FACULTY OF SCIENCES

SYLLABUS

of

Bachelor of Science (Medical)

(Semester I –VI)

(Under Continuous Evaluation System)

Session: 2022-23

The Heritage Institution

KANYA MAHA VIDYALAYA JALANDHAR

(Autonomous)

Bachelor of Science Medical (Zoology, Botany, Chemistry)

Session 2022-23

Programme Specific Outcomes:

Upon successful completion of this course, students will be able to:

PSO1. Understand the nature and basic concepts of cell biology, Biochemistry, Taxonomy and ecology.

PSO2. Analyse the relationships among animals, plants and microbes

PSO3. Perform procedures as per laboratory standards in the areas of Biochemistry, Bioinformatics, Taxonomy, Economic Zoology and Ecology

PSO4. Understand the applications of biological sciences in Apiculture, Aquaculture, Agriculture and Medicine

PSO5. Understand the importance of plants, their diversity and its conservation.

PSO6. Understand contribution of botany in medicines, food, fibers and other plant products.

PSO7. Understand Health and Environmental Protection and to tackle pollution problems.

PSO8. Understand the importance of nature.

PSO9. Understand Experiments in Botany.

PSO10. Understand knowledge of Botany is an essential requirement for the pursuit of many applied sciences like Agriculture, Horticulture, Sericulture, Forestry, Biotechnology and many more.

PSO11. Demonstrate knowledge of organic, inorganic and physical chemistry and apply this knowledge to analyse a variety of chemical phenomena and will be able to interpret and analyse quantitative data.

PSO12. Understand theoretical concepts of instruments that are commonly used in most chemistry fields as well as interpret and use data generated in instrumental physical and chemical analyses.

They will also be able to employ critical thinking and scientific inquiry in the performance, design, interpretation and documentation of laboratory experiments, at a level suitable to succeed at an entry-level position in industry or a chemistry postgraduate program.

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

CURRICULUM AND SCHEME OF EXAMINATIONS OF THREE-YEAR DEGREE PROGRAM

Bachelor of Science (Medical)

Session-2022-23

Bachelor of Science (Medical) Semester I								
Course Code		**Course Name**	**Course Type**	**Marks**				**Examination time (in Hours)**
				Total	**Ext.**		**CA**	
					L	**P**		
BSML-1421 BSML-1031 BSML-1431		Punjabi (Compulsory) [1]Basic Punjabi [2]Punjab History & Culture	C	50	40	-	10	3
BSML-1212		English (Compulsory)	C	50	40	-	10	3
BSMM-1483	(I)	**Zoology** (Cell Biology)	E	100	60 (30+30)	20	20	3+3+3
	(II)	**Zoology** (Biodiversity-I)						
	(P)	**Zoology** (PRACTICAL–I -Related to Cell Biology & Biodiversity-I)						
BSMM-1343	(T)	**Microbiology** (Fundamentals of Microbiology)	E	100	60	20	20	3+3
	(P)	**Microbiology** (PRACTICAL- Related to Fundamentals of Microbiology)						
BSMM-1084	(I)	**Chemistry** (Inorganic Chemistry–I)	C	100	60 (30+30)	20	20	3+3+3½
	(II)	**Chemistry** (Organic Chemistry–I)						
	(P)	**Chemistry** (Practical)						
BSMM-1075	(I)	**Botany** (Diversity of Microbes)	E	100	60 (30+30)	20	20	3+3+3
	(II)	**Botany** (Diversity of Cryptogams)						
	(P)	**Botany** (PRACTICAL–I -Related to Paper-I and Paper II)						
BSMM-1255		**Food Science** (Food Chemistry and Nutrition)	E	100	60	20	20	3+3
	(P)	**Food Science** (PRACTICAL- Related to Food Chemistry and Nutrition)						
AECD-1161		*Drug Abuse: Problem, Management and Prevention (Compulsory)	AC	50	40	-	10	3
SECF-1492		*Foundation Programme	AC	25	25	-	-	2
Total								

C-Compulsory
E-Elective
AC- Audit Course
[1]Special paper in lieu of Punjabi (Compulsory).
[2] Special paper in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab.
***Marks of these papers will not be added in total marks and only grades will be provided.**

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

CURRICULUM AND SCHEME OF EXAMINATIONS OF THREE-YEAR DEGREE PROGRAM

Bachelor of Science (Medical)

Session-2022-23

Bachelor of Science (Medical) Semester II								
Course Code		**Course Name**	**Course Type**	**Marks**				**Examination time (in Hours)**
				Total	**Ext.**		**CA**	
					L	**P**		
BSMM-2421 BSMM-2031 BSMM-2431		Punjabi (Compulsory) [1]Basic Punjabi [2]Punjab History & Culture	C	50	40	-	10	3
BSMM-2212		English (Compulsory)	C	50	40	-	10	3
BSMM-2483	(I)	**Zoology** (Ecology)	E	100	60 (30+30)	20	20	3+3+3
	(II)	**Zoology** (Biodiversity –II)						
	(P)	**Zoology** (Practical-II- related to ecology and Biodiversity-II)						
BSMM-2343	(T)	**Microbiology** (Basic Food Microbiology)	E	100	60	20	20	3+3
	(P)	**Microbiology** (PRACTICAL- Related to Basic Food Microbiology)						
BSMM-2084	(I)	**Chemistry** (Inorganic Chemistry–I)	C	100	60	20	20	3+3+3½
	(II)	**Chemistry** (Organic Chemistry–I)						
	(P)	**Chemistry** (Practical)						
BSMM-2075	(I)	**Botany** (Cell Biology)	E	100	60 (30+30)	20	20	3+3+3
	(II)	**Botany** (Genetics)						
	(P)	**Botany** (Practical-II- Related to Paper I and Paper II)						
BSMM-2255	(T)	**Food Science** (Food Plant Hygiene and Sanitation)	E	100	60	20	20	3+3
	(P)	**Food Science** (PRACTICAL- Related to Food Plant Hygiene and Sanitation)						
SECM-2502		*Moral Education Programme	AC	25	20	-	5	2
Total								

C-Compulsory
E-Elective
AC- Audit Course
[1]Special paper in lieu of Punjabi (Compulsory).
[2] Special paper in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab.
***Marks of these papers will not be added in total marks and only grades will be provided.**

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

CURRICULUM AND SCHEME OF EXAMINATIONS OF THREE-YEAR DEGREE PROGRAM

Bachelor of Science (Medical)

Session-2022-23

Bachelor of Science (Medical) Semester III								
Course Code		**Course Name**	**Course Type**	**Marks**				**Examination time (in Hours)**
				Total	**Ext.**		**CA**	
					L	**P**		
BSML-3421 BSML-3031 BSML-3431		Punjabi (Compulsory) [1]Basic Punjabi [2]Punjab History & Culture **(**From 1000-1605 A. D.	C	50	40	-	10	3
BSML-3212		English (Compulsory)	C	50	40	-	10	3
BSMM-3483	(I)	**Zoology** (Evolution)	E	100	60 (30+30)	20	20	3+3+3
	(II)	**Zoology** (Biodiversity –III) (Chordates)						
	(P)	**Zoology** (Practical-III- related to Evolution and Biodiversity-III)						
BSMM-3343	(I)	**Microbiology** (Microbial nutrition and Metabolism)	E	100	60	20	20	3+3
	(P)	**Microbiology** (Practical- Microbial nutrition and Metabolism)						
BSMM-3084	(I)	**Chemistry** (Organic Chemistry–I)	C	100	60 (30+30)	20	20	3+3+3½
	(II)	**Chemistry** (Physical Chemistry–II)						
	(P)	**Chemistry** (Practical)						
BSMM-3075	(I)	**Botany** (Structure Development and Reproduction in Flowering Plant-I)	E	100	60 (30+30)	20	20	3+3+3
	(II)	**Botany** (Structure Development and Reproduction in Flowering Plant-II)						
	(P)	**Botany** (Practical-III -Related to Structure Development and Reproduction in Flowering Plant I & II)						
BSMM-3255	(I)	**Food Science (Vocational)** (Food Processing and Packaging)	E	100	60	20	20	3+3
	(P)	**Food Science (Vocational)** (Practical-Food Processing and Packaging)						
AECE-3221		*Environmental studies	AECC**	100	60	20	20	3
SECP-3512/ SECG-3531		*Personality Development Programme (Skill Based)/ Gender Sensitization Programme	AC	25	25	-	-	2

C-Compulsory
E-Elective
AC- Audit Course
[1]Special paper in lieu of Punjabi (Compulsory).
[2] Special paper in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab.
***Marks of these papers will not be added in total marks and only grades will be provided.**

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

CURRICULUM AND SCHEME OF EXAMINATIONS OF THREE-YEAR DEGREE PROGRAM

Bachelor of Science (Medical)

Session-2022-23

Bachelor of Science (Medical) Semester IV								
Course Code		**Course Name**	**Course Type**	**Marks**				**Examination time (in Hours)**
				Total	**Ext.**		**CA**	
					L	**P**		
BSML-4421 BSML-4031 BSML-4431		Punjabi (Compulsory) [1]Basic Punjabi [2]Punjab History & Culture **(**From 1000-1605 A. D.	C	50	40	-	10	3
BSML-4212		English (Compulsory)	C	50	40	-	10	3
BSMM-4483	(I)	**Zoology** (Biochemistry)	E	100	60 (30+30)	20	20	3+3+3
	(II)	**Zoology** (Animal Physiology)						
	(P)	**Zoology** (Practical- Related to Biochemistry and Animal Physiology)						
BSMM-4343	(I)	**Microbiology** (Microbial Ecology)	E	100	60	20	20	3+3
	(P)	**Microbiology** (Practical- Microbial Ecology)						
BSMM-4084	(I)	**Chemistry** (Inorganic Chemistry–I)	C	100	60 (30+30)	20	20	3+3+3½
	(II)	**Chemistry** (Organic Chemistry–II)						
	(P)	**Chemistry** (Practical)						
BSMM-4075	(I)	**Botany** (Diversity Of Seed Plants And Their Systematics-I)	E	100	60 (30+30)	20	20	3+3+3
	(II)	**Botany** (Diversity Of Seed Plants And Their Systematics-II)						
	(P)	**Botany** (Practical-III -Related to Diversity Of Seed Plants And Their Systematics-I & II)						
BSMM-4255	(I)	**Food Science (Vocational)** (Quality Assurance)	E	100	60	20	20	3+3
	(P)	**Food Science (Vocational)** (Practical-Quality Assurance)						
SECS- 4522		Social Outreach Programme	AC	25	30	-	5	3

C-Compulsory
E-Elective
AC- Audit Course
[1]Special paper in lieu of Punjabi (Compulsory).
[2] Special paper in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab.
***Marks of these papers will not be added in total marks and only grades will be provided.**

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

CURRICULUM AND SCHEME OF EXAMINATIONS OF THREE-YEAR DEGREE PROGRAM

Bachelor of Science (Medical)

Session-2022-23

Bachelor of Science (Medical) Semester – V								
Course Code		**Course Name**	**Course Type**	**Marks**				**Examinationtime (in Hours)**
				Total	**Ext. L**	**P**	**CA**	
BSMM-5421 BSMM-5031BSMM-5431		Punjabi (Compulsory) [1]Basic Punjabi [2]Punjab History & Culture	C	50	40	-	10	3
BSMM-5212		English	C	50	40	-	10	3
BSMM-5483	(I)	**Zoology** (Development Biology)	E	100	60 (30+30)	20	20	3+3+3
	(II)	**Zoology** (Genetics)						
	(P)	**Zoology** (Practical –V- related to development biology and genetics)						
BSMM-5343	(I)	**Microbiology** (Applied Microbiology-I)	E	100	60	20	20	3+3
	(P)	**Microbiology** (Practical – Related toApplied Microbiology-I)						
BSMM-5084	(I)	**Chemistry** (Inorganic Chemistry–I)	C	100	60	20	20	3+3+3½
	(II)	**Chemistry** (Physical Chemistry–II)						
	(P)	**Chemistry** (Practical)						
BSMM-5075	(I)	**Botany** (Plant Physiology)	E	100	60 (30+30)	20	20	3+3+3
	(II)	**Botany** (Biochemistry & Biotechnology)						
	(P)	**Botany** (Practical-V-Related to Plant Physiology, Biochemistry & Biotechnology)						
BSMM-5255	(I)	**Food Science and quality control(Vocational)** Food Analysis	E	100	60	20	20	3+3
	(P)	**Food Science and quality control (Vocational)** (Practical –Related to FoodAnalysis)						
SECJ-5551		*Job Readiness course	AC	2credit	-	-	-	-
SECI-5541		*Innovation, Entrepreneurship and VentureDevelopment	AC	2credit				
Total								

C-Compulsory
E-Elective
AC- Audit Course
[1]Special paper in lieu of Punjabi (Compulsory).
[2] Special paper in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab.
***Marks of these papers will not be added in total marks and only grades will be provided.**

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

CURRICULUM AND SCHEME OF EXAMINATIONS OF THREE-YEAR DEGREE PROGRAM

Bachelor of Science (Medical)

Session-2022-23

Bachelor of Science (Medical) Semester – VI								
Course Code		**Course Name**	**Course Type**	**Marks**				**Examination time (In Hours)**
				Total	**Ext.**		**CA**	
					L	**P**		
BSMM-6421 BSMM-6031 BSMM-6431		Punjabi (Compulsory) [1]Basic Punjabi [2]Punjab History & Culture	C	50	40	-	10	3
BSMM-6212		English	C	50	40	-	10	3
BSMM-6483	(I)	**Zoology** (Medical Zoology)	E	100	60 (30+30)	20	20	3+3+3
	(II)	**Zoology** (Medical laboratory Technology)						
	(P)	**Zoology** (Practical –VI- related to Medical Zoology & Medical laboratory Technology)						
BSMM-6343	(I)	**Microbiology** (Applied Microbiology-II)	E	100	60	20	20	3+3
	(P)	**Microbiology** (Practical – Related to Applied Microbiology-II)						
BSMM-6084	(I)	**Chemistry** (Organic Chemistry–I)	C	100	60	20	20	3+3+3½
	(II)	**Chemistry** (Physical Chemistry–II)						
	(P)	**Chemistry** (Practical)						
BSMM-6075	(I)	**Botany** (Ecology)	E	100	60 (30+30)	20	20	3+3+3
	(II)	**Botany** (Economic Botany)						
	(P)	**Botany** (Practical-VI- Related to Ecology & Economic Botany)						
BSMM-6255	(I)	**Food Science and quality control (Vocational)** Food plant layout and management	E	100	60	20	20	3+3
	(P)	**Food Science and quality control (Vocational)** (Practical –Related to Food plant layout and management)						
Total								

C-Compulsory
E-Elective
AC- Audit Course
[1]Special paper in lieu of Punjabi (Compulsory).
[2] Special paper in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab.
***Marks of these papers will not be added in total marks and only grades will be provided.**

Bachelor of Science (Medical) Semester- I (Session 2022-23)

Course Title: Punjabi (Compulsory)

Course Code- BSML-1421

Course Outcomes:

CO1: ਦੋ ਰੰਗ (ਕਵਿਤਾ ਭਾਗ) ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਵਿਤਾ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਤਾਂ ਕਿ ਉਹ ਆਧੁਨਿਕ ਦੌਰ ਵਿਚ ਚੱਲ ਰਹੀਆਂ ਕਾਵਿ ਧਾਰਾਵਾਂ ਅਤੇ ਕਵੀਆਂ ਬਾਰੇ ਗਿਆਨ ਹਾਸਿਲ ਕਰ ਸਕਣ।

CO2: ਇਸ ਦਾ ਹੋਰ ਮਨੋਰਥ ਕਵਿਤਾ ਦੀ ਵਿਆਖਿਆ, ਵਿਸ਼ਲੇਸ਼ਣ ਤੇ ਮੁਲੰਕਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ ਵੀ ਹੈ ਤਾਂ ਕਿ ਉਹ ਸਮਕਾਲੀ ਸਮਾਜ ਦੀਆਂ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਸਮਝ ਸਕਣ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਦ੍ਰਿਸ਼ਟੀ ਬਣਾ ਸਕਣ।

CO3: ਸੰਸਾਰ ਦੀਆਂ ਪ੍ਰਸਿਧ ਹਸਤੀਆਂ ਜੀਵਨੀ ਦੀ ਵਿਧਾ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਜੀਵਨੀ ਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਜੀਵਨੀ ਜਗਤ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO4: ਪੈਰ੍ਹਾ ਰਚਨਾ ਅਤੇ ਪੈਰ੍ਹਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ ਦੇਣ ਦਾ ਮਨਰੋਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO5: ਧੁਨੀ ਵਿਉਂਤ ਪੜ੍ਹਣ ਨਾਲ ਵਿਦਿਆਰਥੀ ਧੁਨੀਆਂ ਦੀ ਉਚਾਰਨ ਪ੍ਰਣਾਲੀ ਤੋਂ ਵਾਕਫ਼ ਹੋਣਗੇ।

Bachelor of Science (Medical) Semester- I (Session 2022-23)

Course Title: Punjabi (Compulsory)

Course Code- BSML-1421

ਸਮਾਂ: 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA:10

ਪਾਠਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਦੋ ਰੰਗ (ਕਵਿਤਾ ਭਾਗ) (ਸੰਪਾ.ਹਰਜਿੰਦਰ ਸਿੰਘ ਢਿਲੋਂ ਅਤੇ ਪ੍ਰੀਤਮ ਸਿੰਘ ਸਰਗੋਧੀਆ), ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

(ਕਵਿਤਾ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ) ੪ ਅੰਕ

ਯੂਨਿਟ-II

ਸੰਸਾਰ ਦੀਆਂ ਪ੍ਰਸਿਧ ਹਸਤੀਆਂ (ਜੀਵਨੀ ਨੰ: 1 ਤੋਂ 9 ਤਕ)

(ਸੰਪਾ.ਪ੍ਰਿੰ. ਤੇਜਾ ਸਿੰਘ, ਹਰਨਾਮ ਸਿੰਘ ਸ਼ਾਮ),ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।

(ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ) ੪ ਅੰਕ

ਯੂਨਿਟ-III

(ੳ) ਪੈਰ੍ਹਾ ਰਚਨਾ (ਤਿੰਨ ਵਿਚੋਂ ਇਕ)

(ਅ) ਪੈਰ੍ਹਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ। ੪ ਅੰਕ

ਯੂਨਿਟ-IV

(ੳ) ਪੰਜਾਬੀ ਧੁਨੀ ਵਿਉਂਤ :ਪਰਿਭਾਸ਼ਾ ਤੇ ਉਚਾਰਨ ਅੰਗ

(ਅ) ਸਵਰ, ਵਿਅੰਜਨ ੪ ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

Bachelor of Science (Medical) Semester- I (Session 2022-23)

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code- BSML-1031

Course outcomes

CO1: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਨੂੰ ਸਿਖਾਉਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਵਿਚ ਪਾ ਕੇ ਇਕ ਹੋਰ ਭਾਸ਼ਾ ਸਿੱਖਣ ਦਾ ਮੌਕਾ ਪ੍ਰਦਾਨ ਕਰਨਾ ਹੈ।

CO2: ਇਸ ਵਿਚ ਵਿਦਿਆਰਥੀ ਨੂੰ ਬਾਰੀਕਬੀਨੀ ਨਾਲ ਭਾਸ਼ਾ ਦਾ ਅਧਿਐਨ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

CO3:ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਸ਼ਬਦ ਰਚਨਾ ਤੋਂ ਜਾਣੂ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

CO4: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ ਬਾਰੇ ਦੱਸਣਾ ਹੈ।

CO5: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਸ਼ਬਦ ਘੇਰਾ ਵਿਸ਼ਾਲ ਕਰਨਾ ਹੈ।

CO6: ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਿਚ ਹਫ਼ਤੇ ਦੇ ਸੱਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰ੍ਹਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕ ਤੋਂ ਸੌ ਤੱਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂ ਵਿਚ ਸਿਖਾਉਣਾ ਹੈ।

Bachelor of Science (Medical) Semester- I (Session 2022-23)

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code- BSML-1031

ਸਮਾਂ : 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਪਾਠਕ੍ਰਮ

ਯੂਨਿਟ-I

ਪੈਂਤੀ ਅੱਖਰੀ, ਅੱਖਰ ਕ੍ਰਮ, ਪੈਰ ਬਿੰਦੀ ਵਾਲੇ ਵਰਣ ਅਤੇ ਪੈਰ ਵਿਚ ਪੈਣ ਵਾਲੇ ਵਰਣ ਅਤੇ ਮਾਤ੍ਰਵਾਂ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ) ਲਗਾਖਰ (ਬਿੰਦੀ, ਟਿੱਪੀ, ਅੱਧਕ) : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ । 08ਅੰਕ

ਯੂਨਿਟ-II

ਪੰਜਾਬੀ ਸ਼ਬਦ ਬਣਤਰ : ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ (ਸਾਧਾਰਨ ਸ਼ਬਦ, ਸੰਯੁਕਤ ਸ਼ਬਦ, ਮਿਸ਼ਰਤ ਸ਼ਬਦ, ਮੂਲ ਸ਼ਬਦ, ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ) 08ਅੰਕ

ਯੂਨਿਟ-III

ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ: ਬਾਜ਼ਾਰ, ਵਪਾਰ, ਰਿਬਤੇ ਨਾਤੇ, ਖੇਤੀ ਅਤੇ ਹੋਰ ਧੰਦਿਆਂ ਆਦਿ ਨਾਲ ਸੰਬੰਧਤ। 08 ਅੰਕ

ਯੂਨਿਟ-IV

ਹਫ਼ਤੇ ਦੇ ਸੱਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰ੍ਹਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕ ਤੋਂ ਸੌ ਤਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂ ਵਿਚ। 08 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

Bachelor of Science (Medical) Semester- I (Session 2022-23)

Course Title: Punjab History and Culture (From Earliest Times to C 320)

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

Course Code- BSML-1431

Course Outcomes:

After completing Semester I and course on Punjab History and Culture students of History will be able to identify and have a complete grasp on the sources & writings of Ancient Indian History of Punjab.

CO1: Identify and understand the sources and physical features of Punjab

CO 2: To study the earliest civilisation (Indus Valley Civilization) and original home of Aryans

CO 3: To examine the Social, Religious and Economic life during Early and Later Vedic Age

CO 4: To comprehend the Buddhist, Jain and Hindu faith and their relevance in the modern times

Bachelor of Science (Medical) Semester- I (Session 2022-23)

Course Title: Punjab History and Culture (From Earliest Times to C 320)

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

Course Code- BSML-1031

Examination Time: 3 Hours **Max. Marks: 50**

Theory: 40

CA: 10

Instructions for the Paper Setters

1. Question paper shall consist of four Units

2. Examiner shall set 8 questions in all by selecting Two Questions of equal marks from each Unit.

3. Candidates shall attempt 5 questions in 600 words, by at least selecting One Question from each Unit and the 5th question may be attempted from any of the four Units.

4. Each question will carry 8 marks.

UNIT-I

1. Physical features of the Punjab

2. Sources of the ancient history of Punjab

UNIT-II

3. Harappan Civilization: social, economic and religious life of the Indus Valley People.

4. The Indo-Aryans: Original home

UNIT-III

5. Social, Religious and Economic life during Early Vedic Age.

6. Social, Religious and Economic life during Later Vedic Age.

UNIT-IV

7. Teachings of Buddhism

8. Teachings of Jainism

Suggested Readings

- B.N. Sharma, Life in Northern India, Delhi. 1966.
- Budha Parkash, Glimpses of Ancient Punjab, Patiala, 1983.
- Chopra, P.N., Puri, B.N., & Das, M.N.(1974). A Social, Cultural & Economic
- History of India, Vol. I, New Delhi: Macmillan India.

- L. M Joshi (ed.), History and Culture of the Punjab, Art-I, Patiala, 1989 (3rd
- edition)
- L.M. Joshi and Fauja Singh (ed.), History of Punjab, Vol.I, Patiala 1977.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

Course Title: English (Compulsory)
Course Code: BSML-1212

Course Outcomes

After passing this course, the students will be able to:

CO1: Understand fundamental grammatical rules governing tenses, the use of modal verbs and make correct usage in their language through the study of "English Grammar in Use" by Raymond Murphy

CO2: Write paragraphs on any given topic and translate any passage from Hindi/Punjabi to English

CO3: Comprehend the meaning of texts and answer questions related to situations, episodes, themes and characters depicted in them through the study of the stories in text "Tales of Life".

CO4: Appreciate the writings of various Indian and foreign story and prose writers and relate them to their socio-cultural milieu through the study of the essays in text "Prose for Young Learners"

Bachelor of Science (Medical) Semester- I (Session 2022-23)

Course Title: English (Compulsory)
Course Code: BSML-1212

Max. Marks: 50

Examination Time: 3 Hrs **Theory: 40**

CA: 10

Instructions for the Examiner:
The question paper will consist of 4 sections & distribution of marks will be as under:
Section A: The question will be set from Unit I of the syllabus. Fifteen sentences will be set and the students would be required to attempt any ten. Each sentence will carry one mark.

(1x10=10)

Section B: Two questions will be set from Unit II of the syllabus. The students would be required to attempt one paragraph out of the given two topics (word limit 150 words). It will carry five marks. The second question will be based on translation. The students would be required to translate a paragraph from Hindi/Punjabi to English. **(2x5=10)**

Section C: This section will be divided into two parts. Two questions will be set from Unit III of the syllabus. Part one will have one essay type question with internal choice carrying six marks (word limit 300 words). The students would be required to attempt any one. The second part will have three questions. The students would be required to attempt any two. Each question will carry two marks (50 words each).

(6+2+2=10)

Section D: This section will be divided into two parts. Two questions will be set from Unit IV of the syllabus. Part one will have one essay type question with internal choice carrying six marks (word limit 300 words). The students would be required to attempt any one. The second part will have three questions. The students would be required to attempt any two. Each question will carry two marks (50 words each).

(6+2+2=10)

Unit I

English Grammar in Use, 4th Edition by Raymond Murphy, CUP (Units: 1-37)

Unit II

Paragraph Writing and Translation of paragraph (from Hindi/Punjabi to English)

Unit III

Tales of Life (Guru Nanak Dev University, Amritsar): Stories at Sr. No. 1, 2, 3, 5, 6

Unit IV

Prose for Young Learners: Essays at Sr. No. 1, 2, 3, 5, 6

Texts Prescribed:

1. *English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP
2. *Tales of Life* (Guru Nanak Dev University, Amritsar)
3. *Prose for Young Learners* (Guru Nanak Dev University, Amritsar)

Bachelor of Science (Medical) Semester- I (Session 2022-23)

ZOOLOGY

Course Title: Cell Biology

Course Code: BSMM-1483 (I)

(THEORY)

Course Outcomes:

CO1. Perform a variety of molecular and cellular biology techniques

CO2. Describe cellular membrane structure and function, fine structure and function of cell organelles.

CO3. Knowledge about structure and function of cell organelles.

CO4. Learn elementary idea about Cancer and Immunity.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

ZOOLOGY

Course Title: Cell Biology

Course Code: BSMM-1483 (I)

(THEORY)

Max. Time: 3 Hrs. **Max Marks: 30**

Instructions for the Paper Setter

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

Methods in Cell Biology

(a) Principles of light and phase contrast microscopy
(b) Electron microscopy (TEM and SEM)
(c) Fixation and fixatives
(d) Staining techniques.

UNIT-II

Organization of Cell: Extra nuclear and nuclear, ultrastructure and functions of cell organelles

(a) Plasma Membrane: Structure, osmosis, active and passive transport, endocytosis and exocytosis.
(b) Endoplasmic reticulum: Structure, types and associated enzymes.
(c) Mitochondria: Structure, mitochondrial enzymes and role of mitochondria in respiration and mitochondrial DNA.

UNIT-III

Organization of Cell:

(a) Golgi complex: Structure and functions.
(b) Ribosomes: Types of ribosomes, their structure and functions.
(c) Lysosomes: Polymorphism and their function.
(d) Centrosome: Structure and functions.

UNIT-IV

Nucleus: Structure and functions of nuclear membrane, nucleolus and chromosomes.

An elementary idea of cell transformation in cancer

An elementary idea of cellular basis of immunity

Suggested Readings:

1. Cooper, G. M. (2004), The cell, A Molecular Approach, ASM press, Washington, D. C.
2. Karp, G. (1984). Cell Biology (4^{th} ed), McGraw Hill, New York.
3. Pawar, C.B (1999), Cell Biology, Himalaya Publishing House, Bombay.
4. Dhami P. K. (2000) Zoology I, Pradeep Publishers.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

ZOOLOGY

Course Title: Biodiversity-I (Protozoa to Annelida)

Course Code: BSMM-1483 (II)

(THEORY)

Course Outcomes

- CO1: Knowledge about physiology of unicellular life and parasitic protozoan.
- CO2: Understanding of important marine water non chordates.
- CO3: Learn about parasitic Platyhelminthes
- CO4: Understand the economic importance and physiology of Ascaris and earthworm

Bachelor of Science (Medical) Semester- I (Session 2022-23)

ZOOLOGY

Course Title: Biodiversity-I (Protozoa to Annelida)

Course Code: BSMM-1483 (II)

(THEORY)

Max. Time: 3 Hrs. **Max Marks: 30**

Instructions for the Paper Setter

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

Detailed Type study of the following animals

UNIT-I

Protozoa: *Amoeba proteus,*

Paramecium caudatum (with special reference to Kappa particles in *P. aurelia*)

Plasmodium vivax.

UNIT-II

Parazoa (Porifera): *Sycon*,

Cnidaria (Coelentrata): *Obelia*

UNIT-III

Platyhelminthes: *Fasciola hepatica,*

Taenia solium

Larvae of *Fasciola hepatica* and *Taenia solium*

UNIT-IV

Aschelminthes: *Ascaris,* Parasitic adaptations in Helminthes

Annelida: *Pheretima posthuma* (Earthworm)

Suggested Readings:

1. Dhami, P.S. &Dhami, J. K(2001), Invertebrates, R. Chand & Co., New Delhi.

2. Brusca, R. C. and Brusca, G. J. (2003), Invertebrates (2nd ed). Sinauer Associates, Inc. Publishers, Sunderland, Massachusetts.
3. Engemann, J. G. and Hegner, R. W. (1981), Invertebrate Zoology (3rd ed.) Macmillan, New York.
4. Gardiner, M. S. (1972), The Biology of Invertebrates, McGraw Hill, New York.
5. Meglitsch, P. A. and Schran, F. R. (1991), Invertebrate Zoology (3rd ed). Oxford University Press, New York.
6. Pechenik, A. Jan. (2000), Biology of the invertebrates, (4th ed), McGraw Hill Book Co. Singapore.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

ZOOLOGY

Course Title: Practical-I (Related to Cell Biology & Biodiversity-I)

Course Code: BSMM-1483 (P)

(PRACTICAL)

Course Outcomes

BSMM 1483 (P): Practical–I (Related to Cell Biology & Biodiversity-I)

- CO1. Familiar with Scientific method
- CO2.Recognise the importance of conservation
- CO3. Ability to observe chromosomal arrangements during cell division

Bachelor of Science (Medical) Semester- I (Session 2022-23)

ZOOLOGY

Course Title: Practical-I (Related to Cell Biology & Biodiversity-I)

Course Code: BSMM-1483 (P)

(PRACTICAL)

Time: 3 Hrs. **Marks: 20**

Instructions for the Practical Examiners: Question paper is to set on the spot jointly by the Internal and External Examiners. Two copies of the same should be submitted for the record to COE Office, KanyaMaha Vidyalaya, Jalandhar

Guidelines for conduct of practical Examination: -

1.	Identify and classify the specimens upto order. Write a note on their habit, habitat, special features and economic importance.	4
2.	Identify the slides/micrographs and give two reasons for identification.	4
3.	Make a temporary mount of protozoa.	2
4.	Draw a well labelled sketch of the given system of the organism and explain to the examiner.	3
5.	Write down the theory and procedure of gel electrophoresis/ paper chromotogaphy/thin layer chromatography/ SEM & TEM.	2
6.	Report	2
7.	Viva-voce & Practical file.	3

I. Classification up to orders with ecological notes and economic importance (if any) of the following animals (Through Specimens or slides):

A. Protozoa.*Amoeba, Euglena, Trypanosoma, Noctiluca, Eimeria, Monocystis, Paramecium Opalina, Vorticella, Balantidium, Nyctotherus* and *Polystomella.*

B. Parazoa.*Sycon, Grantia, Euplectella, Hyalonema, Spongilla, Euspongia.*

C. Cnidaria.*Porpita, Velella, Physalia, Aurelia, Rhizostoma, Metridium, Millipora, Alcyonium, Tubipora, Zoanthus, Madrepora, Favia, Fungia and Astrangia.*

Hydra (W.M.), *Hydra* with buds, *Obelia* (colony and medusa), *Sertularia, Plumularia, Tubularia, Bougainvillea* and *Aurelia*

D. Platyhelminthes.

Dugesia, Fasciola, Taenia, Echinococcus.

Miracidium, Sporocyst, Redia, Cercaria of *Fasciola,* scolex and proglottids of *Taenia* (mature and gravid).

E. Aschelminthes.*Ascaris*(male and female), *Trichinella, Ancylostoma.*

F. Annelida. *Pheretima, Nereis, Heteronereis, Polynoe, Eunice, Aphrodite, Chaetopterus, Arenicola, Tubifex* and *Pontobdela*

2. **Study of the following permanent stained preparations**:

A. L.S. and T.S. *Sycon,* gemmules, spicules and spongin fibers of a sponge.

B. T.S. *Hydra* (Testis and ovary region)

C. T.S. *Fasciola* (Different regions)

D. T.S. *Ascaris* (Male and Female)

E. T.S. *Pheretima* (pharyngeal and typhlosolar regions), Setae, septal nephridia, spermathecae and ovary of *Pheretima*(Earthworm).

3. **Preparation of the following slides**:

Temporary permanent preparation of freshwater Protozoan culture.

4. **Demonstration of** digestive, reproductive and nervous systems of earthworm with the help of charts/videos/models.

5. **Cell Biology:**

A. Paper chromatography.

B. Gel electrophoresis through photographs or through research laboratories

C. Familiarity with TEM & SEM.

D. Study of different ultra-structures of cell organelles through photographs.

6. Visit to a vermi–composting unit and submission of report.

Note:- Some changes can be made in the practicals depending on the availability of material.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

MICROBIOLOGY

Course Title: Fundamentals of Microbiology

Course Code: BSMM-1343

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Learn about history of microbiology and characterization and identification of microorganisms.

CO2: Understand the principle and applications of different microscopes and methods of sterilization, pure culture concept and different staining methods of bacteria.

CO3: Understand the structure of bacterial cell and nutritional requirement of microorganisms, different types of media and control of microorganisms by physical and chemical agents.

CO4: Understand the reproduction and growth of microorganisms and common bacterial and viral diseases in human.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

MICROBIOLOGY

Course Title: Fundamentals of Microbiology

Course Code: BSMM-1343

(THEORY)

Time: 3 Hours **Max Marks: 100**

Theory Marks: 60

Practical Marks: 20

CA: 20

Instructions for the Paper Setter: Eight questions of equal marks (12 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT–I

Introduction and Scope of Microbiology: Discovery of microorganisms, history of microbiology, controversy over spontaneous origin or microorganisms, discovery of anaerobic life, germ theory of fermentation as life without oxygen, germ theory of disease.

Characterization and Identification of Microorganisms: Place of microorganisms inliving world, Hackel's and Whittaker's system of classification, prokaryotic and eukaryotic cells, characteristics of main groups of microorganisms.

UNIT–II

Microscopy: Principles and applications of Bright field microscopy, Dark field phase contrast, Fluorescence and Immuno-fluorescence, Electron microscopy.

Methods in Microbiology: Methods of sterilization, preparation of a culture media, pure culture concept, staining of bacteria such as simple, negative and differential methods. Antibiotics, properties and mode of action: drug resistance and its significance, antibiotic sensitivity test.

UNIT–III

Structure of Bacteria: Fine structure of bacterial cell, cell wall, cell membrane, capsule, pili, flagella, ribosomes, Cytoplasmic inclusions, Bacterial movement, Endospore and physiology of endospore formation.

Nutrition: Nutritional requirements of microorganisms, nutritional types of bacteria, autotrophs, heterotrophs, parasites, types of culture media, differential media, selective media and enrichment media. Control of microorganisms by physical and chemical agents.

UNIT–IV

Reproduction and Growth in Microorganisms: Modes of cell division, growth curve of bacteria, continuous culture, synchronous growth, quantitative measurement of bacterial growth, Effect of various factors on growth of bacteria.

Clinical Microbiology: Epidemiology reservoirs and modes of transmission of infectious diseases. Pathogenesis, diagnosis and treatment of common bacterial and viral diseases (including COVID 19) in humans.

Books Recommended:

1. Pelczar, M.I., Chan, E.C.S. and Krieg, N.R. 2011, 5th edition, Microbiology. TataMcGraw Hill Publishing Co., Ltd.,New Delhi.
2. Stanier, R.Y., Ingraham, J.L., Wheelis, M.L. and Painter, P.R. 2005, 5th edition, General Microbiology, MacMillan Education Ltd. Publisher.
3. Powar, C.B. and Dagniwala, H.F. 2012, General Microbiology, Volume I and II, Himalaya Publishing House, Delhi.
4. Sharma, P.D. 2010, Microbiology, Rastogi Publications, Meerut. 142.
5. Clinical microbiology by UsmanWaheed, Asim Ansari, Anwar Ullah and Ihsan Ali., 1st Edition, 2013. **(Online available)**
6. General Microbiology by Linda Bruslind, 1st Edition. **(Online available)**
7. General Microbiology by H.G. Schlegel, 6th Edition. **(Online available)**

Bachelor of Science (Medical) Semester- I (Session 2022-23)

MICROBIOLOGY

Course Title: Fundamentals of Microbiology

Course Code: BSMM-1343 (P)

(PRACTICAL)

Time: 3 Hours **Marks: 20**

Instructions for the practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

LIST OF PRACTICALS:

1. To study the essentials of a microbiology laboratory.
2. To study various parts of a laboratory microscope.
3. To study various sterilization techniques.
4. To prepare the cultures media for the cultivation of various microorganisms.
5. To study various laboratory techniques for the cultivation and isolation of pure cultures of microorganisms.
6. To perform the simple staining of bacterial cell.
7. To perform the differential staining of bacterial cell.
8. To study the typical growth curve of bacteria.
9. To measure the size of microbial cells by ocular micrometer.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

CHEMISTRY

Course Title: Inorganic Chemistry

Course Code: BSMM-1084 (I)

(THEORY)

Course outcomes:

Students will be able to

CO1: Predict electronic properties of atoms using current models and theories in chemistry, sketch the probability density curves, boundary surface diagrams and shapes of orbitals and write the electronic configuration of atoms.

CO2: Identify the periodic trends in physical and chemical properties of elements, describe the arrangement of the elements in the Periodic Table& change from metallic to nonmetallic character.

CO3: Describe VBT, VSEPR theory and predicts the geometry of simple molecules&molecular orbital theory of homonuclear diatomic molecules

CO4: Explain, predict & draw structures of simple ionic compounds.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

CHEMISTRY

Course Title: Inorganic Chemistry

Course Code: BSMM-1084 (I)

(THEORY)

Time: 3 Hrs. **Max.Marks:30**

Instructions for the Paper Setter

Eight questions of equal marks (six each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from UNITs I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT–I

I. Atomic Structure

Idea of de Broglie matter waves, Heisenberg uncertainty principle, atomic orbitals, Schrodinger wave equation, significance of ψ^1 and ψ 2, quantum numbers, radial and angular wave functions and probability distribution curves, shapes of s,p,d orbitals. Aufbau and Pauli exclusion principles, Hund's multiplicity rule. Electronic configurations of the elements and ions.

UNIT–II

II. Periodic Properties

Position of elements in the periodic table; effective nuclear charge and its calculations. Atomic and ionic radii, ionization energy, electron affinity and electronegativity –definition, methods of determination or evaluation, trends in periodic table and applications in predicting and explaining the chemical behaviour.

UNIT–III

III. Chemical Bonding

Covalent Bond –Valence bond theory and its limitations, directional characteristics of covalent bond, various types of hybridizationand shapes of simple inorganic molecules and ions. BeF_2 , BF_3,CH_4, PF_5, SF_6, IF_7, $SnCI_2$, XeF_4, BF_4, $SnC1_6$. Valence shellelectron pair repulsion (VSEPR) theory to NH_3, H_3O+, SF_4,CIF_3, ICl_2 and H_2O. MO theory, homonuclear (elements and ions of 1st and 2nd row), and heteronuclear (BO, CN^-, CO, NO^+, CO^+, CN),

diatomic molecules, multicenter bonding in electron deficient molecule (Boranes). Percentage ionic character from dipole moment and electronegativity difference

UNIT–IV

IV. Ionic Solids

Concept of close packing, Ionic structures, (NaCI type, Zinc blende, Wurtzite, CaF_2 and antifluorite, radius ratio rule and coordination number, limitation of radius ratio rule, lattice defects, semiconductors, lattice energy and Born–Haber cycle, solvation energy and solubility of ionic solids, polarizing power and polarisability of ions, Fajan's rule. Metallic bond– free electron, valence bond and band theories.

Weak Interactions –Hydrogen bonding, Vander Waals forces

Books Suggested:

1. Cotton, F.A., Wilkinson, G., Gaus, P.L., Basic Inorganic Chemistry; 3rd edition, Pubs: John Wiley Sons. 1995.
2. Lee, J.D., Concise Inorganic Chemistry; 4th edition, Pubs: Chapman Hall Ltd., 1991.
3. Shriver, D.E., Alkins, P.W., Langford, C.H., Inorganic Chemistry; 4th edition, Oxford Publisher: Oxford University Press, 2006.
4. Douglas, B. McDamiel, D., Alexander, J., Concepts and Models of Inorganic Chemistry; 3rd edition, Pubs: John Wiley and Sons Inc., 1994.
5. Miessler, G.L., Larr, D.A., Inorganic Chemistry; 3rd edition, Pubs: Pearson Education Inc., 2004.
6. Jolly, W.L., Modern Inorganic Chemistry; 2nd edition, Pubs: McGraw-Hill Publishing Company Limited, 1991.
7. Purcell, K.F., Kotz, J.C., Inorganic Chemistry; Pubs: W.B. Saunders Company, 1977.
8. Puri, B.R., Sharma, L.R., Kalia, K.C., Principles of Inorganic Chemistry; 30th edition, Pubs: Milestones Publisher, 2006-07.
9. University General Chemistry, C.N.R. Rao, Macmillan.
10. Inorganic Chemistry, W.W. Porterfield Addison-Wesley.
11. Inorganic Chemistry, A.G. Sharpe, ELBS.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

CHEMISTRY

Course Title: Organic Chemistry

Course Code: BSMM-1084 (II)

(THEORY)

Course outcomes:

Students will be able to

CO1: interpret the bonding, hybridization between different organic compounds, explain the various reaction mechanisms and different electron displacement effects

CO2: interpret the reactions and properties of alkanes, alkenes & alkynes, derive the electrophilic, nucleophilic addition reactions, free radical mechanisms of halogenation of alkanes.

CO3: compare the reactivities of various alkyl and aryl halide, stability of various cycloalkanes

CO4: differentiate between aromatic, anti-aromatic and non-aromatic compounds, explain the effect of various substituents on the reactivity of aromatic compounds

Bachelor of Science (Medical) Semester- I (Session 2022-23)

CHEMISTRY

Course Title: Organic Chemistry

Course Code: BSMM-1084 (II)

(THEORY)

Time: 3 Hrs. **Max. Marks: 30**

Instructions for the Paper Setter

Eight questions of equal marks (six each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from UNITs I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT–I

I. Structure and Bonding

Hybridization, bond lengths and bond angles, bond energy, localized and delocalized chemical bond, Vander Waals interactions, resonance, hyperconjugation, aromticity hydrogen bonding and Inductive and electrometric effects.

II. Mechanism of Organic Reactions

Curved arrow notation, drawing electron movements with arrows, half–headed and double–headed arrows, homolytic and heterolytic bond breaking. Types of reagents – electrophiles and nucleophiles. Types of organic reactions. Energy considerations.

Reactive intermediates –Carbocations, carbanions, free radicals, carbenes, arenes and nitrenes (with examples). Assigning formal charges on intermediates and other ionic species.

UNIT-II

III. Alkanes

Isomerism in alkanes, sources, methods of formation (with special reference to Wurtz reaction, Kolbe reaction, Corey–House reaction and decarboxylation of carboxylic acids), physical properties and chemical reactions of alkanes. Mechanism of free radical halogenation of alkanes: orientation, reactivity and selectivity.

IV. Alkenes and Alkynes

Nomenclature of alkenes, methods of formation, mechanisms of dehydration of alcohols and dehydrohalogenation of alkyl halides, regioselectivity in alcohol dehydration. The Saytzeff rule, Hofmann elimination, physical properties and relative stabilities of alkenes. Chemical reactions of alkenes-mechanisms involved in hydrogenation, electrophilic and free radical additions, Markownikoff's rule, hydroboration-oxidation, oxymercuration reduction. Epoxidation, ozonolysis, hydration, hydroxylation and oxidation with $KMnO_4$.

Substitution at the allylic and vinylic positions of alkenes.

Nomenclature, structure and bonding in alkynes. Methods of formation. Chemical reactions of alkynes, acidity of alkynes. Mechanism of electrophilic and nucleophilic addition reactions, hydroboration-oxidation, metal-ammonia reductions, oxidation and polymerization.

UNIT–III

V. Alkyl and Aryl Halides

Nomenclature and classes of alkyl halides, chemical reactions. Mechanisms of nucleophilic substitution reaction of alkyl halides, SN2 and SN1 reactions with energy profile diagrams. Nuclear and side chain reactions. The addition-elimination and the elimination-addition mechanisms of nucleophilic aromatic substitution reactions. Relative reactivities of alkyl halides vs allyl, vinyl and aryl halides.

VI. Cycloalkanes:

Baeyer's strain theory and its limitations. Ring strain in small rings (cyclopropane and cyclobutane), theory of strainless rings. The case of cyclopropane ring : banana bonds.

UNIT-IV

VII. Arenes and Aromaticity

Nomenclature of benzene derivatives. The aryl group. Aromatic nucleus and side chain. Structure of benzene: Molecular formula and Kekule structure. Stability and carbon carbon bond lengths of benzene, resonance structure, MO picture.

Aromaticity : the Huckel's rule, aromatic ions.

Aromatic electrophilic substitution–general pattern of the mechanism, role of σ and π complexes. Mechanism of nitration, halogenation, sulphonation, mercuration and Friedel Crafts reaction. Energy profile diagrams. Activating and deactivating substituents, orientation and ortho/para ratio. Side chain reactions of benzene derivatives. Methods of formation and chemical reactions of alkylbenzenes.

Books suggested:

1. Morrison, R.T., Boyd, R.N., Organic Chemistry; 6th edition, Pubs: Prentice-Hall, 1992.
2. Solomons, T.W., Fryhle, C.B., Organic Chemistry; 9th edition, Pubs: Wiley India, 2007.
3. Wade Jr., L.G., Singh, M.S., Organic Chemistry; 6th edition, Pubs: Pearson education, 2008.
4. Mukherji, S.M., Singh, S.P., Kapoor, R.P., Organic Chemistry; Pubs: New Age International, 1985.
5. Carey, F.A., Sundberg, R.J., Advanced Organic Chemistry Part B: Reactions and Synthesis.
6. Fundamentals of Organic Chemistry, Solomons, John Wiley.
7. Introduction to Organic Chemistry, Sireitwieser, Heathcock and Kosover, Macmilan.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

CHEMISTRY

Course Title: Chemistry Practical

Course Code: BSMM-1084 (P)

(PRACTICAL)

Course outcomes

Students will be able to

CO1: separate and identify the various ions present in the mixture

CO2: accurately note down the melting point of organic compounds

CO3: accurately note down theboiling point of organic compounds.

CO4: Differentiate between pure & impure compounds.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

CHEMISTRY

Course Title: Chemistry Practical

Course Code: BSMM-1084 (P)

(PRACTICAL)

Time: 3½ Hrs. **Max. Marks: 20**

Instruction for practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same should be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Inorganic Chemistry: Semi Micro analysis. Cation analysis, Separation and identification of ions from groups I, II, III, IV, V, and VI. Anionic analysis. Four ions with no interference.

Organic Chemistry Laboratory
Techniques

Determination of Melting Point

Naphthalene 80–82^{o}C	Cinnamic acid 132.5–133^{o}C
Benzoic acid 121.5–122^{0}C	Salicylic acid 157.5–158^{o}C
Urea 132.5–133^{o}C	Acetanilide 113.5–114^{o}C
Succinic Acid 184.5–185^{o}C	m–dinitro benzene 90^{o}C
P–dichlorobenzene 52^{o}C	Aspirin 135^{o}C

Determination of Boiling Point

Ethanol 78^{o}C	Cyclo Hexane 81.4^{o}C,
Benzene–80^{o}C	Toluene 110°C

Practical Examination

1) Inorganic Mixture	12
2) Melting Point/Boiling point of organic substance	03
3) Viva–Voce	03
4) Note Book	02

Books suggested:

1. Vogel's Qualitative Inorganic Analysis, revised, Svehla, Orient Longman.
2. Experimental Inorganic Chemistry, W.G. Palmer, Cambridge. Standard Methods of Chemical. Analysis, W.W. Scott: The Technical Press.
3. Laboratory Manual in Organic Chemistry, R.K. Bansal, Wiley Eastern.
4. Vogel's Textbook of Practical Organic Chemistry, B.S. Furniss, A.J. Hannaford, V. Rogers, P.W.G. Smith and A.R. Tatchell, ELBS.
5. Experiments in General Chemistry, C.N.R. Rao and U.C. Aggarwal, East-West Press**.**

Bachelor of Science (Medical) Semester- I (Session 2022-23)

BOTANY

Course Title: Diversity of Microbes

Course Code: BSMM-1075 (I)

(THEORY)

Course outcome: -

After passing this course the course the student will be able to:

CO1: Understand diversity in microscopic living organisms and their associations with other organisms.

CO2: Understand evolutionary history and time scale of non-vascular plants.

CO3: Develop basic knowledge about the variations in life cycle pattern of different organisms.

CO4: Interpret the structure and functional anatomy of plants belonging to the principal groups of living and fossil land plants.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

BOTANY

Course Title: Diversity of Microbes

Course Code: BSMM-1075 (I)

(THEORY)

Time: 3 Hrs **Max. Marks: 30**

Instructions for the Paper Setters:

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

Algae: General characters, classification and economic importance, range of thallus organization, important features and life history of Chlorophyceae– *Volvox, Oedogonium, Coleochaete;* Xanthophyceae– *Vaucheria;* Phaeophyceae– *Ectocarpus, Sargassum;* Rhodophyceae– *Polysiphonia.*

UNIT-II

General account of viruses and mycoplasma with special reference to SARS and Covid-19. Bacteria– structure, nutrition, reproduction and economic importance; general account of cyanobacteria.

UNIT-III

General account, classification and economic importance of fungi. Important features and life history of Mastigomycotina– *Pythium, Phytophthora;* Zygomycotina– *Mucor*, Ascomycotina– *Saccharomyces, Eurotium, Chaetomium, Peziza*.

UNIT-IV

Basidiomycotina– *Puccinia, Agaricus;* Deuteromycotina– *Cercospora, Colletotrichum*. General account of Lichens.

Suggested Readings:

1. Dube, H.C., 2007, A Textbook of Fungi, Bacteria and Viruses (3rd edition), Scientific Publishers, India
2. Dube, H.C., 2013, An Introduction to Fungi (4th edition), Scientific Publishers., India.
3. James W. Brown. (2015). Principles of Microbial Diversity.ASM press, USA.
4. Ogunseitan, O. (2008). Microbial Diversity: Form and function in Prokaryotes. Wiley Publishers, USA.

5. Sharma, O.P., 2004, Text Book of Thallophytes. McGraw Hill Publishing Co., India.
6. Sharma, P.D., 2004, The Fungi, (2nd Edition) Rastogi Publication, India
7. Srivastava, H.N., 2018, Diversity of Microbes and Cryptogams, Vol. I, Pradeep's Publication.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

BOTANY

Course Title: Diversity of Cryptogams

Course Code: BSMM-1075 (II)

(THEORY)

Course Outcomes:

After passing this course student will be able to:

CO1: Demonstrate knowledge of similarities and differences between vascular and nonvascular plants.

CO2: Build up a sound foundation in the subject of Cryptogamic Botany in general and Bryophytes in particular so that the students may be able to apply the acquired knowledge while interacting into the other fields of Botany.

CO3: Acquaint the students about the classification, morphology, biology and economic importance of various pteridophytic plants.

CO4: Recognize different plants and flora that come under cryptogams.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

BOTANY

Course Title: Diversity of Cryptogams

Course Code: BSMM-1075 (II)

(THEORY)

Time: 3 Hrs **Max. Marks: 30**

Instructions for the Paper Setters:

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT-I

Bryophyta: Amphibians of plants kingdom displaying alternation of generations; structure, reproduction.

UNIT-II

Classification of Hepaticopsida (e.g. *Marchantia*); Anthocerotopsida (e.g. *Anthoceros*), Bryopsida (e.g. *Funaria*).

UNIT-III

Pteridophyta: The first vascular plant; important characteristics of Psilopsida, Lycopsida, Sphenopsida and Pteropsida; Structure, reproduction in *Rhynia*

UNIT-IV

Structure and reproduction in *Lycopodium, Selaginella, Equisetum, Pteris and Marsilea.*

Suggested Readings:

- Goffinet B. (2008). Bryophyte Biology. Cambridge University Press, UK.
- Sambamurty, S.S. (2013). A Textbook of Bryophytes, Pteridophytes, Gymnosperms and Paleobotany. I K International Publishing House Pvt Ltd., India
- Sharma, O.P. (2014). Bryophyta. McGraw Hill Education Pvt Ltd., India.
- Srivastava, H.N., 2018, Diversity of Microbes and Cryptogams, Vol. I, Pradeep's Publication.
- Vashishta, P.C, Sinha, A.K, Kumar, A., (2010). Botany for Degree Students Pteridophyta (Vascular cryptogams). S.S. Chand Publications

Bachelor of Science (Medical) Semester- I (Session 2022-23)

BOTANY

Course Title: Practical – Related to Diversity of Microbes & Diversity of Cryptogams

Course Code: BSMM-1075 (P)

(PRACTICAL)

Course Outcomes:

After passing this course student will be able to:

CO1: Ability to evaluate different sources of phylogenetic information (e.g. molecular sequence data, ultrastructure, morphology) for understanding algal, fungal.

CO2: Knowledge of the evolutionary history and time-scale of non-vascular plants, including the development of the first terrestrial plants from green algae.

CO3: Knowledge of the history and time-scale of land plant evolution, and evaluation of the principal types of evidence underlying.

CO4: Basic understanding of algal and fungal diversity (incl. morphology, cell structure and level of organization) to phylum level, and their association as lichens.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

BOTANY

Course Title: Practical – Related to Diversity of Microbes &

Diversity of Cryptogams

Course Code: BSMM-1075 (P)

(PRACTICAL)

Time: 3 Hrs. **Marks: 20**

Instructions for the paper setter: question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar

Suggested Laboratory Exercises

Teachers may select plants/material available in their locality/institution.

1. Gram staining of bacteria.
2. Observation of disease symptoms in hosts infected by fungi, viruses and mycoplasma. Section cutting of diseased material and identification of the pathogens as per the theory syllabus.
3. Study of the genera included under algae and fungi.
4. Study of morphology, reproductive structures and anatomy of the examples cited in theory under Bryophyta and Pteridophyta.
5. Types of Bacteria to be observed from temporary /permanent slides /electron micrographs.

Suggested Readings:

- Lee, R.E. **(2018).** Phycology, Fifth Edition, Cambridge University Press, USA.
- Agrios, G.N. **(2005).** Plant Pathology, 5th edition, Academic Press, U.K.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

FOOD SCIENCE

Course Title: Food Science and Quality Control (Vocational) (Food Chemistry and Nutrition)

Course Code: BSMM-1255

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand food, its functions, food groups, food metabolism, nutrition, malnutrition and nutrient requirement for adult men and women as per ICMR.

CO2: Understand the chemistry underlying the properties of various food components.

CO3: Understand the composition and nutritional significance of cereals, milk and milk products.

CO4: Understand the composition and nutritional significance of egg and poultry, meat and fish, fruits and vegetables.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

FOOD SCIENCE

Course Title: Food Science and Quality Control (Vocational) (Food Chemistry and Nutrition)

Course Code: BSMM-1255

(THEORY)

Examination Time: 3 hours

Max. Marks: 100

Theory Marks: 60

Practical Marks: 20

CA: 20

Instructions for the Paper Setter: Eight questions of equal marks (12 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT– I

1. **Introduction to nutrition**–food as a source of nutrients, function of foods, definition of nutrition, nutrients, adequate, optimum and good nutrition, malnutrition.
2. **Inter–relationship between nutrition and health**–parameters of good health.
3. **Food guide**–basic five food groups – Importance, uses.
4. **Food metabolism**–digestion, absorption, transport, utilization of nutrients in the body.
5. **Recommended dietary requirements-** Nutrient requirement for adult men and women as per ICMR.
6. **Water**–function, sources, requirement, water balance, effect of deficiency on health.

UNIT-II

7. **Carbohydrate**—composition, classification, food sources, storage in body, reaction, structure, functions of monosaccharides, oligosaccharides and polysaccharides in foods.
8. **Fat and oils**—composition, saturated, unsaturated fatty acids, food sources, functions of fats. Nomenclature and classification, emulsions and emulsifiers, role of fat and oil in food processing.
9. **Proteins**- composition, essential and non–essential amino acids, sources of protein, functions, protein deficiency diseases, physico–chemical properties, modification of food protein during processing and storage.

10. **Energy**- unit of energy, food as a source of energy, calorific value of food, need for energy, basic metabolic role, utilization of fat, energy requirement.
11. **Minerals**- function, sources, bio–availability and deficiency of macro and micro minerals.
12. **Vitamins**- classification, sources, functions and deficiency diseases of fat and water soluble vitamins.

UNIT– III

13. **Cereals**: Composition and Nutritional aspects, breakfast cereals and cereal products: Bread and pasta.
14. **Milk and Milk Products**: Composition, classification, storage, uses, and nutritional significance of milk, curd, butter, paneer, khoa, cheese, ice–cream and various kinds of processed milk.

UNIT -IV

15. **Egg and Poultry**: Composition and nutrition significance.
16. **Meat and Fish**: Structure, composition and nutritional significance, post mortem changes, changes in meat during cooking.
17. **Fruits and Vegetables**: Nutritive value of fruit and vegetables and their products- jam, jelly, marmalade and canned products.

Books Recommended:

1. Food Chemistry, 2007, 4th Edition, Owen R. Fennema**. (Online available)** **https://edisciplinas.usp.br/pluginfile.php/4937824/mod_folder/content/0/Fennema%E2%80%99s%20Food%20Chemistry-CRC%20Press%20%282008%29%20-%204th%20Edition.pdf?forcedownload=1**
2. Food Chemistry, 2003, 2nd Edition, Connie M. Weaver, James R. Daniel.
3. Food Chemistry, 1974, 3rd Edition, Mian Hoagland Meyer.
4. Principles of Food Chemistry, 2018, 4th Edition, deMan.
5. Basic Food Chemistry, 2012, 4th Edition, Frank A. Lee.
6. Fundamentals of Foods and Nutritions, 2018, 6thEdition, Mudambi S.R., M.V. Rajgopal.
7. Advanced text book of Foods Nutrition, 1985, 2nd Edition, Swaminathan S.
8. Dairy technology: principles of milk properties and processes, 1995, 1st Edition, P. Walstra, T.J Guerts, A. Noomen, A. Jellema and M.A.J.S Van Boekel.
9. Cereal processing technology, 2001, 1st Edition, Gavin Owens.
10. Preservation of Fruit and Vegetables, GirdhariLal, G.S. Siddappaa and G.L. Tandon, ICAR, New Delhi.

11. Analysis and Quality Control for Fruit and VegetableProducts, S Ranganna, McGraw Hill Education (India) Private Limited, Chennai, India.
12. Essentials of Food Science, 2013, 4th Edition, Vickie A. Vaclavik, Elizabeth W. Christian. **(Online available)** **https://core.ac.uk/download/pdf/326762601.pdf**
13. Food Chemistry, 2009, 4th Edition, H.-D. Belitz, W. Grosch, P. Schieberle. **(Online available)** **https://edisciplinas.usp.br/pluginfile.php/4937824/mod_folder/content/0/Hans-Dieter%20Belitz%2C%20Werner%20Grosch%2C%20Peter%20Schieberle%20auth.%20Food%20Chemistry.pdf?forcedownload=1**

Bachelor of Science (Medical) Semester- I (Session 2022-23)

FOOD SCIENCE

Course Title: Food Science and Quality Control (Vocational) (Food Chemistry and Nutrition)

Course Code: BSMM-1255

(PRACTICAL)

Time: 3 hours **Max. Marks: 20**

Instructions for the practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

List of Practicals

1. Determination of moisture content of wheat flour.
2. Calculation of BMI and BMR
3. Determination of ash content of food sample.
4. Qualitative tests of proteins and lipids in different foods.
5. Estimation of Vitamin C.
6. Determination of salt content in food products.
7. Estimation of volatile and nonvolatile acids in vinegar.
8. Estimation of fat in food sample by Soxhlet apparatus.
9. Grading and quality evaluation of eggs.
10. Dehydration of common fruits and vegetables.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

DRUG ABUSE

Course Title: Drug Abuse: Problem, Management and Prevention

Course Code: AECD-1161

(THEORY)

Course Outcomes

After completing the course, the students will be able to:

CO1. Learn how to include factual data about what substance abuse is; warning signs of addiction; information about how alcohol and specific drugs affect the mind and body;

CO 2. Learn how to be supportive during the detoxification and rehabilitation process.

CO3. Focus on substance abuse education- is teaching individuals about drug and alcohol abuse and how to avoid, stop, or get help for substance use disorders.

CO 4. Understand that substance abuse education is important for students alike; there are many misconceptions about commonly used legal and illegal substances, such as alcohol and marijuana

Bachelor of Science (Medical) Semester- I (Session 2022-23)

DRUG ABUSE

Course Title: Drug Abuse: Problem, Management and Prevention

Course Code: AECD-1161

(THEORY)

Time: 3 Hrs **Max. Marks: 50**

Theory: 40

CA: 10

Instructions for the Paper Setter:

Eight questions of equal marks (8 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

Meaning, Nature and Extent of Drug Abuse in India and Punjab.

Consequences of Drug Abuse for:

Individual: Education, Employment, Income.

Family: Violence

Society: Crime

Nation: Law and Order problem

UNIT-II

Management of Drug Abuse

Medical Management: Medication for treatment and to reduce withdrawal effects.

Psychiatric Management: Counselling, Behavioural and Cognitive therapy.

Social Management: Family, Group therapy and Environmental Intervention.

UNIT-III

Prevention of Drug abuse:

Role of family: Parent child relationship, Family support, Supervision

School: Counselling, Teacher as role-model. Parent-teacher-Health, Professional Coordination.

UNIT-IV

Media: Restraint on advertisements of drugs, advertisements on bad effects of drugs, Educational and awareness program

Legislation: NDPs act, Statutory warnings, Policing of Borders, Checking Supply/Smuggling of Drugs, Strict enforcement of laws.

Suggested Readings:

1. Ahuja, Ram (2003), *Social Problems in India*, Rawat Publication, Jaipur.
2. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.
3. Inciardi, J.A. 1981. *The Drug Crime Connection.* Beverly Hills: Sage Publications.
4. Kapoor. T. (1985) *Drug epidemic among Indian Youth*, New Delhi: Mittal Pub.
5. Modi, Ishwar and Modi, Shalini (1997) *Drugs: Addiction and Prevention*, Jaipur: Rawat Publication.
6. National Household Survey of Alcohol and Drug abuse. (2003) New Delhi, Clinical Epidemiological Unit, All India Institute of Medical Sciences, 2004.
7. Sain, Bhim 1991, *Drug Addiction Alcoholism*, Smoking obscenity New Delhi: Mittal Publications.
8. Sandhu, Ranvinder Singh, 2009, *Drug Addiction in Punjab*: A Sociological Study. Amritsar: Guru Nanak Dev University.
9. Singh, Chandra Paul 2000. *Alcohol and Dependence among Industrial Workers*: Delhi: Shipra.
10. Sussman, S and Ames, S.L. (2008). *Drug Abuse: Concepts, Prevention and Cessation,*Cambridge University Press.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

FOUNDATION COURSE

Course Title: Foundation Course

Course Code: SECF-I

Nature of Course: Audit Course (Value Added)

Course Duration: 30 hours

Course Credits: 1

PURPOSE & AIM

This course has been designed to strengthen the intellectual foundation of all the new entrants in the college. One of the most common factors found in the students seeking admission in college after high school is the lack of an overall view of human history, knowledge of global issues, peaks of human intellect, social/political thinkers and inventors & discoverers who have impacted human life. For a student, the process of transition from school to college is full of apprehension and skepticism regarding adapting themselves to new system. The Foundation Programme intends to bridge the gap between high school and college education and develop an intellectual readiness and base for acquiring higher education.

INSTRUCTIONAL OBJECTIVES

- to enable the students to realise their position in the whole saga of time and space
- to inculcate in them an appreciation of life, cultures and people across the globe
- to promote, in the students, an awareness of human intellectual history
- to make them responsible and humane world citizens so that they can carry forward the rich legacy of humanity

LEARNING OUTCOMES

After the completion of this Audit course, students will be able to

- learn how past societies, systems, ideologies, governments, cultures and technologies were built, how they operated, and how they have changed
- understand how the rich history of the world helps us to paint a detailed picture of where we stand today
- understand the Vedic theism, Upanishads Philosophy and doctrines of Jainism, Buddhism and Sikhism
- acquire knowledge of women rights and courage to face day to day challenges
- acknowledge the changes in society, religion and literature in the renaissance period and the importance of empathy and compassion for humanity
- *learn about the prominent Indians (Men and Women) who contributed significantly in freedom struggle, education, economic development and in the formation and evolution of our nation*

- understand meaning of race and how that concept has been used to justify exclusion, inequality, and violence throughout history and the origin of civil right movements to fight for equality, liberty and fraternity
- critically evaluate the socio-political and economic issues at global level and its implications in the present
- upgrade and enhance learning technological skills and striking a balance between technology and their well being
- take pride in learning the saga of Indian Past Culture and Heritage
- understand the rich legacy of KMV and its progressive endeavours

MODULE	TITLE	CONTACT HOURS
I	**Introduction and Initial Assessment**	**2**
II	**The Human Story**	**3**
III	***The Vedas* and the Indian Philosophy**	**2.5**
IV	**The Journey of Woman** **The Story and the Dream**	**2.5**
V	**Changing Paradigms in Society, Religion & Literature**	**2.5**
VI	**Makers of Modern India**	**2.5**
VII	**Racism: Story of the West**	**2.5**
VIII	**Modern World at a Glance: Political & Economic Perspective**	**2.5**
IX	**Technology Vis a Vis Human Life**	**2.5**
X	**My Nation My Pride**	**2.5**
XI	**The KMV Experience**	**2.5**
XII	**Final Assessment, Feedback and Closure**	**2.5**

EXAMINATION

- **Total Marks: 25 (Final Exam: 20; Internal Assessment: 5)**

- Final Exam: multiple choice quiz**.** Marks – 20; Time: 1 hour
- Internal Assessment: 5 (Assessment: 3; Attendance:2)
  Comparative assessment questions (medium length) in the beginning and close of the programme. Marks: 3; Time: 0.5 hour each at the beginning and end.
- Total marks: 25 converted to grade for final result
- Grading system: 90% marks & above: A grade
  80% - 89% marks : B grade
  70% - 79% marks : C grade
  60% - 69% marks : D grade
  50% - 59% marks : E grade
  Below 50% marks : F grade (Fail - must give the exam again)

SYLLABUS

Module I Being a Human: Introduction & Initial Assessment

- Introduction to the programme
- Initial Assessment of the students through written answers to a couple of questions

Module 2 The Human Story

- Comprehensive overview of human intellectual growth right from the birth of human history
- The wisdom of the Ancients
- Dark Middle Ages
- Revolutionary Renaissance
- Progressive modern times
- Most momentous turning points, inventions and discoveries

Module 3 *The Vedas* and the Indian Philosophy

- Origin, teachings and significance of *The Vedas*
- Upnishads and Puranas
- Karma Theory of *The Bhagwad Gita*
- Main tenets of Buddhism & Jainism
- Teachings of Guru Granth Sahib

Module 4 Changing Paradigms in Society, Religion & Literature

- Renaissance: The Age of Rebirth
- Transformation in human thought
- Importance of humanism
- Geocentricism to heliocentricism
- Copernicus, Galileo, Columbus, Darwin and Saint Joan
- Empathy and Compassion

Module 5 Woman: A Journey through the Ages

- Status of women in pre-vedic times
- Women in ancient Greek and Roman civilizations
- Women in vedic and ancient India
- Status of women in the Muslim world
- Women in the modern world
- Crimes against women
- Women labour workforce participation
- Women in politics
- Status of women- our dream

Module 6 Makers of Modern India

- Early engagement of foreigners with India
- Education: The first step to modernization
- Railways: The lifeline of India
- Raja Ram Mohan Roy, Gandhi, Nehru, Vivekanand, Sardar Patel etc.
- Indira Gandhi, Mother Teresa, Homai Vyarawala etc.
- The Way Ahead

Module 7 Racism: Story of the West

- European beginnings of racism
- Racism in the USA - Jim Crow Laws
- Martin Luther King Jr. and the battle against racism
- Apartheid and Nelson Mandela
- Changing face of racism in the modern world

Module 8 Modern World at a Glance: Political & Economic Perspective

- Changing world order
- World War I & II
- UNO and The Commonwealth
- Nuclear Powers; Terrorism
- Economic Scenario: IMF, World Bank
- International Regional Economic Integration

Module 9 Technology Vis a Vis Human Life

- Impact of technology on modern life
- Technological gadgets and their role in our lives
- Technology and environment
- Consumerism and materialism
- Psychological and emotional consequences of technology
- Harmonizing technology with ethics and humaneness

Module 10 My Nation My Pride

- Indian Past Culture and Heritage
- Major Discoveries (Medicinal and Scientific)
- Vedic Age
- Prominent Achievements
- Art, Architecture and Literature

Module 11 The KMV Experience

- Rich Legacy of KMV
- Pioneering role in women emancipation and empowerment
- KMV Contribution in the Indian Freedom Struggle
- Moral, cultural and intellectual heritage of KMV
- Landmark achievements
- Innovative initiatives; international endeavours
- Vision, mission and focus
- Conduct guidelines for students

Module 12 Final Assessment, Feedback & Closure

- Final multiple choice quiz
- Assessment through the same questions asked in the beginning
- Feedback about the programme from the students
- Closure of the programme

PRESCRIBED READING

- ***The Human Story*** published by Dawn Publications

Bachelor of Science (Medical) Semester- II (Session 2022-23)

Course Title: Punjabi (Compulsory)

Course Code- BSML-2421

Course Outcomes

CO1: ਦੋ ਰੰਗ (ਕਹਾਣੀ ਭਾਗ) ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਵਿਤਾ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਤਾਂ ਕਿ ਉਹ ਆਧੁਨਿਕ ਦੌਰ ਵਿਚ ਚੱਲ ਰਹੀਆਂ ਕਾਵਿ ਧਾਰਾਵਾਂ ਅਤੇ ਕਵੀਆਂ ਬਾਰੇ ਗਿਆਨ ਹਾਸਿਲ ਕਰ ਸਕਣ।

CO2: ਇਸ ਦਾ ਹੋਰ ਮਨੋਰਥ ਕਵਿਤਾ ਦੀ ਵਿਆਖਿਆ, ਵਿਸ਼ਲੇਸ਼ਣ ਤੇ ਮੁਲੰਕਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ ਵੀ ਹੈ ਤਾਂ ਕਿ ਉਹ ਸਮਕਾਲੀ ਸਮਾਜ ਦੀਆਂ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਸਮਝ ਸਕਣ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਦ੍ਰਿਸ਼ਟੀ ਬਣਾ ਸਕਣ।

CO3: ਸੰਸਾਰ ਦੀਆਂ ਪ੍ਰਸਿਧ ਹਸਤੀਆਂ ਜੀਵਨੀ ਦੀ ਵਿਧਾ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਜੀਵਨੀ ਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਜੀਵਨੀ ਜਗਤ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO4: ਸ਼ਬਦ ਬਣਤਰ ਅਤੇ ਸ਼ਬਦ ਰਚਨਾ ਪੜ੍ਹਣ ਨਾਲ ਵਿਦਿਆਰਥੀ ਇਸਦੇ ਮੁੱਢਲੇ ਸੰਕਲਪਾਂ ਨੂੰ ਆਧਾਰ ਬਣਾ ਕੇ ਇਹਨਾਂ ਸੰਕਲਪਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ ।

CO5: ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

CO6: ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂ ਨਾਲ ਗੱਲਬਾਤ ਵਿਚ ਪਰਪੱਕਤਾ ਆਉਂਦੀ ਹੈ।ਇਹ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤ ਵਿਚ ਨਿਖਾਰ ਲਿਆਉਣ ਦਾ ਕੰਮ ਕਰਨਗੇ।

Bachelor of Science (Medical) Semester- II (Session 2022-23)

Course Title: Punjabi (Compulsory)

Course Code- BSML-2421

ਸਮਾਂ: 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਪਾਠਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਦੋ ਰੰਗ (ਕਹਾਣੀ ਭਾਗ) (ਸੰਪਾ.ਹਰਜਿੰਦਰ ਸਿੰਘ ਢਿਲੋਂ ਅਤੇ ਪ੍ਰੀਤਮ ਸਿੰਘ ਸਰਗੋਧੀਆ),ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

(ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ) ੪ ਅੰਕ

ਯੂਨਿਟ-II

ਸੰਸਾਰ ਦੀਆਂ ਪ੍ਰਸਿੱਧ ਹਸਤੀਆਂ (ਜੀਵਨੀ ਨੰ: 10 ਤੋਂ18 ਤਕ)(ਸੰਪਾ.ਪ੍ਰਿੰ. ਤੇਜਾ ਸਿੰਘ, ਹਰਨਾਮ ਸਿੰਘ ਸ਼ਾਮ),

ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।

(ਵਿਸ਼ਾ/ਸਾਰ) ੪ ਅੰਕ

ਯੂਨਿਟ-III

(ੳ) ਸ਼ਬਦ ਬਣਤਰ ਅਤੇ ਸ਼ਬਦ ਰਚਨਾ : ਪਰਿਭਾਸ਼ਾ, ਮੁੱਢਲੇ ਸੰਕਲਪ।

(ਅ) ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ ੪ ਅੰਕ

ਯੂਨਿਟ-IV

(ੳ) ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ

(ਅ) ਮੁਹਾਵਰੇ ੪ ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

Bachelor of Science (Medical) Semester- II (Session 2022-23)

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code- BSML-2031

Course outcomes

CO1: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਨੂੰ ਸਿਖਾਉਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਵਿਚ ਪਾ ਕੇ ਇਕ ਹੋਰ ਭਾਸ਼ਾ ਸਿੱਖਣ ਦੇ ਮੌਕੇ ਪ੍ਰਦਾਨ ਕਰਨਾ ਹੈ।

CO2: ਇਸ ਵਿਚ ਵਿਦਿਆਰਥੀ ਨੂੰ ਬਾਰੀਕਬੀਨੀ ਨਾਲ ਭਾਸ਼ਾ ਦਾ ਅਧਿਐਨ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

CO3: ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਸ਼ਬਦ ਰਚਨਾ ਤੋਂ ਜਾਣੂ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

CO4: ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

CO5: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਸ਼ਬਦ ਘੇਰਾ ਵਿਸ਼ਾਲ ਕਰਨਾ ਹੈ।

CO6: ਵਿਦਿਆਰਥੀ ਵਾਕ ਦੀ ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਇਸਦੀ ਬਣਤਰ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ ਅਤੇ ਭਾਸ਼ਾ ਤੇ ਪਕੜ ਮਜਬੂਤ ਹੋਵੇਗੀ।

CO7: ਪੈਰ੍ਹਾ ਰਚਨਾ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO8: ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ ਲਿਖਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇਸ ਕਲਾ ਵਿਚ ਨਿਪੁੰਨ ਕਰਨਾ ਹੈ।

CO9: ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂ ਨਾਲ ਗੱਲਬਾਤ ਵਿਚ ਪਰਪੱਕਤਾ ਆਉਂਦੀ ਹੈ।ਇਹ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤ ਵਿਚ ਨਿਖਾਰ ਲਿਆਉਣ ਦਾ ਕੰਮ ਕਰਨਗੇ।

Bachelor of Science (Medical) Semester- II (Session 2022-23)

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code- BSML-2031

ਸਮਾਂ: 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਪਾਠਕ੍ਰਮ

ਯੂਨਿਟ-I

ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ (ਨਾਂਵ, ਪੜਨਾਂਵ, ਕਿਰਿਆ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ, ਸਬੰਧਕ, ਯੋਜਕ ਅਤੇ ਵਿਸਮਿਕ) 08 ਅੰਕ

ਯੂਨਿਟ-II

ਪੰਜਾਬੀਵਾਕਬਣਤਰ : ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ

(ੳ) ਸਾਧਾਰਨਵਾਕ, ਸੰਯੁਕਤ ਵਾਕ ਅਤੇ ਮਿਸ਼ਰਤ ਵਾਕ (ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ)

(ਅ) ਬਿਆਨੀਆ ਵਾਕ, ਪ੍ਰਸ਼ਨ ਵਾਚਕ ਵਾਕ ਅਤੇ ਹੁਕਮੀ ਵਾਕ (ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ) 08 ਅੰਕ

ਯੂਨਿਟ-III

ਪੈਰ੍ਹਾ ਰਚਨਾ

ਅਖਾਣ (ਅਖਾਣਾਂ ਦੀ ਲਿਸਟ ਨਾਲ ਨੱਥੀ ਹੈ) 08 ਅੰਕ

ਯੂਨਿਟ-IV

ਚਿੱਠੀ ਪੱਤਰ (ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀ)

ਮੁਹਾਵਰੇ (ਮੁਹਾਵਰਿਆਂ ਦੀ ਲਿਸਟ ਨਾਲ ਨੱਥੀ ਹੈ) 08 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. **ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।**
2. **ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।**
3. **ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕ ਹਨ।**
4. **ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।**

ਅਖਾਣ

ਉੱਦਮ ਅੱਗੇ ਲੱਛਮੀ ਪੱਖੇ ਅੱਗੇ ਪੈਣ ,ਉਹ ਦਿਨ ਡੁੱਬਾ ਜਦੋਂ ਘੋੜੀ ਚੜ੍ਹਿਆ ਕੁੱਬਾ ,ਉੱਚੀ ਦੁਕਾਨ ਫਿੱਕਾ ਪਕਵਾਨ ,ਉਲਟੀ ਵਾੜ ਖੇਤ ਨੂੰ ਖਾਏ ,ਉੱਚਾ ਲੰਮਾ ਗੱਭਰੂ ਪੱਲੇ ਠੀਕਰੀਆਂ ,ਅੱਖੀਂ ਵੇਖ ਕੇ ਮੱਖੀ ਨਹੀਂ ਨਿਗਲੀ ਜਾਂਦੀ ,ਅੰਦਰ ਹੋਵੇ ਸੱਚ ਤਾਂ ਕੋਠੇ ਚੜ੍ਹ ਕੇ ਨੱਚ ,ਆਪੇ ਮੈਂ ਰੱਜੀ ਪੁੱਜੀ ਆਪੇ ਮੇਰੇ ਬੱਚੇ ਜਿਉਣ ,ਆਪ ਕੁਚੱਜੀ ਵਿਹੜੇ ਨੂੰ ਦੋਸ਼ ,ਅੰਨ੍ਹਾ ਵੰਡੇ ਰਿਉੜੀਆਂ ਮੁੜ ਮੁੜ ਆਪਣਿਆਂ ਨੂੰ ,ਅਕਲ ਵੱਡੀ ਕੇ ਮੱਝ ,ਅੰਨ੍ਹਿਆਂ ਵਿੱਚ ਕਾਣਾ ਰਾਜਾ ,ਆਪਣੀ ਪੀੜ੍ਹੀ ਹੇਠ ਸੋਟਾ ਫੇਰਨਾ ,ਇਕ ਅਨਾਰ ਸੌ ਬਿਮਾਰ ,ਇਕ ਹੱਥ ਨਾਲ ਤਾੜੀ ਨਹੀਂ ਵੱਜਦੀ ,ਇੱਕ ਚੁੱਪ ਸੌ ਸੁੱਖ ਛੱਟ ਮੰਗਣੀ ਪੱਟ ਵਿਆਹ ,ਸਹਿਜ ਪੱਕੇ ਸੋ ਮੀਠਾ ਹੋਵੇ ਦਾਲ ਵਿੱਚ ਕਾਲਾ ਹੋਣਾ ਦਾਲ ਵਿੱਚ ਕਾਲਾ ਹੋਣਾ ,ਸੱਦੀ ਨਾ ਬੁਲਾਈ ਮੈਂ ਲਾੜੇ ਦੀ ਤਾਈਂ ,ਸਵੈ ਭਰੋਸਾ ਵੱਡਾ ਤੋਸਾ,ਸੌ ਦਿਨ ਚੋਰ ਦੇ ਇਕ ਦਿਨ ਸਾਧ ਦਾ ,ਸੱਪ ਦਾ ਬੱਚਾ ਸਪੋਲੀਆ ,ਸੱਪ ਮਰ ਜਾਵੇ ਲਾਠੀ ਵੀ ਨਾ ਟੁੱਟੇ ,ਸਾਈਆਂ ਕਿਤੇ ਵਧਾਈਆਂ ਕਿਤੇ ,ਹੰਕਾਰਿਆ ਸੋ ਮਾਰਿਆ ,ਹਾਥੀ ਲੰਘ ਗਿਆ ਪੂਛ ਰਹਿ ਗਈ ,ਕੁੱਛੜ ਕੁੜੀ ਸ਼ਹਿਰ ਢੰਡੋਰਾ ,ਕੋਲਿਆਂ ਦੀ ਦਲਾਲੀ ਵਿੱਚ ਮੂੰਹ ਕਾਲਾ ,ਕਰੇ ਕੋਈ ਭਰੇ ਕੋਈ ,ਕਰ ਮਜ਼ੂਰੀ ਤੇ ਖਾਹ ਚੂਰੀ ,ਖ਼ਵਾਜੇ ਦਾ ਗਵਾਹ ਡੱਡੂ ,ਖੇਤੀ ਖਸਮਾਂ ਸੇਤੀ ,ਖੂਹ ਪੁੱਟਦੇ ਨੂੰ ਖਾਤਾ ਤਿਆਰ ,ਘਰ ਦਾ ਭੇਤੀ ਲੰਕਾ ਢਾਹੇ ,ਘਰ ਦੀ ਕੁੱਕੜੀ ਦਾਲ ਬਰਾਬਰ ,ਚਿੰਤਾ ਚਿਖਾ ਬਰਾਬਰ , ਛੱਜ ਤਾਂ ਬੋਲੇ ਛਾਣਨੀ ਵੀ ਬੋਲੇ,ਛੋਟੀ ਮੂੰਹ ਵੱਡੀ ਗੱਲ ,ਜਾਂਦੇ ਚੋਰ ਦੀ ਲੰਗੋਟੀ ਹੀ ਸਹੀ ,ਜਿਸ ਦੀ ਕੋਠੀ ਦਾਣੇ ਉਹਦੇ ਕਮਲੇ ਵੀ ਸਿਆਣੇ ,ਜਿਹੜੇ ਗੱਜਦੇ ਨੇ ਉਹ ਵਰ੍ਹਦੇ ਨਹੀਂ ,ਜਾਤ ਦੀ ਕੋਹੜ ਕਿਰਲੀ ਸ਼ਤੀਰਾਂ ਨੂੰ ਜੱਫੇ ,ਝੱਟ ਮੰਗਣੀ ਪੱਟ ਵਿਆਹ ,ਦਾਲ ਵਿੱਚ ਕਾਲਾ ਹੋਣਾ ,ਦਾਣੇ ਦਾਣੇ ਤੇ ਮੋਰ ,ਨਾਲੇ ਚੋਰ ਨਾਲੇ ਚਤਰ ,ਪੇਟ ਨਾ ਪਈਆਂ ਰੋਟੀਆਂ ਸਭੇ ਗੱਲਾਂ ਖੋਟੀਆਂ ,ਬਿਨਾਂ ਰੋਇਆਂ ਮਾਂ ਵੀ ਦੁੱਧ ਨਹੀਂ ਦਿੰਦੀ ,ਬੁੱਢੀ ਘੋੜੀ ਲਾਲ ਲਗਾਮ ,ਭੱਜਦਿਆਂ ਨੂੰ ਵਾਹਣ ਇੱਕੋ ਜਿਹੇ ,ਭੱਜੀਆਂ ਬਾਹਾਂ ਗਲ ਨੂੰ ਆਉਂਦੀਆਂ ਨੇ ,ਰਾਹ ਪਿਆ ਜਾਣੀਏਂ ਜਾਂ ਵਾਹ ਪਿਆ ਜਾਣੀਏ ,ਰਾਈ ਦਾ ਪਹਾੜ ਬਣਾਉਣਾ ,ਰੱਸੀ ਸੜ ਗਈ ਵੱਟ ਨ੍ਹੀਂ ਗਿਆ

ਮੁਹਾਵਰੇ

ਉਸਤਾਦੀ ਕਰਨੀ, ਉਂਗਲ ਕਰਨੀ, ਉੱਲੂ ਬਣਾਉਣਾ ,ਉੱਚਾ ਸਾਹ ਨਾ ਕੱਢਣਾ, ਉੱਡਦੇ ਫਿਰਨਾ ,ਉੱਘ ਸੁੱਘ ਮਿਲਣੀ,ਅੱਖਾਂ ਵਿਚ ਰੜਕਣਾ ,ਅੱਗ ਲਾਉਣਾ ,ਆਵਾ ਊਤ ਜਾਣਾ ,ਅਸਮਾਨ ਨੂੰ ਟਾਕੀਆਂ ਲਾਉਣਾ, ਅੱਖਾਂ ਵਿੱਚ ਲਾਲੀ ਉਤਰਨੀ ,ਅਕਲ ਤੇ ਪਰਦਾ ਪੈਣਾ, ਈਨ ਮੰਨਣੀ, ਈਦ ਦਾ ਚੰਨ ਹੋਣਾ, ਇੱਟ ਨਾਲ ਇੱਟ ਖੜਕਾਉਣ,ਸਿਰ ਫਿਰਨਾ, ਸਿਰ ਤੇ ਚੜ੍ਹਨਾ ,ਸਬਰ ਦਾ ਘੁੱਟ ਭਰਨਾ, ਸਿਰ ਪੈਰ ਨਾ ਹੋਣਾ, ਹੱਥ ਧੋ ਕੇ ਪਿੱਛੇ ਪੈਣਾ, ਹੱਥੀਂ ਛਾਂਵਾਂ ਕਰਨੀਆਂ, ਹੱਡ ਭੰਨਣੇ, ਹੱਥ ਤੰਗ ਹੋਣਾ ,ਹੱਥ ਮਲਣਾ,ਹੱਥ ਪੈਰ ਮਾਰਨਾ,ਕੰਨੀਂ ਕਤਰਾਉਣਾ, ਕੰਨ ਤੇ ਜੂੰ ਨਾ ਸਰਕਣਾ, ਕੰਨ ਘੇਸਲ ਮਾਰਨੀ, ਖ਼ਾਨਾ ਖ਼ਰਾਬ ਹੋਣਾ, ਖਾਨਿਓ ਜਾਣਾ, ਗੁੱਡੀ ਚੜ੍ਹਨੀ, ਗਲ ਪੈਣਾ ,ਗੰਗਾ ਨਹਾਉਣਾ ,ਚੜ੍ਹ ਮੱਚਣੀ, ਚੰਦ ਚਾੜ੍ਹਨਾ, ਚਾਦਰ ਵੇਖ ਕੇ ਪੈਰ ਪਸਾਰਨਾ ,ਚਕਮਾ ਦੇਣਾ ,ਛੱਕੇ ਛੜਾਉਣਾ ,ਛਾਪਾ ਮਾਰਨਾ, ਛਿੱਲ ਲਾਉਣੀ ,ਛਿੱਕੇ ਟੰਗਣਾ, ਜਾਨ ਤੇ ਖੇਡਣਾ, ਜ਼ੁਬਾਨ ਕਰਨੀ, ਜਾਨ ਮਾਰਨਾ, ਜੰਗਲ ਵਿੱਚ ਮੰਗਲ ਹੋਣਾ, ਝੋਲੀ ਚੁੱਕਣਾ, ਝੱਟ ਟਪਾਉਣਾ, ਟੱਸ ਤੋਂ ਮੱਸ ਨਾ ਹੋਣਾ, ਟੰਗ ਅੜਾਉਣੀ, ਟਰ ਟਰ ਕਰਨਾ, ਟੇਢੀ ਖੀਰ, ਟਕੇ ਵਰਗਾ ਜਵਾਬ ਦੇਣਾ, ਠੰਡੇ ਸਾਹ ਭਰਨਾ, ਠੂੰਗਾ ਮਾਰਨਾ, ਠੂਠਾ ਫੜਨਾ, ਠਣ ਠਣ ਗੋਪਾਲ, ਡਕਾਰ ਜਾਣਾ, ਡੁੱਬ ਮਰਨਾ, ਡੰਡੇ ਵਜਾਉਣਾ, ਢਿੱਡ ਵਿੱਚ ਰੱਖਣਾ, ਢਿੱਡ ਵਿੱਚ ਚੂਹੇ ਨੱਚਣਾ, ਢਿੱਡੀਂ ਪੀੜਾਂ ਪੈਣੀਆਂ, ਢੇਰੀ ਢਾਹੁਣਾ, ਤੱਤੀ ਵਾ ਨਾ ਲੱਗਣੀ, ਤਰਲੇ ਲੈਣਾ, ਤੀਲੀ ਲਾਉਣੀ, ਤਾਰੇ ਤੋੜਨਾ, ਤਾੜੀ ਲਾਉਣੀ,ਥੁੱਕੀਂ ਵੜੇ ਪਕਾਉਣਾ, ਥਰ ਥਰ ਕੰਬਣਾ, ਦਮ ਲੈਣਾ, ਦਿਲ ਖੱਟਾ ਹੋਣਾ, ਦੰਦ ਖੱਟੇ ਕਰਨੇ, ਦੀਵਾ ਗੁੱਲ ਕਰਨਾ, ਧੁੱਪ ਵਿੱਚ ਵਾਲ ਚਿੱਟੇ ਹੋਣਾ, ਧਰਮ ਨਿਭਾਉਣਾ, ਧੱਕਾ ਲੱਗਣਾ, ਧਰਨਾ ਮਾਰਨਾ, ਧੁੰਮਾਂ ਪੈ ਜਾਣੀਆਂ, ਧੱਜੀਆਂ ਉਡਾਉਣੀਆਂ, ਨਹੁੰ ਮਾਸ ਦਾ ਰਿਸ਼ਤਾ, ਨੱਕ ਚਾੜ੍ਹਨਾ, ਨੱਕ ਰੱਖਣਾ, ਨੱਕ ਉੱਤੇ ਮੱਖੀ ਨਾ ਬਹਿਣ ਦੇਣਾ, ਨਜ਼ਰ ਸਵੱਲੀ ਹੋਣੀ, ਪੱਟੀ ਪੜ੍ਹਾਉਣੀ, ਪਾਰਾ ਚੜ੍ਹ ਜਾਣਾ, ਪੈਰ ਜ਼ਮੀਨ ਤੇ ਨਾ ਲੱਗਣਾ, ਪੈਰਾਂ ਹੇਠੋਂ ਜ਼ਮੀਨ ਨਿਕਲਣਾ, ਪਾਣੀ ਸਿਰੋਂ ਲੰਘਣਾ, ਪੁੱਠੀਆਂ ਛਾਲਾਂ ਮਾਰਨੀਆਂ, ਪੈਰਾਂ ਤੇ ਪਾਣੀ ਨਾ ਪੈਣ ਦੇਣਾ, ਫੁੱਲਾਂ ਵਾਂਗ ਰੱਖਣਾ, ਫੁੱਲੇ ਨਾ ਸਮਾਉਣਾ, ਫਸਲੀ ਬਟੇਰਾਂ ਹੋਣਾ, ਫੂਕਾਂ ਨਾਲ ਉਡਾ ਦੇਣਾ, ਬਾਜ਼ੀ ਲੈ ਜਾਣਾ, ਬੇੜਾ ਗਰਕ ਹੋਣਾ, ਬੇੜਾ ਪਾਰ ਕਰਨਾ, ਬੀੜਾ ਚੁੱਕਣਾ, ਬੇੜੀਆਂ ਵਿੱਚ ਵੱਟੇ ਪਾਉਣਾ, ਬੀਜ ਨਾਸ਼ ਕਰਨਾ, ਭਾਰ ਸਿਰੋਂ ਲਾਹੁਣਾ, ਭੁੱਖ ਲਹਿ ਜਾਣੀ, ਭੁੱਖੇ ਸ਼ੇਰ ਵਾਂਗ ਪੈਣਾ, ਭੂਤ ਸਵਾਰ ਹੋਣਾ, ਭੰਗ ਭੁੱਜਣੀ, ਮੱਖੀਆਂ ਮਾਰਨੀਆਂ, ਮਰੂੰ ਮਰੂੰ ਕਰਦੇ ਰਹਿਣਾ, ਮਾਤ ਪਾ ਦੇਣਾ, ਮਾਰੋਮਾਰ ਕਰਨੀ, ਮਿਰਚ ਮਸਾਲਾ ਲਾਉਣਾ, ਮਿਰਚਾਂ ਲੱਗਣੀਆਂ, ਮੂੰਹ ਦੀ

ਖਾਣਾ, ਮੋਰਚਾ ਮਾਰਨਾ, ਮਿੱਟੀ ਖਰਾਬ ਕਰਨੀ, ਯੱਬਲੀਆਂ ਮਾਰਨੀਆਂ, ਰਚ ਮਿਚ ਜਾਣਾ, ਰਾਈ ਦਾ ਪਹਾੜ ਬਣਾਉਣਾ, ਰਾਤ ਦਿਨ ਇੱਕ ਕਰਨਾ, ਰਾਹ ਦਾ ਰੋੜਾ ਬਣਨਾ, ਰੰਗ ਬਦਲਣਾ, ਰੰਗ ਵਿੱਚ ਭੰਗ ਪਾਉਣਾ, ਲਹੂ ਨਾਲ ਹੱਥ ਰੰਗਣਾ, ਲਹੂ ਦੇ ਘੁੱਟ ਭਰਨਾ, ਲੱਕ ਟੁੱਟ ਜਾਣਾ, ਲਾਹ ਪਾਹ ਕਰਨੀ, ਲਾਲ ਪੀਲਾ ਹੋਣਾ, ਲੂਣ ਹਰਾਮ ਕਰਨਾ, ਵੱਡ ਵੱਡ ਖਾਣਾ।

Bachelor of Science (Medical) Semester- II (Session 2022-23)

Course Title: Punjab History and Culture (C. 320 to 1000 A.D.)

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

Course Code- BSML-2431

Course Outcomes

After completing Semester II and course on Ancient History of Punjab students will be able to understand:

CO 1 (a): The reasons and impact of Alexander's invasions

CO 1 (b): To understand the various factors leading to rise and fall of empires and emergence of new dynasties and their administration specifically of Maurya rule in general and Ashok in particular

CO 2: art and architecture of Gupta period and the Indo-Greek style of architecture under Gandhara School

CO 3: To have an insight into the socio-cultural history under Harshvardhan and punjab under the stated period

CO 4: To enable students to have thorough insight into the various forms/styles of Architecture and synthesis of Indo - Greek Art and Architecture in Punjab

Bachelor of Science (Medical) Semester- II (Session 2022-23)

Course Title: Punjab History and Culture (C. 320 to 1000 A.D.)

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

Course Code- BSML-2431

Examination Time: 3 Hours **Max. Marks: 50**

Theory: 40

CA: 10

Instructions for the Paper Setter:

1. Question paper shall consist of four Units

2. Examiner shall set 8 questions in all by selecting Two Questions of equal marks from each Unit.

3.Candidates shall attempt 5 questions in 600 words, by at least selecting One Question from each Unit and the 5th question may be attempted from any of the four Units.

4.Each question will carry 8 marks

UNIT-I

1. Alexander's Invasion's and Impact

2. Administration of Chandragupta Maurya with special reference to reforms introduced by Ashok

UNIT-II

3. The Kushans: Gandhar School of Art

4. Gupta Empire: Golden Period-Social and cultural life, Art and Architecture)

UNIT-III

5. The Punjab under Harshvardhana

6. Socio-cultural History of Punjab from 7th to 1000 A.D.

UNIT IV

7. Development of Languages and Education with Special reference to Taxila

8. Development to Art and Architecture

Suggested Readings

- B.N. Sharma: Life in Northern India, Delhi. 1966
- Budha Parkash, Glimpses of Ancient Punjab, Patiala, 1983.
- L. M Joshi (ed), History and Culture of the Punjab, Art-I, Punjabi University, Patiala,
- 1989 (3rd edition)
- L.M. Joshi and Fauja Singh (ed.), History of Punjab, Vol.I, Punjabi University, Patiala, 1977.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

Course Title: English (Compulsory)

Course Code- BSML-2212

Course Outcomes

After passing this course, the students will be able to:

CO1: Change the narration and voice of sentences after understanding fundamental grammatical rules governing them through the study of "English Grammar in Use" by Raymond Murphy

CO2: Write personal letters and increase their knowledge of vocabulary by studying the synonyms and antonyms in the prescribed text *The Students' Companion* by Wilfred D. Best

CO3: Comprehend the meaning of texts and answer questions related to situations, episodes, themes and characters depicted in them through the study of the stories in text "Tales of Life".

CO4: Appreciate the writings of various Indian and foreign story and prose writers and relate them to their socio-cultural milieu through the study of the essays in text "Prose for Young Learners"

Bachelor of Science (Medical) Semester- II (Session 2022-23)

Course Title: English (Compulsory)

Course Code- BSML-2212

Max. Marks: 50

Examination Time: 3 Hrs **Theory: 40**

CA: 10

Instructions for the Examiner:

The question paper will consist of 4 sections & distribution of marks will be as under:

Section A: The question will be set from Unit I of the syllabus. Fifteen sentences will be set and the students would be required to attempt any ten. Each sentence will carry one mark.

(10x1=10)

Section B: Two questions will be set from Unit II of the syllabus. The students would be required to attempt one personal letter out of the given two. It will carry five marks (word limit 150 words). The second question will be based on vocabulary. The students would be required to write Antonyms or Synonyms for given words choosing any 5 out of 8 and each carrying one mark. **(2x5=10)**

Section C: This section will be divided into two parts. Two questions will be set from Unit III of the syllabus. Part one will have one essay type question with internal choice carrying six marks (word limit 300 words). The students would be required to attempt any one. The second part will have three questions. The students would be required to attempt any two. Each question will carry two marks (50 words each). **(6+2+2=10)**

Section D: This section will be divided into two parts. Two questions will be set from Unit IV of the syllabus. Part one will have one essay type question with internal choice carrying six marks (word limit 300 words). The students would be required to attempt any one. The second part will have three questions. The students would be required to attempt any two. Each question will carry two marks (50 words each).

(6+2+2=10)

Unit I

English Grammar in Use, 4th Edition by Raymond Murphy, CUP (Units: 42-52, 69-81)

Unit II

Personal letter Writing and *The Students' Companion* (Section 9: Antonyms and Synonyms)

Unit III

Tales of Life (Guru Nanak Dev University, Amritsar): Stories at Sr.No. 7, 9, 10, 11, 12

Unit IV

Prose for Young Learners: Essays at Sr. No. 7, 8, 9, 10, 11

Texts Prescribed:

1. *English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP
2. *The Students' Companion* by Wilfred D. Best
3. *Tales of Life* (Guru Nanak Dev University, Amritsar)
4. *Prose for Young Learners* (Guru Nanak Dev University, Amritsar)

Bachelor of Science (Medical) Semester- II (Session 2022-23)

ZOOLOGY
Course Title: Ecology
Course Code: BSMM-2483 (I)
(THEORY)

Course Outcomes

After passing this course the student will be able to:

CO1. Describe the history, introduction and nature of ecosystem

CO2. Understand the biogeochemical cycles and ecological adaptations.

CO3. Know about the characteristics of population & biotic community.

CO4. Know about the conservation of resources.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

ZOOLOGY

Course Title: Ecology

Course Code: BSMM-2483 (I)

(THEORY)

Max. Time: 3 Hrs. **Max Marks: 30**

Instructions for the Paper Setter

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

Ecology: Definition, Subdivisions and scope of ecology.

Ecosystem: Components, ecological energetics, food web, major ecosystems of the world.

Ecological factors: Temperature, light and soil as ecological factors.

UNIT-II

Nutrients: Biogeochemical cycles and concept of limiting factors.

Ecological Adaptations: Morphological, physiological and behavioural adaptations in animals in different habitats.

UNIT-III

Population: Characteristics and regulations of population. Inter and Intra Specific relationship: Competition, Predation, Parasitism, Commensalism and Mutualism.

Biotic community: Characteristics, ecological succession, ecological niche.

UNIT-IV

Natural resources: Renewable and nonrenewable natural resources and their conservations.

Environmental Issues: Causes, impact and control of environmental pollution.

Suggested Readings:

Anderwartha, H.G. and Birch, L. C. (1970), The distribution and abundance of animals, University of Chicago Press, Chicago London.

Beeby, A. (1992), Applying Ecology, Chapman and Hall Madras.

Begon, M., Harper J. L. and Townsend, C. R. (1995), Ecology – Individuals, populations and communities, Blackwell Science, Cambridge UK.

Brewer, R. (1994), The science of Ecology, Saunders College of Publishing, New York.

Chapman, J. L. and Resis, M. J. (1995), Ecology- Principles and applications, Cambridge University Press, Cambridge UK.

Kaeighs, S. C. (1974), Ecology with special references to animal and Man, Prentice Hall Inc.

Kormondy, E.J. (1975), Concept of Ecology, Englewood Cliffs, N.J. Prentice Hall Inc.

Kreb C.J. (1982), Ecology, Harper & Row, New York.

Putmann, R. J. and Wratten, S. D. (1984), Principles of Ecology, Crown Helm, London.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

ZOOLOGY

Course Title: Biodiversity-II (Arthropoda to Hemichordata)

Course Code: BSMM-2483 (II)

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1. Understand physiology and economic importance of cockroach and social organization of insects.

CO2. Knowledge about the general pattern of life history of phylum mollusca

CO3. Learn about life history and larval forms of Echinodermata

CO4. Knowledge about affinities of Hemichordates with Non-Chordates and Chordates

Bachelor of Science (Medical) Semester- II (Session 2022-23)

ZOOLOGY

Course Title: Biodiversity-II (Arthropoda to Hemichordata)

Course Code: BSMM-2483 (II)

(THEORY)

Max. Time: 3 Hrs. **Max Marks: 30**

Instructions for the Paper Setter

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

Arthropoda: Type study- *Periplaneta americana* (Cockroach),

Social organizations in insects (Honey bee and Termite)

UNIT-II

Mollusca: Type study-Pila globosa, Tortion, Pearl formation

UNIT-III

Echinodermata: Type study - Asterias (Star fish), Study of Echinoderm larvae

UNIT-IV

Hemichordata:Type study - Balanoglossus (External characters only). Affinities of Hemichordates with Non-Chordates and Chordates

Suggested Readings:

Barnes, R.D.(1999), Invertebrate Zoology. W.B. Saunder, Philadelphia.

Dhami, P.S. & Dhami, J. K., Invertebrates, R. Chand & Co., New Delhi, 2001.

Barth, R. H. and Broshears, R. E (1982), The Invertebrate world. Holt Saunder, Japan.

Brusca, R. C. and Brusca, G. J. (2003), Invertebrates (2nd ed), Sinauer Associates, Inc. Publishers, Sunderland, Massachusetts.

Engemann, J. G. and Hegner, R. W. (1981), Invertebrate Zoology (3rd ed), Macmillan, New York.

Gardiner, M. S. (1972), The Biology of Invertebrates, McGraw Hill, New York.

Meglitsch, P. A. and Schran, F. R. (1991), Invertebrate Zoology (3rd ed), Oxford University Press, New York.

Pechenik, A. Jan. (2000), Biology of the invertebrates, (4th ed), McGraw Hill Book Co. Singapore.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

ZOOLOGY

Course Title: Practical-II (Related to Ecology and Biodiversity-II)

Course Code: BSMM-2483 (P)

(PRACTICAL)

Course Outcomes:

After passing this course the student will be able to:

CO1. Know about the morphological, physiological & behavioural adaptations of different animals in different habitats.

CO2. Familiarise with the classification & ecology of invertebrates.

CO3. Identify different zoogeographical realms with fauna.

CO4. Know about the different nest of birds.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

ZOOLOGY

Course Title: Practical-II (Related to Ecology and Biodiversity-II)

Course Code: BSMM-2483 (P)

(PRACTICAL)

Time: 3 hrs. **Marks: 20**

Instructions for the Practical Examiners:

Question paper is to set on the spot jointly by the Internal and External Examiners. Two copies of the same should be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar

1. Classification up to orders with ecological notes and economic importance (if any) of the following animals:

Arthropoda: Peripatus, Palaemon (prawn), Lobster, Cancer (crab), Sacculina, Eupagurus (hermit Crab), Lepas, Balanus, Cyclops, Daphnia, Lepisma, Periplaneta (cockroach), Schistocerca (locust), Poecilocerus (ak grasshopper), Gryllus (cricket), Mantis (praying mantis), Cicada, Forficula (earwig), Dragonfly, Termite queen, Bug, Moth, Beetles, Polistes (wasp), Apis (honey bee), Bombyx, Pediculus (body louse) Millipede and Centipede, Palamnaeus (scorpion), Aranea (spider) and Limulus (king Crab).

Mollusca: Anodonta, Mytilus, Ostrea, Cardium, Pholas, Solen (razor fish), Pecten, Haliotis, Patella, Aplysia, Doris, Limax, Loligo, Sepia, Octopus, Nautilus shell (Complete and T.S.), Chiton, Dentalium.

Echinodermata: Asterias, Echinus Ophiothrix, Antedon.

Hemichordata: Balanoglossus.

2. **Study of the following permanent stained preparations:**

Trachea and mouth parts of Insects

Radula and osphradium of Pila

T.S. Star fish (Arm).

3. **Demonstration of digestive and nervous systems of Periplaneta (cockroach) with the help of charts/models/videos.**

4. **Ecology:**

Study of animal adaptations with the help of specimens, charts and models.

Study of abiotic and biotic components of an ecosystem.

Study of different types of nests of birds.

Study and preparation of Zoogeographical charts.

5. **Assignment**

Note:- Some changes can be made in the practicals depending on the availability of material.

Guidelines for conduct of practical Examination: -

1.	Identifiy and classify the specimens upto order. Write a note on their habit, habitat, special features and economic importance.	**4**
2.	Draw a well labelled sketch of the given system of the animal & explain it to the examiner.	**3**
3.	Identify the slides/models and give two reasons for identification.	**3**
4.	Identify the adaptive feature/nest.	**2**
5.	Mark the distribution of animals of a realm on the map.	**2**
6.	Assignment	**2**
7.	Viva-voce & Practical file.	**4**

Bachelor of Science (Medical) Semester- II (Session 2022-23)

MICROBIOLOGY

Course Title: Basic Food Microbiology

Course Code: BSMM-2343

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Learn about microorganisms important in food microbiology and the intrinsic and extrinsic factors affecting their growth.

CO2: Learn about the origin and preparation of fermented foods.

CO3: Understand the methods of food preservation and applications of prebiotics and probiotics.

CO4: Understand the spoilage in different food products.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

MICROBIOLOGY

Course Title: Basic Food Microbiology

Course Code: BSMM-2343

(THEORY)

Time: 3 Hours **Max Marks: 100**

Theory Marks: 60

Practical Marks: 20

CA:20

Instructions for the Paper Setters: Eight questions of equal marks are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT–I

Food as a substrate for microorganisms, intrinsic and extrinsic factors affecting the growth of various microorganisms in foods. Microorganisms important in food microbiology–bacteria, yeasts and molds, sources of contamination in foods.

UNIT–II

Fermented foods, origin of fermentation as a method of preparing indigenous foods, bread, dosa, idli, warri, tempeh, miso

UNIT–III

Principles of food preservation and spoilage, asepsis, anaerobic conditions, aseptic packaging, preservation methods, high temperature, low temperature, drying, chemical preservatives. Applications of prebiotics and probiotics.

UNIT–IV

Spoilage of various milk and milk products, cereal and cereal products, vegetable and fruits, meat and meat products, canned foods. Food poisoning and food infection. *Staphylococcal*, *Clostridium* and *Salmonella* intoxications.

Books Recommended:

1. Frazier. W.C. and Westhoff, D.C. 2006, 26th edition, Food Microbiology, Tata McGraw Hill Publishing Co., Ltd., New Delhi.

2. Banwart, G.J., 2012, Basic Food Microbiology, Springer Verlag, New Delhi.

3. Powar, C.B. and Dagniwala, H.F. 2012, General Microbiology Volume II. Himalaya Publishing House, New Delhi. 128.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

MICROBIOLOGY

Course Title: Basic Food Microbiology

Course Code: BSMM-2343 (P)

(PRACTICAL)

Time: 3 Hours **Marks: 20**

Instructions for the practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

LIST OF PRACTICALS:

1. To enumerate the total microbial cells in a suspension by serial dilution and pour plating.
2. To enumerate the total bacteria in milk by direct microscopic count.
3. To study the morphology of bacteria, yeasts and molds.
4. To check the bacteriological quality of raw milk by methylene blue reduction test.
5. Baking of bread and making of dhokla and idli.
6. To study the spoilage causing microorganisms present in spoiled bread and raw milk.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

CHEMISTRY

Course Title: Inorganic Chemistry

Course Code: BSMM-2084 (I)

(THEORY)

Course outcomes:

Students will be able to

CO1: Explains & compares the trends in atomic and physical properties of group 13, 14, 15, 16, 17 elements

CO2: Explain the atomic, physical and chemical properties of alkali metals and alkaline earth metals.

CO3: Interpret the properties of carbides, silicates, interhalogen compounds.

CO4: Exhaustive understanding of d–block elements belonging to 4th, 5th and 6th period.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

CHEMISTRY

Course Title: Inorganic Chemistry

Course Code: BSMM-2084 (I)

(THEORY)

Time: 3 Hrs. **Max. Marks: 30**

Instructions for the Paper Setter

Eight questions of equal marks (6 each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from UNITs I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT–I

I. p–Block Elements–I **(10 Hrs)**

Comparative study (including diagonal relationship) of groups 13–17 elements, compounds like hydrides, oxides, oxyacids and halides of groups 13–16, hydrides of boron–diborane and higher boranes, Borazine, borohydrides, fullerenes.

UNIT-II

II. s-Block Elements **(5 Hrs)**

Comparative studies, diagonal relationship, salient features of hydrides, solvation and complexation tendencies.

III. Acids and Bases **(5 Hrs)**

Arrhenius, Bronsted-Lowry, the Lux-Flood, solvent system and Lewis concepts of acids and bases.

UNIT-III

IV. p–Block Elements-II **(10 Hrs)**

Carbides, fluorocarbons, silicates (structural principle), tetrasulphur tetranitride, basic properties of halogens, interhalogens and polyhalide,Silicones and phosphazenes as examples of inorganicpolymers, nature of bonding in triphosphazenes.

UNIT-IV

V. Chemistry of Transition Elements **(15 Hrs)**

Characteristic properties of *d*–block elements. Properties of the elements of the first transition series, their simple compounds and complexes illustrating relative stability of their oxidation states, coordination number

and geometry. General characteristics of elements of Second and Third Transition Series, comparative treatment with their *3*d analogues in respect of ionic radii, oxidation states, magnetic behaviour.

Books Suggested:

1. Cotton, F.A., Wilkinson, G., Gaus, P.L., Basic Inorganic Chemistry; 2nd edition, Pubs: John Wiley and Sons, 1995.
2. Lee, J.D., Concise Inorganic Chemistry; 4th edition, Pubs: Chapman and Hall Ltd., 1991.
3. Shriver, D.E., Atkins, P.W., Inorganic Chemistry; 4th edition, Pubs: Oxford University Press, 2006.
4. Douglas, B., Medaniel, D., Atenander, J., Concepts and Models of Inorganic Chemistry; 3rd edition, Pubs: John Wiley and Sons Inc., 1994,
5. Porterfeild, W.W., Wesky, A., Inorganic Chemistry; Pubs: Addison-Wesky Publishing Company, 1984.
6. Miessler, G.L., Tarr, D.A., Inorganic Chemistry; 3rd edition, Pubs: Pearson Education Inc., 2004,
7. Jolly, W.L., Modern Inorganic Chemistry; 2nd edition, Pubs: Tata McGraw-Hill Publishing Company Limited, 1991.
8. Purcell, K.F., Kotz, J.C., Inorganic Chemistry; Pubs: W.B.Saunders Company, 1977.
9. Puri, B.R., Sharma, L.R., Kalia, K.K., Principles of Inorganic Chemistry; 30th edition, Pubs: Milestones Publisher, 2006-07.
10. Inorganic Chemistry, W.W. Porterfield Addison-Wesley.
11. Inorganic Chemistry, A.G. Sharpe, ELBS.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

CHEMISTRY

Course Title: Physical Chemistry

Course Code: BSMM-2084 (II)

(THEORY)

Course Outcomes:

Students will be able to

CO1: Explain various gaseous laws and their applications.

CO2: Acquire the knowledge of structure and intermolecular forces present between solids, liquids and gases, Discuss liquid crystals& its types.

CO3: Understand& apply the basic concepts of colloidal state of matter and applications of colloids.

CO4: Demonstrate an understanding of basic principles of colligative properties of dilute solutions.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

CHEMISTRY

Course Title: Physical Chemistry

Course Code: BSMM-2084 (II)

(THEORY)

Time: 3 Hrs. **Max. Marks: 30**

Note: Log table and non-Programmable calculators are allowed

Instructions for the Paper Setter

Eight questions of equal marks (6 each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from UNITs I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT–I

I. Gaseous States **(11 Hrs)**

Postulates of kinetic theory of gases, deviation from ideal behaviour, van der Waal's equation of state.

Critical Phenomena: PV isotherms of real gases, continuity of states, the isotherms of van der Waal's equation, relationship between critical constants and van der Waals constants, the law of corresponding states, reduced equation of state.

Molecular Velocities: Root mean square, average and most probable velocities. Qualitative discussion of the Maxwell's distribution of molecular velocities, collision number, mean free path and collision diameter. Liquefaction of gases.

UNIT –II

II. Liquid State

Intermolecular forces, structure of liquids (a qualitative description). Structural differences between solids, liquids and gases. Liquid crystals: Difference between liquids crystal, solid and liquid. Classification, structure of nematic and cholestric phases. Thermography and seven segment cell.

UNIT –III

III. Colloidal State **(11 Hrs)**

Definition of colloids, classification of colloids. Solids in liquids (Sol): kinetic, optical and electrical properties, stability of colloids,protective action, Hardy Schulze law, gold number. Liquids in liquids (emulsions): Types of emulsions, preparation. Emulsifiers. General applications of colloids.

UNIT –IV

IV. Solutions, Dilute Solutions and Colligative Properties (12Hrs)

Ideal and non–ideal solutions, methods of expressing concentrations of solutions, activity and activity coefficient. Dilute solution, colligative properties, Raoult's law, relative lowering of vapour pressure, molecular weight determination. Osmosis, Law of osmotic pressure and its measurement, determination of molecular weight from osmotic pressure. Elevation of boiling point and depression of freezing point, Thermodynamic derivation of relation between molecular weight and elevation in boiling point and depression in freezing point. Experimental methods for determining various colligative properties.Abnormal molar mass, degree of dissociation and association of solutes.

Books suggested:

1. Atkins, P., Paula, J.de, Atkins Physical Chemistry; 8th edition, Pubs: Oxford University Press, 2008.
2. Puri, B.R., Sharma, L.R., Pathania, M.S., Principles of Physical Chemistry; 43rd edition, Pubs: Vishal Publishing Co., 2008.
3. Barrow, G.M., Physical Chemistry; 6th edition, Pubs: McGraw Hill Inc, 1996.
4. Rao, C.N.R., University General Chemistry; Pubs: Macmillan India, 1985.
5. Berry, R.S., Rice, S.A., Ross, J., Physical Chemistry; 2nd edition, Pubs: Oxford University Press, 2000.
6. Albert, R.A., Silbey, R.J., Physical Chemistry; 1st edition, Pubs: John Wiley and Sons Inc.,1992.
7. Dogra, S.K., Dogra, S., Physical Chemistry Through Problems; Pubs:Wiley Eastern Limited, 1991.
8. Levine, I.N., Physical Chemistry; 5th edition, Pubs: Tata McGraw Hill Publishing Co. Ltd., 2002.
9. Moore, W. J., Basic Physical Chemistry; Pubs: Prentice Hall of India Pvt. Ltd, 1983.
10. University General Chemistry, C.N.R. Rao, Macmillan.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

CHEMISTRY

Course Title: Chemistry Practical

Course Code: BSMM-2084 (P)

(PRACTICAL)

Course outcomes:

Students will be able to

CO1: Understand & apply the technique of crystallization.

CO2: Determine the rate of the reactions

CO3: Compare & analyze the viscosity and surface tension of different liquids and solutions

CO4: Application of calorimeter in various thermochemistry experiments.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

CHEMISTRY

Course Title: Chemistry Practical

Course Code: BSMM-2084 (P)

(PRACTICAL)

Time: 3½ Hrs. **Max. Marks: 20**

Instruction for practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same should be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Crystallisation:

Concept of indication of crystalisation. Phthalic acid from hot water (using fluted filter paper and stem less funnel)

Acetanilide from boiling water.

Naphthalene from Ethanol

Benzoic acid from water

Physical Chemistry

1. To determine the specific reaction rate of hydrolysis of ethyl acetate catalysed by Hydrogen ions at room temperature.
2. To study the effect of acid strength on hydrolysis of an ester.

Viscosity, Surface Tension (Pure Liquids)

3. To study the viscosity and surface tension of CCl_4, glycerine solution in water.
4. To determine the solubility of benzoic acid at different temperatures and to determine ΔH of the dissolution process.
5. To determine the enthalpy of neutralisation of a weak acid/weak base versus strong base/strong acid and determine the enthalpy of ionisation of the weak acid/weak base.
6. To determine the enthalpy of dissolution of solid calcium chloride and calculate the lattice energy of calcium chloride from its enthalpy data using Born Haber cycle.

Practical Examination:		**Marks**
1)	Crystallisation	05
2)	Physical Experiment	10

3)	Viva–Voce	03
4)	Note Book	02

Books suggested:

1. Experimental Organic Chemistry, Vol. I and II, P.R. Singh, D.S. Gupta and K.S. Bajpai, Tata McGraw Hill.
2. Laboratory Manual in Organic Chemistry, R.K. Bansal, Wiley Eastern.
3. Vogel's Textbook of Practical Organic Chemistry, B.S. Furniss, A.J. Hannaford, V. Rogers, P.W.G. Smith and A.R. Tatchell, ELBS.
4. Experiments in General Chemistry, C.N.R. Rao and U.C. Aggarwal, East-West Press.
5. Experiments in Physical Chemistry, R.C. Das and B. Behra, Tata McGraw Hill.
6. Advanced Practical Physical Chemistry, J.B. Yadav, Goel Publishing House.
7. Advanced Experimental Chemistry, Vol. I, Physical, J.N. Guru and R. Kapoor, S. Chand and Co.
8. Selected Experiments in Physical Chemistry, N.G. Mukherjee, J.N. Ghosh and Sons.
9. Experiments Physical Chemistry, J.C. Ghosh, Bharati Bhavan.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

BOTANY

Course Title: Cell Biology

Course Code: BSMM-2075 (I)

(THEORY)

Course Outcome: -

After passing this course the course the student will be able to:-

CO1: Explain cellular processes and mechanisms that lead to physiological functions as well as examples of pathological state.

CO2: Describe the intricate relationship between various cellular structures and their corresponding functions.

CO3: Describe cytological, biochemical, physiological and genetic aspects of the cell, including cellular processes common to all cells, to all eukaryotic cells as well as processes in certain specialized cells.

CO4: Relate normal cellular structures to their functions.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

BOTANY

Course Title: Cell Biology

Course Code: BSMM-2075 (I)

(THEORY)

Time: 3 Hrs **Max. Marks: 30**

Instructions for the Paper Setters:

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

An Overview: prokaryotic and eukaryotic cells, cell size and shape and *Escherichia coli*. Structure and Function of Nucleus; Ultrastructure; nuclear membrane; nucleolus.

UNIT-II

Extranuclear Genome: Presence and function of mitochondrial and plastid DNA; plasmids. Structure and Function of other Organelles: Golgi bodies, Endoplasmic reticulum, Peroxisomes, Vacuoles.

UNIT-III

Chromosome Organization: Morphology; centromere and telomere; chromosome alterations; deletions, duplications, translocations, inversions; variations in chromosome number, aneuploidy, polyploidy; sex chromosomes.

UNIT-IV

The Cell Envelopes: Plasma membrane; bilayer lipid structure; functions; the cell wall.

Suggested Readings:

1. Gupta, P.K. (2017). A Text–book of Cell and Molecular Biology (5th edition). Rastogi Publications, Meerut, India
2. Johnson, A., Raff, L. and Walter, R. (2008). Molecular Biology of the Cell (5th Edition). Taylor and Francis Group, USA.
3. Karp, G. (2013). Cell and Molecular Biology: Concepts and Experiments (7th Edition). Wiley Publishers, USA.

4. Kleinsmith, L.J. and Kish, V.M. (1995). Principles of Cell and Molecular Biology (2nd edition). Harper Collins College Publishers, New York, USA.
5. Lodish, H., Berk, A., Kaiser, C. A., Krieger, M., Bretscher, A. and Ploegh, H. (2016). Molecular Cell Biology (5th edition) , W.H. Freeman & Co., New York, USA.
6. Snustad, D.P. and Simmons, M.J. (2012). Principles of Genetics (8th Edition). John Wiley and Sons Inc., U.S.A.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

BOTANY

Course Title: Genetics

Course Code: BSMM-2075 (II)

(THEORY)

Course outcome: -

After passing this course the course the student will be able for:-

CO1: Understand the chemical basis of hereditary material i.e., DNA.

CO2: Understand Mitosis, Meiosis and gene interactions.

CO3: Understand different methods of gene expression in prokaryotes and eukaryotes.

CO4: Understand various methods of genetic mutation and variations in living beings.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

BOTANY

Course Title: Genetics

Course Code: BSMM-2075 (II)

(THEORY)

Time: 3 Hours **Max. Marks: 30**

Instructions for the Paper Setters:

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

DNA the Genetic Material: DNA structure; replication; DNA–protein interaction; the nucleosome model; genetic code; satellite and repetitive DNA.

UNIT-II

Cell Division: Mitosis; meiosis. Genetic Inheritance: Mendelism; laws of segregation and independent assortment; linkage analysis; allelic and non–allelic interactions.

UNIT-III

Gene expression**:** Structure of gene; transfer of genetic information; transcription, translation, protein synthesis, tRNA; ribosomes; regulation of gene expression in prokaryotes and eukaryotes; proteins, ID, 2D, and 3D structure.

UNIT-IV

Genetic Variations: Mutations, spontaneous and induced; transposable genetic elements; DNA, damage and repair.

Suggested Readings:

1. Brown, T.A. (2011). Genetics: A Molecular Approach (3rd Edition). BIOS Scientific Publishers, UK.
2. Fletcher, H., Hickey, I. and Winter, P. (2010). Instant Notes on Genetics (3rd edition) Taylor and Francis Group, USA.
3. Gardner, E.J., Simmons, M.J. and Snustad, D.P. (2012). Principles of Genetics (8th Edition). Wiley Sons, USA.

4. Gupta, P.K. (2017). Cell and Molecular Biology (5th edition), Rastogi Publications, Meerut, India.
5. Kleinsmith, L.J. and Kish, V.M. (1995). Principles of Cell and Molecular Biology (2nd Edition).Harper Collins College Publishers, New York, USA.
6. Krebs, B. E., Goldstein, E.S. and Kilpatrick, S.T. (2014). Lewin's Genes XI. Jones and Bartlett Publishers, LLC, UK.
7. Lodish, H., Berk, A., Kaiser, C. A., Krieger, M., Bretscher, A. and Ploegh, H. (2016). Molecular Cell Biology (5th edition), W.H. Freeman & Co., New York, USA.
8. Singh, B.D. (2018). Molecular Genetics.Kalyani Publishers, India.
9. Snustad, D.P. and Simmons, M.J. (2012). Principles of Genetics (5th Edition). John Wiley and Sons Inc., U.S.A.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

BOTANY

Course Title: Practical: Genetics and Cell Biology

Course Code: BSMM-2075 (P)

(PRACTICAL)

Course outcome: -

After passing this course the course the student will develop:

CO1: A critical awareness of how genetics techniques can be applied to biological problems.

CO2: A critical awareness of current thinking in a specialist area of cell biology and genetics.

CO3: the ability to evaluate methodologies in the design of experimental procedures.

CO4: The ability to critically evaluate experimental data.

CO5: The ability to synthesize hypotheses from a wide range of information sources.

CO6: The ability to design and implement a wide range of experimental procedures.

CO7: to be able to make sound judgments on the significance of incomplete data sets.

CO8: Demonstration of independence and originality in solving problems.

CO9: The ability to exercise initiative and personal responsibility.

CO10: The development of independent learning skills required for continuing professional development.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

BOTANY

Course Title: Practical: Genetics and Cell Biology

Course Code: BSMM-2075 (P)

(PRACTICAL)

TIME: 3 Hours **Practical: 20**

Instructions for the paper setter: question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Suggested Laboratory Exercises

Teachers may select plants/material available in their locality/institutions.

1. To study cell structure from onion leaf peels; demonstration of staining and mounting methods.
2. Comparative study of cell structure in onion cells, *Hydrilla* and *Spirogyra*. Study of cyclosis in *Tradescantia* Staminal Cells.
3. Study of plastids to examine pigment distribution in plants (e.g. *Cassia*, *Lycopersicon* and *Capsicum*).
4. Examination of electron micrographs of eukaryotic cells with special reference to organelles.
5. Study of electron micrographs of viruses, bacteria, cyanobacteria and eukaryotic cells for comparative cellular organization.
6. Microscopy- Theoretical knowledge of Light and Electron microscope.
7. Examination of various stages of mitosis and meiosis using appropriate plant material (e.g. onion root tips, onion flower buds).
8. Preparation of karyotypes from dividing root tip cells and pollen grains.
9. Cytological examination of special types of chromosomes: bar body, lampbrush and polytene chromosomes.
10. Working out the laws of inheritance using seed mixtures.
11. Working out the mode of inheritance of linked genes from test cross and/or F2 data.

Suggested Readings: -

1. Fukui, K. and Nakayama, S. 1996. Plant Chromosomes; Laboratory Methods, CRC Press, Boca Raton, Florida.
2. Gunning, B.E.S. and Steer, M.W. 1996. Plant Cell Biology; Structure and Function, Jones and Barllett Publishers, Boston, Massachusetts.

3. Harns, N. and Oparka, K.J. 1994. Plant Cell Biology, A Practical Approach. IRL Press, at Oxford University Press, Oxford, UK.
4. Sharma, A.K. and Sharma, A. 1999. Plant Chromosomes; Analysis. Manipulation and Engineering, Harwood Academic Publishers, Australia.
5. Plopper, G. (2016). Principles of Cell Biology. Jones and Barnett Learning, Boston, Massachusetts.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

FOOD SCIENCE

Course Title: Food Science and Quality Control (Vocational) (FOOD PLANT HYGIENE AND SANITATION)

Course Code: BSMM-2255

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand hygiene, sanitation and importance of personal hygiene of food handler in food industries.

CO2: Learn different methods of cleaning and sanitation in food processing industries.

CO3: Understand basic principles and practices of cleaning and sanitation in different food processing industries.

CO4: Understand pest control, hygiene of water used for processing and waste product handling in food industries.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

FOOD SCIENCE

Course Title: Food Science and Quality Control (Vocational) (FOOD PLANT HYGIENE AND SANITATION)

Course Code: BSMM-2255

(THEORY)

Examination Time: 3 Hours **Max. Marks: 100**

Theory Marks: 60

Practical Marks: 20

CA: 20

Instructions for the Paper Setter: Eight questions of equal marks(12 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT - I

1. Importance of personal hygiene of food handler- habits, clothes, illness, education of handler in handling and service.
2. Cleaning agents and disinfectants. Uses of different cleaning and sanitizing agents.
3. Good Laboratory Practices (GLP) and Good Hygienic Practices (GHP)
4. Cleaning In Place (CIP) and Cleaning Out of Place (COP)

UNIT - II

5. Cleaning methods– sterilization, disinfection, heat & chemicals, chemical tests for sanitizer strength.

UNIT - III

6. Food sanitation- principles & methods, control and inspection, sanitation in fruits & vegetables industry, cereals industry, dairy industry, meat, egg & poultry units.

UNIT - IV

7. Control of infestation, rodent control, vector control, use of pesticides.
8. Hygiene of water used for processing, Analysis of total plate count and *E.coli*
9. Planning & implementation of training programmes for health personnel.
10. Waste disposal and treatment.

Books Recommended:

1. Principles of Food Sanitation by Norman G. Marriott **(Online Available)**
https://ubblab.weebly.com/uploads/4/7/4/6/47469791/principles_of_food_sanitation,_5th_ed.pdf
2. Food Poisoning and Food Hygiene by Hobbs, B. C. and R. J. Gilbert (Online Available)
3. Quantity food sanitation by Longree K
4. Environmental Sanitation in India by Kawata K

Bachelor of Science (Medical) Semester- II (Session 2022-23)

FOOD SCIENCE

Course Title: Food Science and Quality Control (Vocational) (FOOD PLANT HYGIENE AND SANITATION)

Course Code: BSMM-2255 (P)

(PRACTICAL)

Time: 3 hours **Max. Marks: 20**

Instructions for the practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

List of Practicals

1. Sterilization of equipments used in the laboratory by using heat and chemicals.
2. Determination of B.O.D & C.O.D
3. Determination of sanitary status of plant equipment.
4. Chlorination of water.
5. To study the bacteriology of water.
6. Determination of Total dissolved solids (TDS) of water.
7. Determination of Hardness of water.
8. Determination of alkalinity and acidity of water.
9. Determination of organic matter of water.
10. Determination of chlorides and sulphates in water.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

Course Title: Moral Education

Course Code: SECM- 2502

Course Duration: 30 hours

Course intended for: Semester II students of undergraduate degree programmes of all streams.

Course Credits: 2

Course Description:-

The Moral Education Programme has been introduced as part of the curriculum of second semester of all streams of undergraduate degree programmes. Moral education has been added as a compulsory subject, the awards of which will not be incorporated in the total marks but will earn the student two credits.

Expectations:-

This academic input has been taken up to sensitize the students to the need of a morally upright character in the present times

EXAMINATION

- Total Marks: 25 (Final Exam: 20; Internal Assessment: 5)
- Final Exam: multiple choice Questions Marks-20; Time: 1 hour
- Internal Assessment: 5 (Assessment: 3; Attendance:2)
- Total marks: 25 converted to grade for final result
- Grading system: 90% marks & above: A grade

80%-89% marks : B grade

70%-79% marks : C grade

60%-69% marks : D grade

50%-59% marks : E grade

Below 50% marks : F grade (Fail - must give the exam again)

SYLLABUS

Module I: Introduction

- What is Moral Education
- Need content and purpose
- Vedic values
- Character building

Module II: The Self and You

- Understanding the Self-Self awareness, fighting the five evils (lust, anger. attachment, ego and greed), Self growth.
- Personal ethics
- Aspiration v/s ambition, self- seeking v/s selflessness
- Self Discipline

Module III: The Family and You

- Importance of family- the basic unit of human interaction.
- Generation gap
- Relation with peer group, sibling, elders,

Module IV: The Society and You

- Social responsibility
- Our rights and duties
- Civic sense
- Opposite sex relations
- Globalization and IT boom - Cellphone menace
- Drug abuse
- Sex abuse

Module V: The Nation and You

- International peace and brotherhood
- Saving the environment

Bachelor of Science (Medical) Semester- III (Session 2022-23)

PUNJABI

Course Title: PUNJABI (COMPULSORY)

Course Code: BSML-3421

Course Outcomes:

CO1: ਚੋਣਵੇ ਪੰਜਾਬੀ ਨਿਬੰਧ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਵਾਰਤਕ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ।

CO2: 'ਸਮਾਂ ਮੰਗ ਕਰਦਾ ਹੈ' ਇਕਾਂਗੀ ਸੰਗ੍ਰਹਿ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਇਕਾਂਗੀ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਇਸ ਸਾਹਿਤ ਰੂਪ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO3: ਸੰਖੇਪ ਰਚਨਾ ਕਰਨ ਨਾਲ ਵਿਦਿਆਰਥੀ ਆਪਣੀ ਗੱਲ ਨੂੰ ਸੰਖੇਪ ਵਿਚ ਕਹਿਣ ਦੀ ਜਾਚ ਸਿੱਖਣਗੇ ਅਤੇ ਇਹ ਦਿਮਾਗੀ ਕਸਰਤ ਵਿਚ ਸਹਾਈ ਹੋਵੇਗੀ।

CO4: ਲੇਖ ਰਚਨਾ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO5: ਮੂਲ ਵਿਆਕਰਣਕ ਇਕਾਈਆਂ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵੰਨਗੀਆਂ (ਭਾਵੰਸ਼, ਸ਼ਬਦ, ਵਾਕੰਸ਼, ਉਪਵਾਕ ਅਤੇ ਵਾਕ)ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

Bachelor of Science (Medical) Semester- III (Session 2022-23)

PUNJABI

Course Title: PUNJABI (COMPULSORY)

Course Code: BSML-3421

ਸਮਾਂ : 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਪਾਠਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਚੋਣਵੇ ਪੰਜਾਬੀ ਨਿਬੰਧ (ਜੋਗਿੰਦਰ ਸਿੰਘ ਪੁਆਰ,ਪਰਮਜੀਤ ਸਿੰਘ ਸਿੱਧੂ), ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ।

ਘਰ ਦਾ ਪਿਆਰ, ਉਮਰ ਲੰਮੀ ਹੋ ਸਕਦੀ ਹੈ, ਅੱਥਰੂ, ਪੁਰਾਣਾ ਪੰਜਾਬ, ਇੰਗਲੈਂਡਦਾ ਸੋਗੀ ਸੋਮਵਾਰ,ਖਿਡਾਰੀਆਂ ਦੇ ਵਹਿਮ।

(ਪਾਠ ਕ੍ਰਮ ਦਾ ਹਿੱਸਾ ਹਨ)

(ਵਿਸ਼ਾ ਵਸਤੂ/ਸਾਰ) ੪ ਅੰਕ

ਯੂਨਿਟ-II

ਸਮਾਂ ਮੰਗ ਕਰਦਾ ਹੈ (ਇਕਾਂਗੀ ਸੰਗ੍ਰਹਿ) (ਸੰਪਾ. ਕੇਵਲ ਧਾਲੀਵਾਲ) ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ,ਲੁਧਿਆਣਾ।

(ਵਿਸ਼ਾ ਵਸਤੂ /ਸਾਰ) ੪ ਅੰਕ

ਯੂਨਿਟ-III

(ੳ) ਸੰਖੇਪ ਰਚਨਾ (ਪ੍ਰੈਸੀ)

(ਅ) ਲੇਖ ਰਚਨਾ ੪ ਅੰਕ

ਯੂਨਿਟ-IV

ਮੂਲ ਵਿਆਕਰਣਕ ਇਕਾਈਆਂ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵੰਨਗੀਆਂ (ਭਾਵੰਸ਼, ਸ਼ਬਦ, ਵਾਕੰਸ਼, ਉਪਵਾਕ ਅਤੇ ਵਾਕ) ੪ ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨA-Dਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟI-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋ ਂਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

Bachelor of Science (Medical) Semester- III (Session 2022-23)

PUNJABI

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code: BSML-3031

Course Outcomes:

CO1: ਸੰਖੇਪ ਰਚਨਾ ਕਰਨ ਨਾਲ ਵਿਦਿਆਰਥੀ ਆਪਣੀ ਗੱਲ ਨੂੰ ਸੰਖੇਪ ਵਿਚ ਕਹਿਣ ਦੀ ਜਾਚ ਸਿੱਖਣਗੇ ਅਤੇ ਇਹ ਦਿਮਾਗੀ ਕਸਰਤ ਵਿਚ ਸਹਾਈ ਹੋਵੇਗੀ।

CO2: ਪੈਰ੍ਹਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ ਦੇਣ ਦਾ ਮਨਰੋਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO3: ਕਵਿਤਾ ਭਾਗ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਵਿਤਾ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਤਾਂ ਕਿ ਉਹ ਆਧੁਨਿਕ ਦੌਰ ਵਿਚ ਚੱਲ ਰਹੀਆਂ ਕਾਵਿ ਧਾਰਾਵਾਂ ਅਤੇ ਕਵੀਆਂ ਬਾਰੇ ਗਿਆਨ ਹਾਸਿਲ ਕਰ ਸਕਣ।

CO4: ਕਹਾਣੀ ਭਾਗ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਵਿਤਾ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਤਾਂ ਕਿ ਉਹ ਆਧੁਨਿਕ ਦੌਰ ਵਿਚ ਚੱਲ ਰਹੀਆਂ ਕਾਵਿਧਾਰਾਵਾਂ ਅਤੇ ਕਵੀਆਂ ਬਾਰੇ ਗਿਆਨ ਹਾਸਿਲ ਕਰ ਸਕਣ।

CO5: ਨਿਬੰਧ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਮੁੱਲਵਾਨ ਇਤਿਹਾਸ ਤੋਂਜਾਣੂ ਕਰਵਾਉਣਾ ਹੈ।

Bachelor of Science (Medical) Semester- III (Session 2022-23)

PUNJABI

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code: BSML-3031

ਸਮਾਂ: 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਪਾਠਕ੍ਰਮ

ਯੂਨਿਟ-I

ਪੈਰ੍ਹਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ

ਸੰਖੇਪ ਰਚਨਾ 08 ਅੰਕ

ਯੂਨਿਟ-II

ਕਵਿਤਾਵਾਂ

(ੳ) ਸਮਾਂ (ਭਾਈ ਵੀਰ ਸਿੰਘ)

(ਅ) ਖੈਰ ਪੰਜਾਬੀ ਦੀ (ਫ਼ੀਰੋਜ਼ਦੀਨ ਸ਼ਰਫ਼)

(ਇ) ਖ਼ਨਗਾਹੀ ਦੀਵਾ ਬਾਲਦੀਏ (ਪ੍ਰੋ.ਮੋਹਨ ਸਿੰਘ)

(ਸ) ਰੁੱਖ (ਸ਼ਿਵ ਕੁਮਾਰ)

(ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ,ਸਾਰ) 08 ਅੰਕ

ਯੂਨਿਟ-III

ਕਹਾਣੀਆਂ

(ੳ) ਭੂਆ (ਨਾਨਕ ਸਿੰਘ)

(ਅ) ਪੇਮੀ ਦੇ ਨਿਆਣੇ (ਪ੍ਰਿੰ. ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ)

(ਇ) ਕੁਲਫ਼ੀ (ਸੁਜਾਨ ਸਿੰਘ)

(ਸ) ਧਰਤੀ ਹੇਠਲਾ ਬੌਲਦ(ਕੁਲਵੰਤ ਸਿੰਘ ਵਿਰਕ)

(ਵਿਸ਼ਾ ਵਸਤੂ,ਸਾਰ) 08 ਅੰਕ

ਯੂਨਿਟ-IV

ਨਿਬੰਧ

(ੳ) ਘਰ ਦਾ ਪਿਆਰ (ਤੇਜਾ ਸਿੰਘ)

(ਅ) ਮਾਂ (ਗੁਰਬਖ਼ਸ਼ ਸਿੰਘ)

(ਇ) ਭਾਈ ਮਰਦਾਨਾ ਜੀ (ਹਰਪਾਲ ਸਿੰਘ ਪੰਨੂ)

(ਸ) ਮਨੁੱਖ ਕੁਦਰਤ ਦੀ ਨੇਕ ਔਲਾਦ ਨਹੀਂ (ਸੁਰਿੰਦਰ ਮੰਡ)

(ਵਿਸ਼ਾ ਵਸਤੂ,ਸਾਰ) 08 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।

2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾਜਾ ਸਕਦਾ ਹੈ।

3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕ ਹਨ।

4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

Bachelor of Science (Medical) Semester- III (Session 2022-23)

Course Title: PUNJAB HISTORY AND CULTURE (FROM 1000-1605 A. D.)

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

Course Code: BSML-3431

Course Outcomes

After completing the paper the students will have a thorough insight into the origin of Sikh faith and its major institutions in Punjab. They will be able to

CO 1: Understand the society and culture of Medieval Punjab.

CO 2: Understand the growth of various sects during the Bhakti Movement in Punjab.

CO 3: Comprehend and analyse the teachings of Guru Nanak Dev and its relevance today

CO 4 (a): Make a comparison between the philosophy and teachings of first five Sikh Gurus and their relevance in the present scenario.

CO4 (b): Understand and analyze the institutions started by Sikh Gurus and their implications till date.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

Course Title: PUNJAB HISTORY AND CULTURE (FROM 1000-1605 A. D.)

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

Course Code: BSML-3431

Examination Time: 3 Hours **Max. Marks: 50**

Theory: 40

CA: 10

Instructions for the Paper Setters

1. Question paper shall consist of four Units
2. Examiner shall set 8 questions in all by selecting **Two Questions** of equal marks from each Unit.
3. Candidates shall attempt **5 questions** in **600 words**, by at least selecting **One Question** from each Unit and the **5th question** may be attempted from any of the **four Units**.
4. Each question will carry 8 marks.

Unit -1:

1. Society and Culture of Punjab during Turko - Afghan Rule
2. The Punjab under the Mughals

Unit-II:

3. Bhakti Movement and Impact on Society of Punjab
4. Sufism in Punjab

Unit-III:

5.Guru Nanak: Early Life and Teachings

6. Concept of Sangat and Pangat

Unit-IV:

7. Contribution of Guru Angad Dev, Guru Amar Das and Guru Ram Das

8. Guru Arjun Dev and Compilation of Adi Granth

Suggested Readings:

- Chopra, P. N., Puri, B.N., &Das. M.N. (1974). A Social, Cultural and Economic History of India, Vol. II. New Delhi: Macmillan India.
- Grewal, J.S. (1994) The Sikhsof the Punjab, Cambridge University Press, New Delhi.
- Singh, Fauja (1972), A History of the Sikhs, Vol. II, I. Patiala: Punjabi University.
- Singh, Khuswant (2011). A History of Sikhs- Vol. I (1469-1839), New Delhi, Oxford University Press.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

ENGLISH

Course Title: ENGLISH (COMPULSORY)

Course Code: BSML-3212

Course Outcomes:

After passing this course, the students will be able to:

CO1: Comprehend the basics of grammatical rules governing relative clauses, adjectives, adverbs, conjunctions and prepositions through the study of "English Grammar in Use" by Raymond Murphy

CO2: Develop skills to write an essay on a given topic and enhance their vocabulary through the study of "The Students' Companion" by Wilfred D. Best

CO3: Enhance their reading and analysing power of texts through guided reading through the study of "Making Connections" by Kenneth J. Pakenham

CO4: Develop an understanding of the poems taught, relate to the socio-cultural background of England and be able to answer questions regarding tone, style and central idea through the study of the poems in the prescribes text "Moments in Time"

Bachelor of Science (Medical) Semester- III (Session 2022-23)

ENGLISH

Course Title: ENGLISH (COMPULSORY)

Course Code: BSML-3212

Max. Marks: 50

Examination Time: 3 Hrs **Theory: 40**

CA: 10

Instructions for the Examiner:

(The paper setters should avoid questions of theoretical nature from *Making Connections*.)

Section A: One question with sub-parts will be set from Unit I of the syllabus. Fifteen sentences will be set and the students would be required to attempt any ten. Each sentence will carry one mark. **(10x1=10)**

Section B: Two questions will be set from Unit II of the syllabus. The students would be required to attempt one essay out of the given two topics carrying six marks (word limit 300 words). The second question will be based on vocabulary. The students would be required to write single words for phrases and sentences choosing any four out of six and each carrying one mark. **(1x6+4x1=10)**

Section C: The students would be required to attempt two questions (with sub parts) based on exercises as given before and after reading essays in the prescribed text book *Making Connections*. **(2×5=10)**

Section D: This section will be divided into two parts. In part one, three questions based on Central idea, theme, tone and style etc. of the poems from the prescribed textbook, *Moments In Time* from Unit IV of the syllabus will be set. The students would be required to attempt any two, each carrying three marks (100 words each). **(2×3=6)**

Part two will have one question (with internal choice) requiring students to explain a stanza with reference to context carrying four marks (word limit 200 words). The stanzas for explanation will be taken from the prescribed textbook, *Moments in Time* from Unit IV in the syllabus. **(1×4=4)**

Unit I

English Grammar in Use, 4th Edition by Raymond Murphy, CUP (Units 92-120)

Unit II

Essay Writing and *The Students' Companion* by Wilfred D. Best (Section 1: Single words for phrases and sentences: Words denoting Numbers and words denoting Places)

Unit III

Making Connections by Kenneth J. Pakenham, 2nd Edn. CUP: Unit-II

Unit IV

Moments in Time: Poems at Sr. No. 1-6

Texts Prescribed:

1. *English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP
2. *The Students' Companion* by Wilfred D. Best
3. *Making Connections* by Kenneth J. Pakenham, 2nd Edn. CUP
4. *Moments in Time: An Anthology of Poems*, GNDU, Amritsar

Bachelor of Science (Medical) Semester- III (Session 2022-23)

ZOOLOGY

Course Title: EVOLUTION

Course Code: BSMM-3483 (I)

(THEORY)

Max. Time: 3 Hrs. **Max Marks: 30**

Instructions for the Paper Setter

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

Unit I

Introduction to evolution

Evidences of organic evolution

Theories of organic evolution

Unit II

Origin of life

Concept of micro, macro and mega-evolution

Concept of Species

Speciation

Unit III

Fossils, its types and significance

Evolutionary rate

Origin & Extinction of reptiles

Evolution of man (in Brief)

Unit IV

Migration & Parental Care in Pisces

Flight adaptation & Bird migration

Adaptive radiations like scales & fins in fish, poison apparatus in snakes and dentition in Mammals.

Suggested Readings:

1. Avers, C. J. (1989). Evolution Process and Pattern in Evolution, New York Oxford Oxford university press.
2. Bhamarah, H.S. (1993), Juneka K., Cytogenetics & Evolution, Anmol Publication Pvt. Ltd.

3. Brookfield, A. P. (1986). Modern aspects of Evolution. Nelson Thornes publishers
4. Colbert. E.H. (2002), Evolution of Vertebrates, cbspd publishers
5. Freeman, S. and Herron, Jon C. (2007). Evolutionary analysis, Pearson Prentice Hall, New Jersey.
6. Futuyma, D. J. (1998), Evolutionary Biology, Sinauer Assoc. Inc. Pub. USA.
7. Meglitsch, P. A. (1991), Invertebrate Zoology (3rded), Oxford University Press.
8. Wen-Hsiung Li (1997), Molecular Evolution, Sinauer associatesInc.Pub. USA.
9. Rastogi, V.B(2003) Organic evolution, Medtech publishers
10. Strickberger, M.N(2000) Evolution, Jones and Bartlett publishers.
11. Tomar, B.S. and S.P.Singh(2000)Evolutionary Biology, Rastogi publishers.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

ZOOLOGY

Course Title: Biodiversity-III (Chordates)

Course Code: BSMM-3483 (II)

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1. Understand general body plan of Herdmania and external characters of Amphioxus.

CO2. Understand external characters and affinities of Petromyzon as well as body systems of Labeo.

CO3. Understand body plan and various systems of Frog and Uromastix.

CO4. Understand body systems of Pigeon and Rat.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

ZOOLOGY

Course Title: Biodiversity-III (Chordates)

Course Code: BSMM-3483 (II)

(THEORY)

Max. Time: 3 Hrs. **Max Marks: 30**

Instructions for the Paper Setter

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

Unit I

Brief Introduction to Protochordata

Urochordata: Type study- *Herdmania*

Cephalochordata: External features and affinities of *Amphioxus*

Unit II

Cyclostomata: External Characters of *Petromyzon*

Affinities of Cyclostomata

Pisces: Type study-*Labeo*

Unit III

Amphibia: Type study-Frog

Reptilia: Type study-*Uromastix*

Unit IV

Aves: Type study-Pigeon

Mammals: Type study-Rat

Suggested Reading Material.

1. Dhami, P.S. &Dhami J.K. (1998), Vertebrates, R. Chand & Co., New Delhi.
2. Hildebrand, M. and Goslow. Jr. G.E. (2001), Analysis of Vertebrates Structure, John Wiley, N. Y.
3. Jollie, M. (1968), Chordate Morphology, Reinhold, New York.
4. Kardong, K. V. (1995), Vertebrates – Comparative Anatomy, Function, Evolution. W.B.C. Pub., Oxford.

5. Kent, G. C. and Carr, R. K. (2001), Comparative Anatomy of the Vertebrates (9th ed), McGraw Hill Higher Education, New York.
6. Linzey, D. (2001), Vertebrate Biology, McGraw Hill Publishing Company, New York.
7. Pough, F. H., Heiser, J. B. and McFarland, W. N. (1990), Vertebrate Life (3rd ed), Macmillan Pub. Co., New York.
8. Young, J. Z. (1982), The Life of Vertebrates, New York.
9. Parker, T.J. and Haswell, W.A (1981) Text Book of Zoology, Vol. II (Vertebrates), ELBS and Macmillian Press Ltd.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

ZOOLOGY

Course Title: Practical-III (Related to Evolution and Biodiversity-III)

Course Code: BSMM-3483 (P)

(PRACTICAL)

Course Outcomes:

CO1. Familiarize organ systems.

CO2. Aware about economically important specimens (preserved).

CO3. Understanding of evolutionary phenomena.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

ZOOLOGY

Practical-III (Related to Evolution and Biodiversity-III)

Course code: BSMM-3483 (P)

(PRACTICAL)

Time: 3 hrs. **Marks: 20**

Instructions for the Practical Examiners: Question paper is to set on the spot jointly by the Internal and External Examiners. Two copies of the same should be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar

Guidelines for conduct of Practical Examination:

1.	Draw a labelled sketch of the system of the given animal & explain it to the Examiner.	3
2.	Identify and classify the specimens upto order level. Write a short note on habitat, special features, feeding, habits and economic importance of the specimens.	8
3.	Idendify and write a note on the evolutionary phenomenon in the given specimen.	2
4.	Identify the slides/specimens, give two reasons for identification.	3
5.	Viva-voce & Practical file.	4

I. Classification up to order level, except in case of Pisces and Aves where classification up to subclass level, habits, habitat, external characters and economic importance (if any) of the following animals is required:

Urochordata : *Herdmania, Molgula, Pyrosoma, Doliolum, Salpa&Oikopleura.*

Cephalochordata: *Amphioxus.* Study of the following prepared slides:
T.S. *Amphioxus* through various regions, Pharynx of *Amphioxus*

Cyclostomata : *Myxine, Petromyzon &Ammocoetes* Larva.

Chondrichthyes : *Zygaena* (hammer head shark), *Pristis* (saw fish), *Narcine (electric ray), Trygon, Rhinobatus and Chimaera* (rabbit fish).

Actinoptergii :*Polypterus, Acipenser, Lepidosteus, Muraena, Mystus, Catla, Hippocampus, Syngnathus, Exocoetus, Anabas, Diodon, Tetradon, Echeneis and Solea.*

Dipneusti (**Dipnoi**) : *Protopterus*(African lung fish)

Amphibia : *Uraeotyphlus, Necturus, Amphiuma, Amblystoma*and its Axolotl Larva, *Triton, Salamandra, Hyla, Rhacophorus*

Reptilia : *Hemidactylus, Calotes, Draco, Varanus, Phrynosoma, Chamaeleon, Typhlops, Python, Eryx, Ptyas, Bungarus, Naja, Hydrus, Vipera, Crocodilus, Gavialis, Chelone*(turtle) and *Testudo* (tortoise),Differences in nonpoisonous and poisonous snakes.

Aves : *Casuarius, Ardea, Anas, Milvus, Pavo, Eudynamics, Tyto* and *Alcedo.*

Mammalia : *Ornithorynchus, Echidna, Didelphis, Macropus, Loris, Macaca, Manis, Hystrix, Funambulus, Panthera, Canis, Herpestes, Capra, Pteropus.*

II. Study of the following systems with the help of charts/models/videos:

Herdmania **:** General anatomy

Labeo : Digestive and reproductive systems, heart, afferent and branchial arteries, cranial nerves and internal ear.

Pigeon : Digestive, arterial, venous and urino-genital systems.

White Rat : Digestive, arterial, venous and urino-genital systems.

Study of permanent slides of whole mount of Pharynx of *Herdmania* and *Amphioxus.*

Cycloid scales of *Labeo,* blood smear of mammal, Histology of rat/rabbit (compound tissues)

Demonstration of evolutionary phenomena like homology, analogy, mimicry, crypsis.

Note:- Some changes can be made in the practicals depending on the availability of material.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

MICROBIOLOGY

Course Title: MICROBIAL NUTRITION AND METABOLISM

Course Code: BSMM-3343

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the nutritional requirements for growth of microorganisms and types of microorganisms on the basis of nutrition.

CO2: Understand the transport of nutrients across the cell membrane.

CO3: Learn about the metabolic pathways and electron transport chain of bacteria.

CO4: Learn about the enzyme kinetics and biosynthesis of nucleic acids.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

MICROBIOLOGY

Course Title: MICROBIAL NUTRITION AND METABOLISM

Course Code: BSMM-3343

(THEORY)

Examination Time: 3 Hours

Max. Marks: 100

Theory Marks: 60

Practical Marks: 20

CA: 20

Instructions for the Paper Setter: Eight questions of equal marks (12 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT–I

Nutrition, requirements for growth of microorganisms, nutrients and accessory constituents, medium designing. Nutritional types of microorganisms (photolithotrophs, photoorganotrophs, chemolithotrophs and chemoorganotrophs)

UNIT–II

Transport of nutrients across the cell membrane, diffusion, passive transport, active transport, and group translocation for the transport of nutrients across the membrane.

UNIT–III

Bioenergetics; Laws of thermodynamics, entropy, enthalpy and free energy of reaction standard, oxidative phosphorylation, electron transport, respiratory chains of bacteria, energy metabolism in aerobic and anaerobic microorganisms, pathways for breakdown of glucose (glycolysis, Kreb's cycle fermentation, pentose phosphate pathways), gluconeogenesis, metabolism of starch & cellulose by bacteria.

UNIT–IV

Assimilation of nitrogen, biosynthesis of nucleic acids, for synthesis of purine and pyrimidine nucleotides. Enzymes, kinetics, Michaelis Menten equation and allosteric enzymes.

Books Recommended:

1. Pelczar, M.I., Chan, E.C.S. and Krieg, N.R. 2011, 5th edition, Microbiology. Tata McGraw Hill Publishing Co., Ltd., New Delhi.
2. Stanier, R.Y., Ingraham, J.L., Wheelis, M.L. and Painter, P.R. 2005, 5th edition, General Microbiology, MacMillan Education Ltd. Publisher.
3. Powar, C.B. and Dagniwala, H.F. 2012, General Microbiology, Volume I and II, Himalaya Publishing House, Delhi.
4. Sharma, P.D. 2010, Microbiology, Rastogi Publications, Meerut. 142.
5. Bacterial physiology and metabolism by Byung Hong Kim and Geoffrey Michael Gadd. **(Online available).**

Bachelor of Science (Medical) Semester- III (Session 2022-23)

MICROBIOLOGY

Course Title: MICROBIAL NUTRITION AND METABOLISM

Course Code: BSMM-3343

(PRACTICAL)

Time: 3 Hours **Marks: 20**

Instructions for the practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

LIST OF PRACTICALS:

1. Isolation and enumeration of total bacteria from soil by pour plating and spread plating.
2. Comparison of growth on complex medium and defined or minimal medium.
3. Distinction between fermenting and non-fermenting microorganisms.
4. Effects of various concentrations of carbon source on bacterial growth.
5. Effects of various concentrations of nitrogen source on bacterial growth.
6. Effect of temperature on bacterial growth.
7. Effect of pH on bacterial growth.
8. Effect of salt on bacterial growth.
9. Effect of metals on bacterial growth.
10. Effect of dye on bacterial growth.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

CHEMISTRY

Course Title: ORGANIC CHEMISTRY

Course Code: BSMM-3084 (I)
(THEORY)

Course outcomes:

Students will be able to

CO1: To resolve the different enantiomers and differentiate between dextrorotatory-leavorotatory chiral and achiral compounds, understand the concept of isomerism, axial and equatorial bonds.

CO2: Understand the methods of formation, chemical reactions, acidic character of alcohols

CO3: Preparation of understand structure and bonding phenols, acidic character of phenols

CO4: Compare reactivity of aliphatic and aromatic aldehydes and ketones, to understand the various reactions given by carbonyl compounds

Bachelor of Science (Medical) Semester- III (Session 2022-23)

CHEMISTRY

Course Title: ORGANIC CHEMISTRY

Course Code: BSMM-3084 (I)

(THEORY)

Time: 3 Hrs. **Max. Marks: 30**

Instructions for the Paper Setter

Eight questions of equal marks (6 each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

Unit-I

Stereochemistry of Organic Compounds

Concept of isomerism, types of isomerism, Optical isomerism, elements of symmetry, molecular chirality, enantiomers, stereogeniccentre, optical activity, properties of enantiomers, chiral and achiral molecules with two stereogeniccentres, diastereomers, threo and erythrodiasteremers, meso compounds, resolution of enantiomers, inversion, retention and racemization. Relative and absolute configuration, sequence rules, D and L and R and S systems of nomenclature. Geometric isomerism–determination of configuration of geometric isomers. E and Z system of nomenclature. Conformational isomerism–conformational analysis of ethane and n–butane; conformation of cyclohexane, axial and equatorial bonds, conformation of mono substituted cyclohexane derivatives. Newman projection and Sawhorse formulae, Fischer and flying wedge formulae. Difference between configuration and conformation.

Unit–II

Alcohols

Classification and nomenclature. Monohydric alcohols—nomenclature, Acidic nature, Reactions of alcohols, Dihydric alcohols—nomenclature, methods of formation, chemical reactions of vicinal glycols, oxidative cleavage [$Pb(OAc)_4$] and [HIO_4] and pinacol-pinacolone rearrangement.

Unit–III

Phenols

Nomenclature, structure and bonding, preparation of phenols, physical properties and acidic character, Comparative acidic strengths of alcohols and phenols, resonance stabilization of phenoxide ion.Reactions

of phenols—electrophilic aromatic substitution, acylation and carboxylation.Mechanisms of Fries rearrangement, Claisen rearrangement, Gatterman synthesis, Reimer Tiemann reaction.

Unit–IV

Aldehydes and Ketones Nomenclature and structure of the carbonyl group. Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides, synthesis of aldehydes and ketones using 1,3-dithianes, synthesis of ketones from nitriles and from carboxylic acids. Physical properties.Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol, Perkin and Knoevenagel condensations.Condensation with ammonia and its derivatives. Witting reaction, Mannich reaction.Use of acetals as protecting group. Oxidation of aldehydes, Baeyer-Villiger oxidation of Ketones, Cannizzaro reaction.MPV, Clemmensen, Wolff-Kishner, $LiAlH_4$ and $NaBH_4$ reductions. Halogenation of enolizable ketones. Halogenation of enoliable ketones

Books suggested:

1. Morrison, R.T., Boyd, R.N., Organic Chemistry; 6th edition, Pubs: Prentice-Hall, 1992.
2. Wade Jr., L.G., Singh, M.S., Organic Chemistry; 6th edition, Pubs: Pearson Education, 2008.
3. Mukherji, S.M., Singh, S.P., Kapoor, R.P., Organic Chemistry; Pubs: Wiley Eastern Limited, 1985, Vol. I, II, III.
4. Solomons, T.W., Fryhle, C.B., Organic Chemistry; 9th edition, Pubs: Wiley India, 2007.
5. Carey, F.A., Organic Chemistry; 4th edition, Pubs: McGraw-Hill, 2000.
6. Streitwieser, A., Clayton, Jr., Heathcock, H., Introduction to Organic Chemistry; 3rd edition, Pubs:Macmillan Publishing Company, 1989.
7. University General Chemistry, C.N.R. Rao, Macmillan.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

CHEMISTRY

Course Title: PHYSICALCHEMISTRY

Course Code: BSMM-3084 (II)

(THEORY)

Course outcomes:

Students will be able to

CO1: Understand and evaluate thermodynamic property of any system and its applications to various systems, acquire the knowledge of phase equilibria of various systems

CO2: Demonstrate the carnot cycle, understand the concept of Entropy

CO3: Understand the concept of Residual entropy, demonstrate Clausius-Clapeyron equation, CO4: understand concept of spontaneity of a reaction in terms of free energy change.

CO4: Understand and demonstrate the concept of phase equilibria of one component system, two component system

Bachelor of Science (Medical) Semester- III (Session 2022-23)

CHEMISTRY

Course Title: PHYSICALCHEMISTRY

Course Code: BSMM-3084 (II)

(THEORY)

Time: 3 Hrs. **Max. Marks: 30**

Instructions for the Paper Setter

Eight questions of equal marks (6 each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions,selecting at least one question from each section. The fifth question may be attempted from any Section.

Unit–I

Thermodynamics-I

Definition of thermodynamic terms: System, surroundings etc. Types of systems, intensive and extensive properties. State and path functions and their differentials. Thermodynamic process. Concept of heat and work.

First Law of Thermodynamics:

Statement, definition of internal energy and enthalpy. Heat capacity, heat capacities at constant volume and pressure and their relationship. Joule's law-Joule-Thomson coefficient and inversion temperature, Calculation of w,q,dUanddH for the expansion of ideal gases under isothermal and adiabatic conditions for reversible process.

Thermochemistry:

Standard state, standard enthalpy of formation-Hess's Law of heat summation and its applications. Heat of reaction at constant pressure and at constant volume. Enthalpy of neutralization. Bond dissociation energy and its calculation from thermo-chemical data, temperature dependence of enthalpy. Kirchhoff's equation.

Unit–II

Thermodynamics-II

Second Law of Thermodynamics: Need for the law, different statements of the law, Carnot cycle and its efficiency, Carnot theorem. Thermodynamic scale of temperature.

Concept of Entropy: Entropy as a state function, entropy as a function of V and T, entropy as a function of P and T, entropy change in physical change, Clausius inequality, entropy as a criteria of spontaneity and equilibrium. Entropy change in ideal gases and mixing of gases.

Unit–III

Thermodynamics-III

Third Law of Thermodynamics: Nernst heat theorem, statement and concept of residual entropy, evaluation of absolute entropy from heat capacity data. Gibbs and Helmholtz functions; Gibbs function (G) and Helmholtz function (A) as thermodynamic quantities, A and G as criteria for thermodynamic equilibrium and spontaneity, their advantage over entropy change, Variation of G and A with P,V and T.

Chemical Equilibrium

Equilibrium constant and free energy. Thermodynamic derivation of law of mass action. Determination of K_p, K_c, $K_a$and their relationship, Clausius-Clapeyron equation, applications.

Unit–IV

Introduction to Phase Equilibrium

Statement and meaning of the terms-phase, component and degree of freedom, derivation of Gibbs phase rule, phase equilibria of one component system-water, CO_2 and S systems. Phase equilibria of two component systems-solid-liquid equilibria, simple eutectic-Bi-Cd, Pb-Ag systems, desilverisation of lead. Solid solutions-compound formation with congruent melting point (Mg-Zn) and incongruent melting point, ($NaCl-H_2O$), $FeCl_3-H_2O$) and $CuSO_4-H_2O$) system. Freezing mixtures, acetone-dry ice. Non-ideal system-azeotropes-$HCl-H_2O$ and ethanol-water system. Partially miscible liquids Phenol-water, trines-thylamin-water, Nicotine-water System. Lower and upper consulate temperature, Effect of impurity on consolute temperature, immiscible liquids, steam distillation. Nernst distribution law-thermodynamic derivation and applications.

Books suggested:

1. Atkins, P., Paula, J.de, Atkins Physical Chemistry; 8th edition, Pubs: Oxford University Press, 2008.
2. Puri, B.R., Sharma, L.R., Pathania, M.S., Principles of Physical Chemistry; 43rd edition, Pubs: Vishal Publishing Co., 2008.
3. Barrow, G.M., Physical Chemistry; 6th edition, Pubs: McGraw Hill Inc, 1996.
4. Rao, C.N.R., University General Chemistry; Pubs: Macmillan India, 1985.
5. Berry, R.S., Rice, S.A., Ross, J., Physical Chemistry; 2nd edition, Pubs: Oxford University Press, 2000.
6. Albert, R.A., Silbey, R.J., Physical Chemistry; 1st edition, Pubs: John Wiley and Sons Inc., 1992.
7. Dogra, S.K., Dogra, S., Physical Chemistry Through Problems; Pubs:Wiley Eastern Limited, 1991.
8. Levine, I.N., Physical Chemistry; 5th edition, Pubs: Tata McGraw Hill Publishing Co. Ltd., 2002.
9. Moore, W. J., Basic Physical Chemistry; Pubs: Prentice Hall of India Pvt. Ltd, 1983.
10. Metz, C.R., Theory and Problems of Physical Chemistry; Schaum's outline series, 2nd edition, Pubs: McGraw-Hall Book company, 1989.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

CHEMISTRY

Course Title: CHEMISTRY PRACTICAL

Course Code: BSMM-3084 (P)

(PRACTICAL)

Course outcomes:

Students will be able to

CO1: Understand and master the technique of volumetric analysis, analyze an acidic and alkali content in different samples,

CO2: To analyze calcium content in various samples permanganometricall, understand the concept of hardness of water and its analysis by EDTA method

CO3: Understand and master the technique of gravimetric analysis

CO4: To understand the concept of TLC and its applications

Bachelor of Science (Medical) Semester- III (Session 2022-23)

CHEMISTRY

Course Title: CHEMISTRY PRACTICAL

Course Code: BSMM-3084 (P)

(PRACTICAL)

Duration: 3½ Hrs. **Max. Marks: 20**

Instruction for practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same should be submitted for the record to COE office, Kanya Maha Vidyalaya, Jalandhar.

Quantitative Analysis

Volumetric Analysis

a. Determination of acetic acid in commercial vinegar using NaOH.

b. Determination of alkali content-antacid tablet using HCI.

c. Estimation of calcium content in chalk as calcium oxalate by permanganometry.

d. Estimation of hardness of water by EDTA.

e. Estimation of ferrous and ferric by dichromate method.

f. Estimation of copper using sodiumthiosulphate.

Gravimetric Analysis

Analysis of Cu as CuSCN and Ni as Ni (dimethylgloxime)

Organic Chemistry Laboratory Techniques

Thin Layer Chromatography

Determination of R_f values and identification of organic compounds.

(a). Separation of green leaf pigments (spinach leaves may be used).

(b). Preparation and separation of 2, 4. dinitrophenylhydrazones of acetone, 2-butone, 2-Butanone, hexan-2 and 3-one using toluene and light petroleum (40: 60).

(c). Separation of a mixture of dyes using cyclohexane and ethyl acetate (8.5:1.5).

Practical Examination

1) Volumetry / Gravimetry	11
2) Thin Layer chromatography	04

3) Viva-Voce	03
4) Note Book	02

Books suggested:

1. Vogel's Textbook of Quantitative Inorganic Analysis (revised), J. Bassett, R.C. Denney, G.H. Jeffery and J. Mandham, ELBS.
2. Standard Methods of Chemical. Analysis, W.W. Scott: The Technical Press.
3. Experimental Inorganic Chemistry, W.G. Palmer, Cambridge.
4. Laboratory Manual in Organic Chemistry, R.K. Bansal, Wiley Eastern.
5. Vogel's Textbook of Practical Organic Chemistry, B.S. Furniss, A.J. Hannaford, V. Rogers, P.W.G. Smith and A.R. Tatchell, ELBS.
6. Experiments in General Chemistry, C.N.R. Rao and U.C. Aggarwal, East-West Press.
7. Experimental Organic Chemistry, Vol. I and II, P.R. Singh, D.S. Gupta and K.S. Bajpai, Tata McGraw Hill

Bachelor of Science (Medical) Semester- III (Session 2022-23)

BOTANY

Course Title: STRUCTURE, DEVELOPMENT AND REPRODUCTION IN FLOWERING PLANTS-I

Course Code: BSMM-3075 (I)

(THEORY)

Course outcome:

After passing this course the student will develop:

CO1: Understanding of basic body plan of a flowering plant, Diversity in plant form branching pattern and canopy architecture trees.

CO2: Understanding of shoot apical meristem and its histological organization. Cambium and its function and formation of secondary xylem.

CO3: Understanding of wood in relation to water and minerals, growth rings and structure of secondary phloem and periderm.

CO4: Understanding of origin, development, arrangement and diversity in size and shape of leaf, internal structure in relation to photosynthesis and water loss, senescence and abscission.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

BOTANY

Course Title: STRUCTURE, DEVELOPMENT AND REPRODUCTION IN FLOWERING PLANTS-I

Course Code: BSMM-3075 (I)

(THEORY)

Time: 3 Hrs **Max. Marks: 30**

Instructions for the Paper Setters:

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

Unit I

The basic body plan of a flowering plant-modular type of growth. Diversity in plant form in annuals, biennials and perennials; trees-largest and longest-lived, branching pattern; monopodial and sympodial growth; canopy architecture.

Unit II

The Shoot System: The shoot apical meristem and its histological organization; meristematic and permanent tissue, formation of internodes. Cambium and its functions; formation of secondary xylem.

Unit III

A general account of wood structure in relation to conduction of water and minerals; characteristics of growth rings, sapwood and heart wood; role of woody skeleton; secondary phloem-structure function relationships; periderm.

Unit IV

Leaf: Origin, development, arrangement and diversity in size and shape; internal structure in relation to photosynthesis and water loss; adaptations to water stress; senescence and abscission.

Suggested Readings:

- Beck, C.B. (2010). An Introduction to Plant Structure and Development: Plant anatomy for the Twenty First Century (2nd Edition). Cambridge University Press, UK.

- Cutler, D. F., Botha, T. and Stevenson, D. M. (2007). Plant Anatomy: An Applied Approach. Blackwell Publishing, Oxford, UK.
- Dickison, W.C. (2000). Integrative Plant Anatomy. Academic Press, California, USA.
- Mauseth, J.D. (1988). Plant Anatomy, The Benjamin/Cummings Publishing Company Inc., Menlo Park, California, USA.
- Raven, P.H., Evert, R.F. and Eichhorn, S.E. (1999). Biology of Plants, 5th edition. W.H. Freeman and Co., Worth Publishers, New York.
- Rudall, P. J. (2007). Anatomy of Flowering Plants: An Introduction to Structure and
- Development (3rd Edition). Cambridge University Press, UK.
- Thomas, P. (2000) Trees: Their Natural History, Cambridge University Press, Cambridge.
- Srivastava, H.N. (2018) Diversity of Seed Plants and Their Systematics, Vol. III, Pradeep's Publication.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

BOTANY

Course Title: STRUCTURE, DEVELOPMENT AND REPRODUCTION IN FLOWERING PLANTS-II

Course Code: BSMM-3075 (II)

(THEORY)

Course outcome:

After passing this course the student will be able to:

CO1: Recognize the major groups of vascular plants and their phylogenetic relationships.

CO2: Know the structure and development of monocot and dicot embryos.

CO3: Understand different means of vegetative reproduction.

CO4: Understand physiology of seed germination.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

BOTANY

Course Title: STRUCTURE, DEVELOPMENT AND REPRODUCTION IN FLOWERING PLANTS-II

Course Code: BSMM-3075 (II)

(THEORY)

Time: 3 Hrs **Max Marks. 30**

Instructions for the Paper Setters:

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

Unit I

The Root System: The root apical meristem; differentiation of primary and secondary tissues and their roles; structural modification for storage, respiration, reproduction and for interaction with microbes.

Unit II

Vegetative Reproduction: various methods of vegetative propagation. Detailed study and types of grafting and budding, economic aspects. Flower: A modified shoot; structure, development and varieties of flower; functions

Unit III

Structure of anther and pistil; the male and female gametophytes; types of pollination; attractions and reward for pollinators; (sucking and foraging types); pollen-pistil interaction self incompatibility.

Unit IV

Double fertilization: formation of seed endosperm and embryo: fruit development and maturation Significance of Seed: Suspended animation; ecological adaptation; unit of genetic recombination with reference to reshuffling of genes and replenishment; dispersal strategies.

Suggested readings:

- Bhojwani, S.S., Bhatnagar, S.P. and Dantu P.K. (2015). The Embryology of Angiosperms, 6th edition. Vikas Publishing House, Delhi.
- Hartmann, H.T. and Kestler, D.E. (1976). Plant Propagation: Principles and Practices, 3rd edition, Prentice Hall of India Pvt. Ltd., New Delhi.

- Mauseth, J.D. (1988). Plant Anatomy, The Benjamin/Cummings Publishing Company Inc., Menlo Park, California, USA.
- Peau, K. (1977). Anatomy of Seed Plants, 3rd edition. John Wiley & Sons, New York.
- Pegeri, K. and Vander Pijl (1979). The Principles of Pollination Biology, Pergamon Press, Oxford.
- Raven, P.H., Evert, R.F. and Eichhorn, S.E. (1999). Biology of Plants, 5th edition. W.H. Freeman and Co., Worth Publishers, New York.
- Srivastava, H.N. (2018) Diversity of Seed Plants and Their Systematics, Vol. III, Pradeep's Publication.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

BOTANY

Course Title: PRACTICAL – STRUCTURE, DEVELOPMENT AND REPRODUCTION IN FLOWERING PLANTS (I & II)

Course Code: BSMM-3075 (P)

(PRACTICAL)

Course outcome:

After passing this course the student will be able to:

CO1: Develop knowledge about the role of herbarium techniques in plant identification.

CO2: Understand different life forms exhibited by flowering plants.

CO3: Understand anatomy of different plant parts using free hand razor technique.

CO4: Examine flower and their mode of pollination.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

BOTANY

Course Title: PRACTICAL – STRUCTURE, DEVELOPMENT AND REPRODUCTION IN FLOWERING PLANTS (I & II)

Course Code: BSMM-3075 (P)

(PRACTICAL)

TIME: 3 Hours **Practical: 20**

Instructions for the paper setter: question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Suggested Laboratory Exercises

1. Study of any commonly occurring dicotyledonous plant (for example *Solanum nigrum* or Kalanchoe) to the body plan, organography and modular type of growth.
2. Life forms exhibited by flowering plants (by a visit to a forest or a garden, Study of tree like habit in cycads, bamboo, banana, traveller's tree (*Revenala madagascariensis*) and Yucca and comparison with true trees as exemplified by conifers and dicotyledons.
3. L.S. Shoot tip to study the cytohistological zonation and origin of leaf primordia.
4. Monopodial and sympodial types of branching in stems (especially rhizomes).
5. Anatomy of primary and secondary growth in monocots and dicots using free hand razor technique (*Solanum*, *Boerhavia*, *Helianthus*, *Mirabilis*, *Nyctanthus*, *Draceana*, Maize) hand sections (or prepared slides). Structure of secondary phloem and xylem. Growth rings in wood, microscopic study of wood in T.S., T.L.S. and R.L.S.
6. Field study of diversity in leaf shape, size, thickness, surface properties. Internal structure of leaf. Structure and development of stomata (using epidermal peels of leaf).
7. Anatomy of the root. Primary and secondary structure.
8. Examination of a wide range of flowers available in the locality and methods of their pollination.
9. Structure of anther, microsporogenesis (using slides) and pollen grains (using whole mounts). Pollen viability using in vitro pollen germination.
10. Structure of ovule and embryo sac development using serial sections from permanent slides.
11. Nuclear and cellular endosperm. Embryo development in monocots and dicots (using permanent slides/dissections).

12. Simple experiments to show vegetative propagation (leaf cuttings in *Bryophyllum*, *Sansevieria*, *Begonia*; stem cuttings in rose, *Salix*, money plant, Sugarcane and *Bougainvillea*).
13. Germination of non-dormant and dormant seeds.

Suggested Readings (for laboratory exercises):

1. Bhojwani, S.S. and Bhatnagar, P. (2000). The Embryology of Angiosperms (4th revised and enlarged edition), Vikas Publishing House, New Delhi.
2. Mauseth, J.D. (1988). Plant Anatomy, The Benjamin/Cumminas Publishing Co., Inc., Mehlo Park, California, USA.
3. Raven, P.H., Evert, R.F. and Eichhorn, S.E. (1992). Biology of Plants (5th Edition). Worth Publishers, New York.
4. Steeves, T.A. and Sussex, I.M. (1989). Patterns in Plant Development (2nd Edition). Cambridge University Press, Cambridge

Bachelor of Science (Medical) Semester- III (Session 2022-23)

FOOD SCIENCE AND QUALITY CONTROL (VOCATIONAL)

Course Title: FOOD PROCESSING AND PACKAGING

Course Code: BSMM-3255

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Learn about the methods of food preservation and processing of fats, oils and sugar.

CO2: Learn about the processing of salt, tea, coffee, chocolate and cocoa powder, extruded foods and role of enzymes in food processing.

CO3: Learn about spices and flavors, food additives and manufacturing of fermented products.

CO4: Understand types of packaging materials, their properties and machinery.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

FOOD SCIENCE AND QUALITY CONTROL (VOCATIONAL)

Course Title: FOOD PROCESSING AND PACKAGING

Course Code: BSMM-3255

(THEORY)

Examination Time: 3 Hours

Max. Marks: 100

Theory Marks: 60

Practical Marks: 20

CA: 20

Instructions for the Paper Setter: Eight questions of equal marks (12 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

1. Physical principles underlying food processing operations including thermal processing, ionizing radiation, refrigeration, freezing, dehydration.
2. Chemical preservation in food processing.
3. Fats and Oils: Types and sources of fats and oils (animal and vegetable), processing, uses, storage and nutritional aspects.
4. Sugar and Sugar Products: Different forms of sugar (sugar, jaggery, honey syrup), manufacture, selection, storage and use.

UNIT-II

5. Salt: preparation of brine and pickling.
6. Processing of: Tea, coffee, chocolate and cocoa powder.
7. Extruded foods.
8. Enzymes: Definition, factors affecting enzyme activity, role of enzymes in food processing.

UNIT-III

9. Fermentation technology, manufacturing of fermented products: Wine, vinegar, beer, yoghurt, etc.
10. Spices and flavors.
11. Food additives, classes of food additives, role in food processing.

UNIT-IV

12. Definition and functions of Packaging
13. Types of packaging materials: metal, glass, wood, paper and plastics and their importance
14. Types of packages and their evaluation: bottle, pouch, tetra-pack and cans
15. Packaging machinery
16. Shelf life testing

Books Recommended

1. Post Harvest Technology of Cereals, Pulses and Oilseeds, 2019, 3rdEdition, AmalenduChakraverty.
2. Technology of Cereals, 1994, 4th Edition, Norman Leslie Kent and A.D. Evers.
3. Preservation of Fruits & Vegetables, 2009, GirdhariLal, G.S Siddappa and G.L Tandon.
4. Principles of Food Packaging, 1980, 2nd Edition, Stanley Sacharow and Roger C. Griffin.
5. Chemistry of food additives and preservatives, 2012, 1st Edition, Titus A.M. Msagati.
6. Food Preservation, 2nd Edition, M. ShafiurRahman. **(Online available)** http://www.cold.org.gr/library/downloads/Docs/Handbook%20of%20Food%20Preservation.PDF
7. Food Packaging – Principles and practice, 3rd Edition, 2012, Gordon L. Robertson. **(Online available) https://es.1lib.in/book/2353881/49b558?dsource=recommend**

Bachelor of Science (Medical) Semester- III (Session 2022-23)

FOOD SCIENCE AND QUALITY CONTROL (VOCATIONAL)

Course Title: FOOD PROCESSING AND PACKAGING

Course Code: BSMM-3255

(PRACTICAL)

Time: 3 hours **Marks: 20**

Instructions for the practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

List of Practicals

1. Determination of physical characteristics of cereals.
2. Milling of wheat into flour.
3. Determination of wet and dry gluten contents.
4. Identification of packaging materials.
5. To estimate the shelf life of packaged food.
6. To determine the strength of different packaging material.
7. To find out the tin coating weight.
8. To find out the uniformity and amount of wax on wax paper.
9. To check the chemical resistance of packaging materials.
10. To check the adequacy of blanching.
11. Visit to various industries dealing with food packaging material like, paper board and metal.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

Course Title: ENVIRONMENTAL STUDIES (COMPULSORY)

Course Code: AECE-3221

(THEORY)

Course Outcomes:

After passing this course students will be able to:

CO1: Understand the concept and need of environmental education.

CO2: Understand the role of an individual in conservation of natural resources.

CO3: Learn about role of major Eco system and their conservation.

CO4: Develop desirable attitude,value and respect for protection of Biodiversity.

CO5: Learn about the control measure of pollution and solid waste management.

CO6: Understand the role of different agencies in the protection of environment.

CO7: Knowledge regarding welfare programmes and Human rights.

CO8: Knowledge about the applied value of environmental studies.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

Course Title: ENVIRONMENTAL STUDIES (COMPULSORY)

Course Code: AECE-3221

(THEORY)

Time: 3 Hrs. **Max. Marks: 100**

Theory: 60

Project Report: 20

CA: 20

Instructions for the Paper Setter:

The question paper should carry 60 marks.

The structure of the question paper being:

Part-A, Short answer pattern – 20 marks

Attempt any five questions out of seven. Each question carries 4 marks. Answer to each question should not exceed 2 pages

Part-B, Essay type with inbuilt choice – 40 marks

Attempt any five questions out of eight. Each question carries 8 marks. Answer to each question should not exceed 5 pages.

Unit 1

The multidisciplinary nature of environmental studies

Definition, scope and importance, Need for public awareness

Unit 2

Natural Resources: Renewable and non-renewable resources:

Natural resources and associated problems.

(a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.

(b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.

(c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

(d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.

(e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.

(f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

Unit 3

Ecosystems

- Concept of an ecosystem
- Structure and function of an ecosystem
- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs and ecological pyramids
- Introduction, types, characteristic features, structure and function of the following ecosystem: Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

Unit 4

Biodiversity and its conservation

- Introduction – Definition: genetic, species and ecosystem diversity
- Biogeographical classification of India
- Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values
- Biodiversity at global, national and local levels
- India as a mega-diversity nation
- Hot-spots of biodiversity
- Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
- Endangered and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

Unit 5

Environmental Pollution

Definition

- Causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear pollution
- Solid waste management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution
- Pollution case studies
- Disaster management: floods, earthquake, cyclone and landslides

Unit 6

Social Issues and the Environment

- From unsustainable to sustainable development
- Urban problems and related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case studies.
- Environmental ethics: Issues and possible solutions
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Wasteland reclamation
- Consumerism and waste products
- Environmental Protection Act, 1986
- Air (Prevention and Control of Pollution) Act, 1981
- Water (Prevention and control of Pollution) Act, 1974
- Wildlife Protection Act
- Forest Conservation Act
- ➢ Issues involved in enforcement of environmental legislation
- ➢ Public awareness

Unit 7

Human Population and the Environment

- Population growth, variation among nations
- Population explosion – Family Welfare Programmes
- Environment and human health
- Human Rights
- Value Education
- HIV / AIDS

- Women and Child Welfare
- Role of Information Technology in Environment and Human Health
- Case Studies

Unit 8

Field Work

- Visit to a local area to document environmental assets river/forest/grassland/hill/mountain
- Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
- Study of common plants, insects, birds
- Study of simple ecosystems-pond, river, hill slopes, etc

References:

1. Bharucha, E. 2005. Textbook of Environmental Studies, Universities Press, Hyderabad.
2. Down to Earth, Centre for Science and Environment, New Delhi.
3. Heywood, V.H. & Waston, R.T. 1995. Global Biodiversity Assessment, Cambridge House, Delhi.
4. Joseph, K. & Nagendran, R. 2004. Essentials of Environmental Studies, Pearson Education (Singapore) Pte. Ltd., Delhi.
5. Kaushik, A. & Kaushik, C.P. 2004. Perspective in Environmental Studies, New Age International (P) Ltd, New Delhi.
6. Rajagopalan, R. 2011. Environmental Studies from Crisis to Cure. Oxford University Press, New Delhi.
7. Sharma, J. P., Sharma. N.K. & Yadav, N.S. 2005. Comprehensive Environmental Studies, Laxmi Publications, New Delhi.
8. Sharma, P. D. 2009. Ecology and Environment, Rastogi Publications, Meerut.
9. State of India's Environment 2018 by Centre for Sciences and Environment, New Delhi
10. Subramanian, V. 2002. A Text Book in Environmental Sciences, Narosa Publishing House, New Delhi

Bachelor of Science (Medical) Semester- III (Session 2022-23)

Course Title: PERSONALITY DEVELOPMENT (Value added)

Course Code: SECP-3512

(THEORY)

PURPOSE

To enhance holistic development of students and improve their employability skills.

INSTRUCTIONAL OBJECTIVES

- To re-engineer attitude and understand its influence on behaviour.
- To develop inter-personal skills and be an effective goal-oriented team player.
- To develop communication and problem solving skills.
- To develop professionals with idealistic, practical and moral values.

LEARNING OUTCOMES

- On completion of the course, students will be able to hone their personality by
- Realisation of the importance and incorporation of positive thinking and attitude in life
- Enhacement of self confidence and analysis of self capabilities
- Learning the different communication skills for self expression
- Effective use of time to combat stress and increase in productivity
- Enhancing personality by physical grooming and fitness
- Understanding the role of design principles and appropriateness of apparel
- Incorporating social etiquettes in daily life and conduct
- Excelling in decision making and leadership qualities

CURRICULUM

Course credits-2 **Total Contact Hours-30**

MODULE	TITLE	HOURS
1.	**Positive Thinking & Attitude**	**2**
2.	**Self Analysis & Self Confidence**	**2**
3.	**Communication Skills**	**10**
	• **Basic Communication Skills** • **Body Language** • **Interview Skills** • **Résumé Writing** • **Group Discussion** • **Telephone and E-mail etiquette**	

	• **Public Speaking**	
4.	**Time Management**	**2**
5.	**Stress and Conflict Management**	**2**
6.	**Physical Fitness and Personal Grooming**	**2**
7.	**Appropriateness of Apparel**	**2**
8.	**Social Etiquette**	**2**
9.	**Decision Making process & Problem Solving Skills** • **Leadership Skills** • **Goal Setting** • **Motivation**	**5**
10.	**Closure**	**1**

EXAMINATION

1. Total marks of the course will be 25 (Final Examination: 20 Marks; Internal Assessment: 5 Marks)
2. The pattern of the final examination will be multiple choice questions. 25 multiple choice type questions will be set. The student shall attempt 20 questions. Each question will carry 1 mark (20 X 1 = 20). Total time allotted will be 1 hour.
3. Internal Assessment will consist of Attendance: 2 Marks, Internal: 3 Marks.(Total Internal Assessment:5 Marks)

SYLLABUS

MODULE 1: Positive Thinking & Attitude

- Factors Influencing Attitude
- Essentials to develop Positive Attitude
- Challenges & lessons from Attitude

MODULE 2: Self Analysis & Self Confidence

- Who am I
- Importance of Self Confidence
- SWOT Analysis

MODULE 3: Communication Skills

(i) Basic Communication Skills

- Speaking skills
- Listening skills
- Presentation skills

(ii) Body Language

- Forms of Non-Verbal Communication
- Interpreting body language clues
- Effective use of body language

(iii) Interview Skills

- Type of Interviews
- Ensuring success in job interviews
- Appropriate use of Non-verbal Communication

(iv) Résumé Writing

- Features
- Different types of résumé for Different posts

(v) Group Discussion

- Difference between Group discussion and debate
- Importance of Group Discussion
- Group Decision
- Ensuring success in group discussions

(vi) Telephone & E-mail Etiquette

- Telephone etiquette
- E-mail etiquette

(vii) Public Speaking

- Introductory speech
- Informative speech
- Persuasive speech
- Extempore session

MODULE 4: Time Management

- Importance of time management
- Values & beliefs
- Goals and benchmarks – The ladders of success
- Managing projects and commitments
- Prioritizing your To-do's
- Getting the results you need

MODULE 5: Stress & Conflict Management

- Introduction to stress
- Types of stressors
- Small changes and large rewards
- Stress prevention
- Overcoming unhealthy worry
- Stress at home and workplace
- Dealing with frustration and anger
- Stress reducing exercises
- Understanding conflicts
- Violent and Non-violent conflicts
- Source of conflict
- Structural and cultural violence

MODULE 6: Physical Fitness and Personal Grooming

- Fitness and exercise
- Balanced & healthy diet
- Skin care & Hair care
- Make-up skills

MODULE 7: Appropriateness of Apparel

- Apparel & Personality
- Psycho-social aspects of apparel
- Style-tips for smart dressing & effective use of design elements

MODULE 8: Social Etiquette

- Civic Sense
- Workplace skills

- Meeting and greeting people
- Table Setting and table manners

<u>MODULE 9</u>: Decision Making Process and Problem Solving Skills

- Anatomy of a decision
- How to use problem solving steps and problem solving tools
- How to distinguish root causes from symptoms to identify right solution for right problems
- How to improve problem solving and decision making by identifying individual problem solving styles
- The creative process for making decisions
- Tools to improve creativity
- Implementing the decision – Wrap up

(i) Leadership Skills

- Handling peer pressure and bullies
- Team work
- Decision making
- Taking initiatives

(ii) Goal Setting

- Wish list
- SMART goals
- Blueprint for success
- Short-term, Long-term, Life-term Goals

(iii) Motivation

- Factors of motivation
- Self talk
- Intrinsic & extrinsic motivators

Books Recommended

1. Rossi, P. (2011). *Everyday Etiquette: How to navigate 101 common and uncommon social situations*. St Martins Pr.
2. Pietrzak, T.,& Fraum, M. (2005). *Building career success skills*. ASTD Press.
3. Treffinger, D.J., Isaksen, S.G., & Brian, K. (2005). *Creative problem solving: An Introduction*.
4. Carr, A. (2004). *Positive Psychology: The science of happiness and human strengths*. Burnner-Routlrdge.
5. Oberg, B.C. (1994). *Speech craft: An Introduction to public speaking*. Meriwether Publishing.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

PUNJABI

Course Title: PUNJABI (COMPULSORY)

Course Code: BSML-4421

Course Outcomes:

CO1: ‘ਪਗਡੰਡੀਆਂ’ (ਸਵੈਜੀਵਨੀ) ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਸਵੈ ਜੀਵਨੀ ਇਸ ਸਾਹਿਤ ਰੂਪ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ।

CO2: ‘ਫ਼ਾਸਲੇ’ (ਨਾਟਕ) ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਨਾਟਕ ਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਨਾਟਕ ਜਗਤ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO3: ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ ਲਿਖਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂਨੂੰ ਇਸ ਕਲਾ ਵਿਚ ਨਿਪੁੰਨ ਕਰਨਾ ਹੈ।

CO4: ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰਨ ਦਾ ਮਕਸਦ ਵਿਦਿਆਰਥੀਆਂ ਦੁਆਰਾ ਲਿਖ਼ਤ ਵਿਚ ਕੀਤੀਆਂ ਜਾਣ ਵਾਲੀਆਂ ਗਲਤੀਆਂ ਨੂੰ ਸੁਧਾਰਨਾ ਹੈ।

CO5: ਗੁਰਮੁਖੀ ਲਿਪੀ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

PUNJABI

Course Title: PUNJABI (COMPULSORY)

Course Code: BSML-4421

ਸਮਾਂ : 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਪਾਠਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਪਗਡੰਡੀਆਂ (ਸਵੈਜੀਵਨੀ) : ਡਾ.ਬਚਿੰਤ ਕੌਰ

(ਸਾਰ /ਵਿਸ਼ਾ ਵਸਤੂ) ੪ ਅੰਕ

ਯੂਨਿਟ-II

ਫ਼ਾਸਲੇ (ਨਾਟਕ) :ਜਤਿੰਦਰ ਬਰਾੜ,

(ਵਿਸ਼ਾ ਵਸਤੂ/ਸਾਰ) ੪ ਅੰਕ

ਯੂਨਿਟ-III

ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ ੪ ਅੰਕ

ਯੂਨਿਟ-IV

ਵਿਆਕਰਣ

(ੳ) ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮ

(ਅ) ਗੁਰਮੁਖੀ ਲਿਪੀ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ੪ ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨA-Dਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟI-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁਲ ਪੰਜ ਪ੍ਰਸ਼ਨਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

PUNJABI

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code: BSML-4031

Course Outcomes:

CO1: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਦੇ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਭਾਸ਼ਾ ਦੀ ਮੁੱਢਲੀ ਜਾਣਕਾਰੀ ਦੇਣ ਤੋਂ ਬਾਅਦ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਰੂ ਬ ਰੂ ਕਰਵਾਏ ਜਾਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸਾਹਿਤ ਪੜ੍ਹਨ ਲਈ ਉਤਸ਼ਾਹਤ ਕਰਨਾ ਹੈ। ਪੰਜਾਬੀ ਸਾਹਿਤ ਜਗਤ ਦੇ ਨਾਮਵਰ ਕਵੀਆਂ ਦੀਆਂ ਰਚਨਾਵਾਂ ਪੜ੍ਹ ਕੇ ਵਿਦਿਆਰਥੀ ਇਨ੍ਹਾਂ ਦੇ ਜੀਵਨ ਤੇ ਸਾਹਿਤ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

CO2: ਵੱਖੋ ਵੱਖਰੀਆਂ ਧਾਰਾਵਾਂ ਨਾਲ ਸਬੰਧਤ ਇਨ੍ਹਾਂ ਕਵੀਆਂ ਦੀਆਂ ਰਚਨਾਵਾਂ ਪੜ੍ਹ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਨਵੀਨ ਵਿਚਾਰਧਾਰਾ ਬਾਰੇ ਜਾਣਕਾਰੀ ਮਿਲੇਗੀ।

CO3: ਲੇਖ ਰਚਨਾ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO4: ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰਨ ਦਾ ਮਕਸਦ ਵਿਦਿਆਰਥੀਆਂ ਦੁਆਰਾ ਲਿਖ਼ਤ ਵਿਚ ਕੀਤੀਆਂ ਜਾਣ ਵਾਲੀਆਂ ਗਲਤੀਆਂ ਨੂੰ ਸੁਧਾਰਨਾ ਹੈ।

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

PUNJABI

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code: BSML-4031

ਸਮਾਂ: 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਪਾਠਕ੍ਰਮ

ਯੂਨਿਟ-I

ਆਤਮ ਅਨਾਤਮ (ਕਵਿਤਾ ਭਾਗ)(ਸੰਪਾਦਕ ਡਾ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਡਾ.ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)

ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

ਮੋਹਨ ਸਿੰਘ,ਜਗਤਾਰ,ਸੁਰਜੀਤ ਪਾਤਰ,ਪਾਸ਼ ਸਿਲੇਬਸ ਦਾ ਹਿੱਸਾ ਹਨ।

ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ 08 ਅੰਕ

ਯੂਨਿਟ-II

ਆਤਮ ਅਨਾਤਮ (ਕਵਿਤਾ ਭਾਗ)(ਸੰਪਾਦਕ ਡਾ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਡਾ.ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)

ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

ਮੋਹਨ ਸਿੰਘ,ਜਗਤਾਰ,ਸੁਰਜੀਤ ਪਾਤਰ,ਪਾਸ਼ ਸਿਲੇਬਸ ਦਾ ਹਿੱਸਾ ਹਨ।

(ਸਾਰ) 08 ਅੰਕ

ਯੂਨਿਟ-III

ਆਤਮ ਅਨਾਤਮ (ਕਵਿਤਾ ਭਾਗ)(ਸੰਪਾਦਕ ਡਾ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਡਾ.ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)

ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

ਮੋਹਨ ਸਿੰਘ,ਜਗਤਾਰ,ਸੁਰਜੀਤ ਪਾਤਰ,ਪਾਸ਼ ਸਿਲੇਬਸ ਦਾ ਹਿੱਸਾ ਹਨ।

(ਕਵੀਆਂ ਦੇ ਜੀਵਨ ਅਤੇ ਰਚਨਾ ਬਾਰੇ ਮੁੱਢਲੀ ਜਾਣਕਾਰੀ) 08 ਅੰਕ

ਯੂਨਿਟ-IV

ਲੇਖ ਰਚਨਾ

ਅਸ਼ੁੱਧ ਸ਼ਬਦ ਜੋੜਾਂ ਨੂੰ ਸ਼ੁੱਧ ਕਰਕੇ ਲਿਖਣਾ 08 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

Course Title: PUNJAB HISTORY AND CULTURE (FROM 1605 to 1849 A.D.)

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

Course Code: BSML-4431

Course Outcomes

After completing the paper the students will have a thorough insight into the origin of Sikh faith and its major institutions in Punjab

CO 1: Understand the adoption of new policy by Guru Hargobind and martyrdom of Guru Tegh Bahadur

CO 2: To understand the factors leading to the establishment of Khalsa Panth and its impact .

CO 3: Have deep insight into the conflict with Mughals and the rise of Banda Singh Bahadur and aftermath.

CO 4: Understand the administration under Maharaja Ranjit Singh , also the fairs, festivals and folk music of Punjab.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

Course Title: PUNJAB HISTORY AND CULTURE (FROM 1605 to 1849 A.D.)

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

Course Code: BSML-4431

Examination Time: 3 Hours **Max. Marks: 50**
Theory: 40
CA: 10

Instructions for the Paper Setters

1. Question paper shall consist of four Units

2. Examiner shall set 8 questions in all by selecting Two Questions of equal marks from each Unit.

3. Candidates shall attempt 5 questions in 600 words, by at least selecting One Question from each Unit and the 5th question may be attempted from any of the four Units.

4. Each question will carry 8 marks

UNIT I

1. Transformation of Sikhism under Guru Hargobind.

2. Martydom of Guru Teg Bahadur

UNIT II

3. Creation of Khalsa

4. Khalsa and its impact on the Punjab

UNIT III

5. Banda Bahadur and his achievements

6. Rise of Misls.

UNIT IV

7. Maharaja Ranjit Singh:- Civil, Military and Land Revenue Administration.

8. Fair, Festivals and Folk Music in the Punjab during the medieval period (Jarag, Baisakhi and Diwali)

Suggested Readings

- Chopra P.N., Puri, B.N., & Das, M.N.(1974), A Social, Cultural & Economic History of India. Vol.II, Macmillan India Limited, New Delhi.
- Grewal, J.S. (1994). The Sikhs of the Punjab, Cambridge University Press, New Delhi.

- Oxford University Press.
- Patiala: Publication Bureau, Punjabi University.
- Singh, Fauja (1972). A History of the Sikhs, Vol. III, Patiala: Punjabi University.
- Singh, Kushwant (2011). A History of the Sikhs- Vol. I (1469-1839). New Delhi:
- Singh,Kirpal (1990). History and Culture of the Punjab-Part II (Medieval Period).

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

ENGLISH

Course Title: ENGLISH (COMPULSORY)

Course Code: BSML-4212

Course Outcomes:

After passing this course, the students will be able to:

CO1: Comprehend the basics of grammatical rules governing prepositions and phrasal verbs through the study of "English Grammar in Use" by Raymond Murphy

CO 2: Develop skills to write an essay on a given topic and enhance their vocabulary through the study of "The Students' Companion" by Wilfred D. Best

CO 3: Enhance their reading and analysing power of texts through guided reading through the study of "Making Connections" by Kenneth J. Pakenham

CO4: Develop an understanding of the poems taught, relate to the socio-cultural background of England and be able to answer questions regarding tone, style and central idea through the study of the poems in the prescribes text "Moments in Time"

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

ENGLISH

Course Title: ENGLISH (COMPULSORY)

Course Code: BSML-4212

Max. Marks: 50

Examination Time: 3 Hrs **Theory: 40**

CA: 10

Instructions for the Examiner:

The paper setters should avoid questions of theoretical nature from *Making Connections*.

Section A: One question with sub-parts will be set from Unit I of the syllabus. Fifteen sentences will be set and the students would be required to attempt any ten. Each sentence will carry one mark.

(10x1=10)

Section B: Two questions will be set from Unit II of the syllabus. The students would be required to attempt one essay out of the given two topics carrying six marks (word limit 300 words). The second question will be based on vocabulary. The students would be required to write single words for phrases and sentences choosing any four out of six and each carrying one mark.

(1x6+4x1=10)

Section C: The students would be required to attempt two questions (with sub parts) based on exercises as given before and after reading essays in the prescribed text book *Making Connections*.

(2×5=10)

Section D: This section will be divided into two parts. In part one, three questions based on central idea, theme, tone and style etc. of the poems from the prescribed textbook, *Moments in Time* from Unit IV of the syllabus will be set. The students would be required to attempt any two, each carrying three marks (100 words each). **(2×3=6)**

Part two will have one question (with internal choice) requiring students to explain a stanza with reference to context carrying four marks (word limit 200 words). The stanzas for explanation will be taken from the prescribed textbook, *Moments in Time* from Unit IV in the syllabus. **(1×4=4)**

Unit I

English Grammar in Use, 4th Edition by Raymond Murphy, CUP (Units 121-145)

Unit II

Essay Writing and *The Students' Companion* by Wilfred D. Best (Section 1: Single words for phrases and sentences: Words pertaining to Government, words pertaining to Marriage, Opposites and Negatives)

Unit III

Making Connections by Kenneth J. Pakenham, 2nd Edn. CUP: Unit-IV

Unit IV

Moments in Time: Poems at Sr. No. 7-12

Texts Prescribed:

1. *English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP

2. *The Students' Companion* by Wilfred D. Best
3. *Making Connections* by Kenneth J. Pakenham, 2nd Edn. CUP
4. *Moments in Time: An Anthology of Poems*, GNDU, Amritsar

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

ZOOLOGY

Course Title: BIOCHEMISTRY

Course Code: BSMM-4483 (I)

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1. Understand the structure and functions of biologically important molecules.

CO2. Understand about enzymes, coenzymes and lipid metabolism.

CO3. Understand various processes of carbohydrate metabolism.

CO4. Gain knowledge about protein metabolism.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

ZOOLOGY

Course Title: BIOCHEMISTRY

Course Code: BSMM-4483 (I)

(THEORY)

Max. Time: 3 Hrs. **Max Marks: 30**

Instructions for the Paper Setter

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

Unit I

Biochemistry and its scope
Classification and functions of:
- Carbohydrates
- Proteins
- Lipids
- Nucleic acids

Unit II

Enzymes:
- Nature and their classification
- Coenzymes.

Lipid Metabolism:
- B-Oxidation of fatty acid
- Ketosis

Unit III

Carbohydrate Metabolism:
- Glycolysis
- Tricarboxylic acid cycle
- Hexose monophosphate shunt
- Glycogenesis
- Glycogenolysis
- Gluconeogenesis
- Oxidative Phosphorylation

Unit IV

Protein Metabolism:
- Metabolism of amino acids

Oxidative deamination
Transamination
Decarboxylation
Hydrolysis of proteins
Ornithine cycle

Suggested Reading Material:-

1. Conn, E.E., Stump. P.K. Bruening, S. and Doi R.H. (2006), Outlines of Biochemistry (5th ed), John Wiley and Sons Inc., New York.
2. Fischer, J. and Arriold, J.R.P. (2001). Instant notes in Chemistry for Biologists, Viva Books Pvt. Ltd.
3. Harper, H.A. (2018): Harper's Biochemistry (31st ed).
4. Holde, K.E.V., Johnson, W.C. and Shing, P. (2005). Principles of Physical Biochemistry Prentice Hall, Inc., USA.
5. Lehninger, A (2017). Principles of Biochemistry, (7th ed).
6. Morris, H. Best, L.R., Pattison, S., Arerna, S. (2013). Introduction to General Organic Biochemistry, (11th ed), Wadsworth Group.
7. Robert, K., Murray, Mayes Daryl, K. Granner, Victor, W., Woodwell (1990), Harper's Biochemistry, 22nd Edition, Prentice Hall International Inc.
8. Sheehan, D (2013). Physical Biochemistry: Principles and Applications – John Wiley & Sons Ltd., England.
9. Stryer, L. (2019). Biochemistry (9th ed), San Francisco W.H. Freeman.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

ZOOLOGY

Course Title: ANIMAL PHYSIOLOGY

Course Code: BSMM-4483 (II)

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1.Understand mechanism of digestion and respiration.

CO2. Have knowledge about composition of blood, blood groups, cardiac cycle and urine formation.

CO3. Understand mechanism of skeletal muscle contraction and neural integration.

CO4. Understand physiology of behavior and endocrine system.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

ZOOLOGY

Course Title: ANIMAL PHYSIOLOGY

Course Code: BSMM-4483 (II)

(THEORY)

Max. Time: 3 Hrs. **Max Marks: 30**

Instructions for the Paper Setter

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

Units I

Digestion : Digestion of dietary constituents, regulation of digestive processes and absorption. Extra and intra cellular digestion, enzymatic digestion and symbiotic digestion.

Respiration : Transport of O_2 and CO_2, Oxygen dissociation curve of haemoglobin, Bohr effect, chloride (-) shift, Haldane effect and control of breathing.

Units II

Heart : Origin and regulation of heart beat, cardiac cycle, electrocardiogram, cardiac output, Blood pressure and micro-circulation.

Blood : Composition and functions of blood and lymph. Blood clotting. Blood groups including Rh factor, haemopoiesis

Excretion : Urine formation and osmoregulation.

Units III

Muscles : Ultrastructure, chemical and physical basis of skeletal muscle contraction.

Neural Integration: Structure of neuron, resting membrane potential, Origin and propagation of impulse along the axon, synapse and myoneural function.

Units IV

Physiology of Behavior: Taxes and reflexes, instinctive and motivate learning and reasoning

Endocrine : Structure and physiology of thyroid, parathyroid, adrenal, hypothalamus, pituitary, pancreas and gonads.

Suggested Reading Material:

1. Guyton, and Hall, (2015), Text Book of Medical Physiology, 15th Edition, Elsevier.

2. Hill, R. W., Wyse, G. K. and Anderson, N. 3 edi (2012), Animal physiology, Sinauer Associate, INC. Pub. Saunderland, Massachusettes, USA.
3. Hoar, W. S. (1984), General and Comparative Physiology, Prentice Hall of India Pvt. Limited, New Delhi, India.
4. Prosser, C.L.4th Edi (1991), Comparative Animal Physiology, Satish Book Enterprise Books seller & Publishers, Agra.
5. Purves, W. K., Oriane, G. H., Space, H. C. and Salava, D. (2001), Life – The Science of Biology (6th ed), Sinauer Assoc. Inc., USA.
6. Randall, D., Burggren, K.L. and French, K. (2002), Eckert Animal Physiology: Mechanisms and Adaptations, W.H. Freeman and Company, New York.
7. Taneja, S.K. (1997), Biochemistry & Animal Physiology, Trueman Book Co.
8. Willmer, P. Stone, G. and Johnston, I (2000). Environmental Physiology of Animals, Blackwell Science.
9. Withers, P.C. (1992), Comparative Animal Physiology, Saunder College Publishing, New York.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

ZOOLOGY

Practical -IV (Related to Biochemistry and Animal Physiology)

Course Code: BSMM-4483 (P)

(PRACTICAL)

Course Outcomes:

CO1. Learn clinical procedures for blood & urine analysis.

CO2. Develop skill in simple biochemical laboratory procedures.

CO3. Skill in observing and to some extent in analysing various Biological Data.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

ZOOLOGY

Practical -IV (Related to Biochemistry and Animal Physiology)

Course Code: BSMM-4483 (P)

(PRACTICAL)

Time: 3 hrs. **Marks: 20**

Instructions for the Practical Examiners: Question paper is to set on the spot jointly by the Internal and External Examiners. Two copies of the same should be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar

1. Study of the skeleton of *Scoliodon, Rana, Varanus, Gallus* and *Oryctolagus*.
2. Identification of food stuffs: starch, glucose, proteins and fats in solution.
3. Demonstration of osmosis and diffusion.
4. Demonstrate the presence of amylase in saliva, denaturation by pH and temperature.
5. Determination of coagulation and bleeding time of blood in man/rat/rabbit.
6. Determination of blood groups of human blood sample.
7. Recording of blood pressure of man.
8. Analysis of urine for urea, chloride, glucose and uric acid.
9. Estimation of haemoglobin content.
10. Field study: Visit to a fossil Park/Lab/ Science City and submit a report / Familiarity with the local vertebrate fauna.

Guidelines for conduct of Practical Examination:

1.	Identify the given bones, make labeled sketches of their respective–views	8
2.	Write down the steps and determine the constituents in the given sample.	3
3.	Write the procedure and perform the given physiology experiment.	3
4.	Report on visit to a fossil park/lab/Science City/study of local vertebrate fauna.	2
5.	Viva-voce & Practical file.	4

Note:- Some changes can be made in the practicals depending on the availability of material.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

MICROBIOLOGY

Course Title: MICROBIAL ECOLOGY

Course Code: BSMM-4343

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the Diversity of various microbial habitats.

CO2: Understand the various microbial interactions and competition for survival in nature.

CO3: Understand the role of microorganisms in geochemical cycles, concept of microbial toxins, biofertilizers and bioinsecticides.

CO4: Understand the effluent treatment, bioremediation and bioleaching.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

MICROBIOLOGY

Course Title: MICROBIAL ECOLOGY

Course Code: BSMM-4343

(THEORY)

Time: 3 Hours **Max Marks: 100**

Theory Marks: 60

Practical Marks: 20

CA: 20

Instructions for the Paper Setters: Eight questions of equal marks are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT–I

Diversity of microbial habitats: Environmental selecting factors: - physical, chemical and biological types of microbial habitats: - atmospheric, aquatic and terrestrial environments.

UNIT–II

Microbial interactions, antagonism, commensalism, symbiosis, parasitism miscellaneous associations in nature. Competition for survival in nature (for nutrients, space, oxygen).

UNIT–III

Role of microorganisms in geochemical cycles: Carbon cycle, nitrogen cycle, phosphorus cycle and sulphur cycle, microbial toxins in the environment: Types of Microbial toxins, ecological consequences of microbial toxins as insecticidal agents, bioinsecticides, biofertilizers.

UNIT–IV

Concept of BOD and COD, Sewage and effluent treatment by primary, secondary and tertiary methods. Role of microbes in bioremediation of persistent pollutants and bioleaching of metals.

Books Recommended: (Edition of books updated)

1. Edmonds, P., 1978, Microbiology: An Environmental Perspective, MacMillan Publishing Co., Inc., New York.

2. Powar C.B. and Danginwala, H.F., 2017, General Microbiology, Volume II, 2nd ed. Himalaya Publishing House, New Delhi.
3. Sharma, P.D., 2010, Microbiology, Rastogi Publication, Meerut.
4. Pleczar, M.J., Chan, E.C.S. and Krieg N.R., 2011 (reprint), Microbiology, 2nd ed. Tata McGraw Hill Publishing Co., Ltd., New Delhi.
5. Patel, A.H., 2011, Industrial Microbiology, 2nded. Macmillan India Ltd., Delhi.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

MICROBIOLOGY

Course Title: MICROBIAL ECOLOGY

Course Code: BSMM-4343

(PRACTICAL)

Time: 3 Hours **Marks: 20**

Instructions for the practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

LIST OF PRACTICALS:

1. Isolation and enumeration of fungi from air and soil by pour plating and spread plating.
2. Determination of dissolved oxygen content (DO) of the given water sample by Titrimetric method.
3. Determination of COD of the given water sample by Titrimetric method.
4. To conduct bacteriological examination of water sample by MPN method.
5. To isolate symbiotic nitrogen bacteria from root nodules.
6. To perform crowded plate method for studying microbial interactions.
7. Determination of B.O.D.
8. Lethal effect of Ultra violet light on bacterial growth.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

CHEMISTRY

Course Title: INORGANIC CHEMISTRY

Course Code: BSMM-4084 (I)

(THEORY)

Course Outcomes:

Students will be able to

CO1: Understand the key features of coordination compounds viz. Nomenclature, Isomerism and electronic configurations of coordination compounds, have general knowledge of Chelates, Postulates of VBT.

CO2: Understand the properties and reactions of non-aqueous solvents.

CO3: Write both reduction and oxidation half reactions for a simple redox reaction, Frost and understand the Latimer Pourbaix diagram.

CO4: Understand the positions, electronic configurations, relative stability, preparation, properties, structures and characteristics of the f-block elements in the periodic table

CO5: Understand the role of metal ions and other inorganic elements in biological systems

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

CHEMISTRY

Course Title: INORGANIC CHEMISTRY

Course Code: BSMM-4084 (I)

(THEORY)

Time: 3 Hrs. **Max. Marks: 30**

Note: Instructions for the Paper Setter

Eight questions of equal marks (6 each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

Unit–I

Coordination Compounds **(10 Hrs)**

Werner's coordination theory and its experimental verification, effective atomic number concept, chelates, nomenclature of coordination compounds, isomerism in coordination compounds, valence bond theory of transition metal complexes

Non-AqueousSolvents **(5 Hrs)**

Physical properties of a solvent, types of solvents and their general characteristics, reactions in non-aqueous solvents with reference to liquid NH_3 and liquid SO_2.

Unit–II

Oxidation and Reduction **(8 Hrs)**

Use of redox potential data-analysis of redox cycle, redox stability in water, Frost, Latimer and Pourbaix diagrams

Chemistry of Lanthanide Elements **(7 Hrs)**

Electronic structure, oxidation states and ionic radii and lanthanide contraction. Electronic absorption and magnetic properties of lanthanides

Unit–III

Chemistry of Actinides **(5 Hrs)**

General features and chemistry of actinides, similarities between the later actinides and the later lanthanides. Electronic and magnetic properties of actinides and their general comparison with the lanthanide elements

Unit–IV

Bioinorganic Chemistry **(10 Hrs)**

Essential and trace elements in biological processes, metalloporphyrins and special reference to haemoglobin and myoglobin. Biological role of alkali and alkaline earth metal ions with special reference to Ca^{2+}

Books Suggested:

1. Cotton, F.A., Wilkinson, G., Gaus, P.L., Basic Inorganic Chemistry; 3rd edition, Pubs: John Wiley Sons. 1995.
2. Lee, J.D., Concise Inorganic Chemistry; 4th edition, Pubs: Chapman Hall Ltd., 1991.
3. Shriver, D.E., Alkins, P.W., Langford, C.H., Inorganic Chemistry; 4th edition, Oxford Publisher: Oxford University Press, 2006.
4. Douglas, B. McDamiel, D., Alexander, J., Concepts and Models of Inorganic Chemistry; 3rd edition, Pubs: John Wiley and Sons Inc., 1994.
5. Porterfield, W.W., Wesley, A., Inorganic Chemistry; Pubs: Addison-Wesley Publishing Company, 1984.
6. Miessler, G.L., Larr, D.A., Inorganic Chemistry; 3rd edition, Pubs: Pearson Education Inc., 2004.
7. Jolly, W.L., Modern Inorganic Chemistry; 2nd edition, Pubs: McGraw-Hill Publishing Company Limited, 1991.
8. Purcell, K.F., Kotz, J.C., Inorganic Chemistry; Pubs: W.B. Saunders Company, 1977.
9. Puri, B.R., Sharma, L.R., Kalia, K.C., Principles of Inorganic Chemistry; 30th edition, Pubs: Milestones Publisher, 2006-07.
10. Inorganic Chemistry, W.W. Porterfield Addison-Wesley.
11. Inorganic Chemistry, A.G. Sharpe, ELBS. University General Chemistry, C.N.R. Rao, Macmillan.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

CHEMISTRY

Course Title: ORGANIC CHEMISTRY

Course Code: BSMM-4084 (II)

(THEORY)

Course Outcomes:

Students will be able to

CO1: Understand structure and bonding in carboxylic acids and carboxylic acid derivatives, Compare the acidity of alcohols, phenols and acids

CO2: Understand preparations and reactions of ethers and epoxides, understand cleavages in ethers, the ring opening reactions of epoxides

CO3: Understand preparation and reactions of nitroalkanes and nitroarenes, differentiate between primary, secondary and tertiary amines, basicity of amines

CO4: Understand nomenclature, structural features, methods of formation and chemical reactions of Organomagnesium, Organolithium, Organozinc and Organocopper compounds.

CO5: Know the various methods of synthesis and compare electrophilic substitution, basicity, reactions of pyrrole, furan, thiophene and nucleophilic substitution reactions of pyridine.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

CHEMISTRY

Course Title: ORGANIC CHEMISTRY

Course Code: BSMM-4084 (II)

(THEORY)

Time: 3 Hrs. **Max. Marks: 30**

Note: Instructions for the Paper Setter

Eight questions of equal marks (6 each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

Unit–I

Carboxylic Acids **(8 Hrs)**

Nomenclature, structure and bonding, physical properties, acidity of carboxylic acids, effects of substituents on acid strength.Reactions of carboxylic acids.Hell-Volhard-Zelinskyreaction.Synthesis of acid chlorides, esters and amides.Reduction of carboxylic acids.Mechanism of decarboxylation.

Carboxylic Acids Derivatives **(7 Hrs)**

Structure and nomenclature of acid chlorides, esters, amides and acid anhydrides, Relative stability and reactivity of acyl derivatives.Physical properties, interconversion of acid derivatives by nucleophilic acyl substitution.Preparation of carboxylic acid derivatives, chemical reactions.Mechanisms of esterification and hydrolysis (acidic and basic).

Unit–II

Ethers and Epoxides **(5 Hrs)**

Nomenclature of ethers and methods of their formation, physical properties.Chemical reaction- cleavage and autoxidation, Ziesel'smethod.Synthesis of epoxides. Acid and base-catalyzed ring opening of epoxides, orientation of epoxide ring opening, reactions of Grignard and organolithium reagents with epoxides.

Unit-III

Organic Compounds of Nitrogen **(10 Hrs)**

Preparation of nitroalkanes and nitroarenes.Chemical reactions of nitroalkanes, Mechanisms of nucleophilc substitution in nitroarenes and their reduction in acidic, neutral and alkaline media.Reactivity, Structure and nomenclature of amines, Methods of preparation of amines by Reductive amination of aldehydic and ketonic compounds, Gabriel-phthalimide reaction and Hoffmann bromamide

reaction.Physicalproperties.Stereochemistry of amines.separation of a mixture of primary, secondary and tertiary amines. Structural features affecting basicity of amines. Amine salts as phase-transfer catalysts.

Unit–IV

Organometallic Compounds (7 Hrs)

Organomagnesium Compounds: The Grignard reagentsformation, structure and chemical reactions.Organolithium Compounds: Formation and chemical reactions.Organozinc and Organo copper Compounds: Nomenclature, structural features, Methods of formation and chemical reactions.

Heterocyclic Compounds (8 Hrs)

Introduction: Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine. Methods of synthesis and chemical reactions with particular emphasis on the mechanism of electrophilic substitution.Mechanism of nucleophilic substitution reactions in pyridine derivatives.Comparison of basicity of pyridine, piperidine and pyrrole.

Book Suggested:

1. Morrison, R.T., Boyd, R.N., Organic Chemistry; 6th edition, Pubs: Prentice-Hall, 1992.
2. Wade Jr., L.G., Singh, M.S., Organic Chemistry; 6th edition, Pubs: Pearson Education, 2008.
3. Mukherji, S.M., Singh, S.P., Kapoor, R.P., Organic Chemistry; Pubs: Wiley Eastern Limited, 1985, Vol.I, II, III.
4. Solomons, T.W., Fryhle, C.B., Organic Chemistry; 9th edition, Pubs: Wiley India, 2007.
5. Carey, F.A., Organic Chemistry; 4th edition, Pubs: McGraw-Hill, 2000.
6. Streitwieser, A., Clayton, Jr., Heathcock, H., Introduction to Organic Chemistry; 3rd edition, Pubs: Macmillan Publishing Company, 1989.
7. Introduction to Organic Chemistry, Sireitwieser, Heathcock and Kosover, Macmilan.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

CHEMISTRY

Course Title: CHEMISTRY PRACTICAL

Course Code: BSMM-4084 (P)
(PRACTICAL)

Course Outcomes:

Students will be able to analyze the given organic compound through

CO1: Understand the basics of Qualitative analysis

CO2: Detection of elements (N, S and halogens) in organic compounds.

CO3: Detection of functional groups (phenolic, carboxylic, carbonyl, esters, carbohydrates, amines, amides, nitro and anilide) in simple organic compounds

CO4: Preparation of their derivatives

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

CHEMISTRY

Course Title: CHEMISTRY PRACTICAL

Course Code: BSMM-4084 (P)
(PRACTICAL)

Duration: 3½ hrs. **Max. Marks: 20**

Instruction for practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same should be submitted for the record to COE office, Kanya Maha Vidyalaya, Jalandhar.

Qualitative Analysis

Detection of elements: N, S and halogens

Detection of functional groups: phenolic, carboxylic, carbonyl, esters, carbohydrates, amines, amides, nitro and anilide in simple organic compounds and preparing their derivatives.

Practical Examination

1) Detection of Elements, functional group and derivative preparation	15
2) Viva-Voce	03
3) Note Book	02

Book Suggested:

1. Experimental Organic Chemistry, Vol. I and II, P.R. Singh, D.S. Gupta and K.S. Bajpai, Tata McGraw Hill.
2. Laboratory Manual in Organic Chemistry, R.K. Bansal, Wiley Eastern.
3. Vogel's Textbook of Practical Organic Chemistry, B.S. Furniss, A.J. Hannaford, V. Rogers, P.W.G. Smith and A.R. Tatchell, ELBS.
4. Experiments in General Chemistry, C.N.R. Rao and U.C. Aggarwal, East-West Press.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

BOTANY

Course Title: DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS-I

Course Code: BSMM-4075 (I)

(THEORY)

Course Outcomes:

After passing this course the student will develop:

CO1: Understanding of characters of seed plants, origin and evolution of seed habit, angiosperms and gymnosperms

CO2: Understanding of general characters of gymnosperms, their classification and evolution including fossil and living gymnosperms.

CO3: Understanding of morphology of vegetative and reproductive parts of *Pinus* and *Cycas*

CO4: Understanding of morphology of vegetative and reproductive parts of *Ephedra* and *Ginkgo*

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

BOTANY

Course Title: DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS-I

Course Code: BSMM-4075 (I)

(THEORY)

Time: 3 Hrs **Max. Marks: 30**

Instructions for the Paper Setters:

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

Unit–I

Characteristics of seed plants; Evolution of the seed habit; Distinguishing features of angiosperms and gymnosperms. Angiosperms: Origin and evolution. Some examples of primitive angiosperms.

Unit–II

General features of gymnosperms and their classification; evolution and diversity of Gymnosperms including fossil and living gymnosperms; Geological time scale and fossilization.

Unit–III

Morphology of vegetative and reproductive parts; Anatomy of root, Stem and leaf; reproduction and life cycle of *Pinus*, *Cycas*.

Unit–IV

Morphology of vegetative and reproductive parts; Anatomy of root, Stem and leaf; reproduction of life cycle of *Ephedra* and *Ginkgo*.

Suggested Readings: -

1. Bhatnagar, S.P. and Moitra, A. (1996). Gymnosperms, New Age International Limited, New Delhi.
2. Gifford, E.M. and Foster, A.S. (1988). Morphology and Evolution of Vascular Plants, W.H. Freeman& Company, New York.
3. Pellant, C. (1994). Fossils, Dragon's World, Great Britain
4. Sporne, K.R. (1965). The Morphology of Gymnosperms, Hutchinson & Co. (Publishers) Ltd., London.
5. Taylor, T. N., Taylor, E. L. and Krings, M. (2008). Paleobotany: The Biology and Evolution of Fossil Plants (2nd Edition). Elsevier Inc. Netherlands.
6. Vashistha, P. C. (2016). Botany for degree students. S. Chand and Company, New Delhi.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

BOTANY

Course Title: DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS-II

Course Code: BSMM-4075 (II)

(THEORY)

Course Outcomes:

After passing this course the student will develop:

CO1: Plant description, describe the morphological and reproductive stretch of plant and also identify the different families.

CO2: Understanding of Botanical Nomenclature, classification of angiosperms and Salient features of the systems proposed by Bentham and Hooker, Engler and Prantl

CO3: Understanding diversity of flowering plants in families like Ranuculaceae, Brassicaceae, Rutaceae, Fabaceae, Apiaceae, Acanthaceae.

CO4: Understanding diversity of flowering plants in families like Apocynaceae, sclepiadaceae, Solanaceae, Lamiaceae, Chenopodiaceae, Euphorbiaceae, Liliaceae, Orchidaceae and Poaceae.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

BOTANY

Course Title: DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS-II

Course Code: BSMM-4075 (II)

(THEORY)

Time: 3 Hrs **Max. Marks: 30**

Instructions for the Paper Setters:

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

Unit–I

Angiosperm taxonomy; Brief history, Aims and fundamental components (alpha-taxonomy, Omega-taxonomy, Holotaxonomy); Identification, keys. Taxonomic literature. Botanical nomenclature: Taxonomic ranks; Type concept; Principle of priority.

Unit–II

Major contribution of cytology, Phytochemistry and taximetrics to taxonomy. Classification of angiosperms; Salient features of the systems proposed by Bentham and Hooker, Engler and Prantl

Unit–III

Diversity of flowering plants as illustrated by members of the families Ranuculaceae, Brassicaceae, Rutaceae, Fabaceae, Apiaceae, Acanthaceae.

Unit–IV

Diversity of flowering plants as illustrated by members of the families Apocynaceae, Asclepiadaceae, Solanaceae, Lamiaceae, Chenopodiaceae, Euphorbiaceae, Liliaceae, Orchidaceae and Poaceae.

Suggested Readings: -

1. Bendre, A. (2007). Practical Botany, Rastogi Publications, Meerut.
2. Davis, P.H. and Heywood, V.H. (1963). Principles of Angiosperm Taxonomy, Oliver and Boyd, London.
3. Gifford, E.M. and Foster, A.S. (1988). Morphology and Evolution of Vascular Plants, W.H. Freeman & Company, New York.
4. Jeffrey, C. (1982). An Introduction to Plant Taxonomy, Cambridge University Press, Cambridge, London.

5. Jones, S.B., Jr. and Luchsinger, A.E. (1986). Plant Systematics (2nd edition). McGraw- Hill Book Co., New York.
6. Radford, A.E. (1986). Fundamental of Plant Systematics, Harper and Row, New York

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

BOTANY

Course Title: PRACTICAL-DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS-I&II

Course Code: BSMM-4075 (P)

(PRACTICAL)

Course Outcomes:

After passing this course the student will able to:

CO1: Identify different plants from different families through their vegetative and reproductive characters.

CO2: Understanding different types of placentation system.

CO3: Understanding morphology and anatomy of *Cycas* and *Pinus*.

CO4: Understanding morphology and anatomy of *Ephedra* and *Ginkgo*.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

BOTANY

Course Title: PRACTICAL-DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS-I&II

Course Code: BSMM-4075 (P)

(PRACTICAL)

TIME: 3Hours **Practical: 20**

Instructions for the paper setter: question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Suggested Laboratory Exercises

1. Angiosperms The following species are suitable for study.

2. This list is only indicative. Teachers may select plants available in their locality. Teachers may select plants/material available in their locality/institution.

1. Ranunculaceae: *Ranunculus, Delphinium*

2. Brassicaceae: *Brassica, Alyssum, Iberis, Coronopus.*

3. Malvaceae*: Hibiscus, Abutilon.*

4. Rutaceae: *Murraya, Citrus*.

5. Fabaceae: Faboideae: *Lathyrus, Cajanus, Melilotus, Trigonella,* Caesalpinioideae*: Cassia, Caesalpinia*, Mimosoideae: *Prosopis, Mimosa, Acacia*.

6. Apiaceae: *Coriandrum. Foeniculum, Anethum*.

7. Acanthaceae: *Adhatoda, Peristrophe*.

8. Apocynaceae: *Vinca, Thevetia, Nerium.*

9. Asclepiadaceae: *Calotropis*.

10. Solanaceae: *Solanum, Withania, Datura*.

11. Euphorbiaceae: *Euphorbia, Phyllanthus*.

12. Lamiaceae: *Ocimum, Salvia*.

13. Chenopodiaceae: *Chenopodium, Beta*.

14. Liliaceae: *Asphodelus, Asparagus*.

15. Poaceae: *Avena, Triticum, Hordeum, Poa, Sorghum*.

The students should be made familiar with the use of identification keys including use of computers in taxonomy. The teachers should prevent students from collecting plants from the wild and submitting them for the practical examination. Instead, the student should be asked to prepare field reports.

Gymnosperms

Cycas (i) Habit, armour of leaf bases on the stem (if specimen is not available show Photography), very young leaf (circinate vernation) and old foliage leaves, scale leaf, bulbils, male cone (specimen); Microsporophyll, megasporophyll mature seed. (ii) Study through permanent slides—normal root (T.S.), stem (T.S.) (if sections are not available show photographs), ovule (L.S.). (iii) Study through hand sections or dissections-coralloid root (T.S.), rachis (T.S.), leaflet (V.S.), microsporophyll (V.S.), pollen grains (W.M.).

Pinus (i) Habit, long and dwarf shoot showing cataphylls and scale leaves, T.S. wood showing growth rings, male cone, 1st year, 2nd year and 3rd year female cones, winged seeds. (ii) Study through permanent slides-root (T.S.), female cone (L.S.) ovule (L.S.), embryo (W.M.) showing polycotyledonous condition. (iii) Study through hand sections or dissections-young stem (T.S.), old stem (wood) (T.L.S. and R.L.S.), needle (T.S. male cone (L.S.), male cone (T.S.), Pollen grains (W.M.).

Ephedra (i) Habit and structure of whole and female cones. (ii) Permanent slides-female cone (L.S.). (iii) Hand sections/dissections-node (L.S.), internode (T.S.), macerated stem to see vessel structure; epidermal peel mount of vegetative parts to study stomata, male cone (T.S. and L.S.), Pollen grains.

Ginkgo (i) Habit and structure of whole plant. (ii) Permanent slides-male and female reproductive parts. (iii) Pollen grains

Suggested Readings:

1. Angiosperm Phylogeny Group (2003). An update of the Angiosperm Phylogeny Group Classification for the orders and families of the flowering plants: APG
2. Botanical Journal of the Linnaean Society 141: 399-436. 2. Cronquist, A. (1981). An Integrated System of Classification of Flowering Plants. Columbia University Press, New York.
3. Simpson, M.C. (2006). Plant Systematics. Elsevier, Amsterdam

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

FOOD SCIENCE AND QUALITY CONTROL (VOCATIONAL)

Course Title: QUALITY ASSURANCE

Course Code: BSMM-4255

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the quality control in food industry and quality attributes.

CO2: Learn about quality assessment methods in different food industries.

CO3: Understand the sampling techniques and sensory evaluation of food.

CO4: Understand the concept of HACCP, GMP and food laws and regulations.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

FOOD SCIENCE AND QUALITY CONTROL (VOCATIONAL)

Course Title: QUALITY ASSURANCE

Course Code: BSMM-4255

(THEORY)

Examination Time: 3 Hours

Max. Marks: 100

Theory Marks: 60

Practical Marks: 20

CA: 20

Instructions for the Paper Setter: Eight questions of equal marks (12 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

1. Objectives, importance and functions of quality control
2. Quality attributes
3. Quality control in food industry-methods of evaluation and control of the various aspects of quality of raw materials, manufacturing process and the testing of finished products.

UNIT-II

4. Methods of quality assessment of food materials: fruits, vegetables, cereals, dairy products, meat, egg and processed products.
5. Color: Definition, importance, different color measuring instruments used in food industries.
6. Texture: Definition, importance, different texture analyzing instruments used in food industries to analyze texture.

UNIT-III

7. Sampling, specifications of raw materials and finished products
8. Sensory evaluation.

UNIT-IV

9. Concept of HACCP and GMP.
10. Food Laws and Regulations- FSSAI, AGMARK, FPO, PFA, MFPO, BIS, ISO.

Recommended Books:

1. Quality Control for Food Industry by A. Kramer and B.A. Twigg
2. Handbook of analysis and quality control for fruits and vegetable products by S. Ranganna
3. Food Science by N.N. Potter (Online Available) https://hostnezt.com/cssfiles/gsa/Food%20Science%205th%20Ed%20By%20Norman%20Potter.pdf

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

FOOD SCIENCE AND QUALITY CONTROL (VOCATIONAL)

Course Title: QUALITY ASSURANCE

Course Code: BSMM-4255

(PRACTICAL)

Time: 3 hours **Marks: 20**

Instructions for the practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE office, Kanya Maha Vidyalaya, Jalandhar.

List of Practicals

1. Determination of acidity and pH of milk.
2. Platform tests for determining the quality of milk.
3. Determination of cooking quality of rice.
4. Determination of iodine value of oil/fat.
5. Determination of saponification value of oil/fat.
6. Determination of reducing and non-reducing sugars.
7. Determination of interior and exterior quality of eggs.
8. Determination of alcoholic acidity of flour.
9. Adulterants in milk, cereals, oils and fats and their detection.
10. Cut out analysis of canned fruits and vegetables.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

Course Title: SOCIAL OUTREACH PROGRAMME

Course Code: SECS- 4522

Course Objectives:

- The Social outreach program proposes to equip the students for community upliftment work.
- It will strive to prepare citizens who will make a marked difference in society.
- The students will be provided with numerous opportunities to build their knowledge and skills on the fundamental values of social fairness and compassion.
- The program will focus on integrating academic work with community services

Learning Outcomes:

Upon successful completion of this course, students will be able to

- Connect the knowledge gained in the classroom with real-life situations by getting hands-on experience through community services.
- Get an opportunity to engage in social service. It will also foster the development of civic responsibility.
- Reflect upon larger issues that affect communities through readings and discussions.
- Integrate academic learning and community engagement through practical fieldwork.
- Develop awareness, knowledge, and skills for working with diverse groups in society.

Curriculum

The curriculum involves two aspects:

A. Students will be introduced to various broad areas in which they can take up projects

B. The students are expected to be actively engaged in working on any of the project areas listed below as volunteers. Evaluation will be based on consistency, commitment, and results achieved in the areas taken up.

MODULE	TOPIC	HOURS
1.	Sensitizing the students towards Social Issues	3
2.	Collaborating with NGOs	1
3.	Social Extension in villages & literacy drive	1
4.	NSS, Swatch Bharat, Unnat Bharat	1

5.	Projects related to Environmental issues/NCC	1
6.	Setting up Empathy Corners	1
7.	Food Adulteration and Medical Camps	1
8.	Medical Camp/ Adulteration Camp / Science Awareness Camp in Villages	1
Total Hours of interactive Sessions		10
Hours for Project Work:		20

List of Projects Areas under Social Outreach Program:

- Working as Motivators under the Swatch Bharat Campaign of the Government,
- Literacy drive: (i) Teaching in the Charitable School Adopted by the College
  (ii) Work on projects undertaken by the Rotary Club of Jalandhar for inducting students into child labor Schools.
- Enroll as NSS Volunteers for various projects (Cleanliness, Women's health awareness)
- Counseling camps in villages
- Tree plantation (i) Maintaining the trees in the park adopted by the college in Vikas Puri, Jalandhar
  (ii)Enroll in projects undertaken by JCI Jalandhar City
- Enroll in the Gandhian Studies Centre as a Student Volunteer for surveys in villages.
- Women Empowerment Programmes in collaboration with JCI Jalandhar Grace
- Generating awareness on voting among the youth.
- Drug Abuse (Generate awareness among the school children)
- Environment Awareness (Reduce Pollution, Plant trees, and work as water warriors)
- Visit Old Age Homes/Orphanages
- Operating the Empathy Corner outside the college gate and setting up empathy corners in Villages.
- Help in Disaster Management/Relief Work

- Organize Food Adulteration and Medical Camps in Villages
- Organize Science Awareness Camps in Villages

Evaluation /Assessment:

- At the beginning of the semester, the students after enrolling for one of the Projects offered will be given deadlines for the project.
- Students will be responsible for recording their hours of service with the faculty and also map the progress of their subjects (children, old people, saplings, etc.).
- The respective departments will monitor the involvement of their students.
- The students will submit a report of the project taken up by them.
- There will be no written examination, The students will be given a grade based on the evaluation of the projects by an evaluation committee, comprising of the Dean of the respective streams, the Head, and two teachers of the concerned department.

Total Marks: 25 (Internal Assessment: 5 and Project Report: 20)

Internal Assessment based on the attendance during the Lectures

Project Report based on the work done by the student.

Total marks: 25 converted to grade for final result

Grading system:

90% marks & above: A grade

80% - 89% marks: B grade

70% - 79% marks: C grade

60% - 69% marks: D grade

50% - 59% marks: E grade

Below 50% marks: F grade (Fail – To repeat Project)

Bachelor of Science (Medical) Semester- V (Session 2022-23)

PUNJABI

Course Title: PUNJABI (COMPULSORY)

Course Code: BSML-5421

Course Outcomes

CO1: ਚੋਣਵੀਆਂ ਪੰਜਾਬੀ ਕਹਾਣੀਆਂ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਹਾਣੀਆਂ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ।

CO2: ਨਾਵਲ ਏਹੁ ਹਮਾਰਾ ਜੀਵਣਾ (ਦਲੀਪ ਕੌਰ ਟਿਵਾਣਾ) ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਨਾਵਲ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਇਸ ਸਾਹਿਤ ਰੂਪ ਨਾਲ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO3: ਪੈਰ੍ਹਾ ਰਚਨਾ ਕਰਨ ਨਾਲ ਵਿਦਿਆਰਥੀ ਆਪਣੀ ਗੱਲ ਨੂੰ ਕਹਿਣ ਦੀ ਜਾਚ ਸਿੱਖਣਗੇ ਅਤੇ ਇਹ ਦਿਮਾਗੀ ਕਸਰਤ ਵਿਚ ਸਹਾਈ ਹੋਵੇਗੀ।

CO4: ਸਰਲ ਅੰਗਰੇਜ਼ੀ ਪੈਰ੍ਹੇ ਦਾ ਪੰਜਾਬੀ ਵਿਚ ਅਨੁਵਾਦ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO5: ਵਾਕਾਤਮਕ ਜੁਗਤਾਂ : ਮੇਲ ਤੇ ਅਧਿਕਾਰ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

Bachelor of Science (Medical) Semester- V (Session 2022-23)

PUNJABI

Course Title: PUNJABI (COMPULSORY)

Course Code: BSML-5421

ਸਮਾਂ : 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਭਾਠ ਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਚੋਣਵੀਆਂ ਪੰਜਾਬੀ ਕਹਾਣੀਆਂ
(ਸੰਪਾ.ਡਾ.ਰਮਿੰਦਰ ਕੌਰ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ, 2018)

ਲੇਖਕ	ਕਹਾਣੀ	ਕਹਾਣੀ ਸੰਗ੍ਰਹਿ
ਅਜੀਤ ਕੌਰ	ਨਿਊ ਯੀਅਰ	ਮੌਤ ਅਲੀ ਬਾਬੇ ਦੀ
ਜਿੰਦਰ	ਸੌਰੀ	ਜਖ਼ਮ
ਸੁਖਜੀਤ	ਹਜ਼ਾਰ ਕਹਾਣੀਆਂ ਦਾ ਬਾਪ	ਮੈ ਇੰਜੁਆਏ ਕਰਦੀ ਹਾਂ
ਜ਼ਤਿੰਦਰ ਹਾਂਸ	ਰਾਹੂ ਕੇਤੂ	ਈਸ਼ਵਰ ਦਾ ਜਨਮ
ਪ੍ਰੇਮ ਪ੍ਰਕਾਸ਼	ਅਰਜਨ ਛੇੜ ਗਡੀਰਨਾ	ਕੁਝ ਅਣਕਿਹਾਵੀ
ਚੰਦਨ ਨੇਗੀ	ਹਰਖ ਸੋਗ	ਹਰਖ ਸੋਗ
ਜਸਵਿੰਦਰ ਸਿੰਘ	ਖੂਹ ਖਾਤੇ	ਖੂਹ ਖਾਤੇ
ਗੁਰਦੇਵ ਸਿੰਘ ਰੁਪਾਣਾ	ਸ਼ੀਸ਼ਾ	ਸ਼ੀਸ਼ਾ ਅਤੇ ਹੋਰ ਕਹਾਣੀਆਂ

(ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ) 8 ਅੰਕ

ਯੂਨਿਟ-II

ਨਾਵਲ : ਏਹੁ ਹਮਾਰਾ ਜੀਵਣਾ(ਦਲੀਪ ਕੌਰ ਟਿਵਾਣਾ)
(ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ) 8 ਅੰਕ

ਯੂਨਿਟ-III

ਲਗਪਗ 200 ਸ਼ਬਦਾਂ ਵਿਚ ਪੈਰ੍ਹਾ ਰਚਨਾ

ਸਰਲ ਅੰਗਰੇਜ਼ੀ ਪੈਰ੍ਹੇ ਦਾ ਪੰਜਾਬੀ ਵਿਚ ਅਨੁਵਾਦ 8 ਅੰਕ

ਯੂਨਿਟ-IV

ਵਿਆਕਰਣ :
(ੳ) ਨਾਂਵ ਵਾਕੰਸ਼
(ਅ) ਮੇਲ ਤੇ ਅਧਿਕਾਰ 8 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

Bachelor of Science (Medical) Semester- V (Session 2022-23)

Basic Punjabi

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code: BSML-5031

Course Outcomes

CO1: ਇਹ ਪਰਚਾ ਵੀ ਸਿਧਾਂਤਕ ਤੇ ਵਿਹਾਰਕ ਗਿਆਨ ਦਾ ਸੁਮੇਲ ਹੈ।

CO2: ਇਸ ਰਾਹੀਂ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੁਰਾਤਨ ਪੰਜਾਬੀ ਲੋਕ ਨਾਚ,ਲੋਕ ਕਲਾਵਾਂ, ਲੋਕ ਗੀਤਾਂ ਨੂੰ ਸਮਝਣ ਦੇ ਕਾਬਲ ਬਣਾਉਣ ਦਾ ਯਤਨ ਹੈ ।

CO3: ਇਨ੍ਹਾਂ ਦੇ ਅਧਿਐਨ ਦੇ ਮਾਧਿਅਮ ਰਾਹੀਂ ਵਿਦਿਆਰਥੀ ਪੁਰਾਤਨ ਲੋਕਾਂ ਦੇ ਜੀਵਨ ਨੂੰ ਸਮਝ ਸਕਣਗੇ ਕਿਉਂਕਿ ਆਪਣੀਆਂ ਜੜ੍ਹਾਂ ਦੀ ਪਛਾਣ ਕਰ ਸਕਣ ਦੇ ਬਗੈਰ ਕੋਈ ਵੀ ਕੌਮ ਜਾਂ ਲੋਕ ਆਪਣਾ ਵਰਤਮਾਨ ਜੀਵਨ ਚੰਗੀ ਤਰ੍ਹਾਂ ਬਿਤਾ ਸਕਣ ਦੇ ਸਮਰੱਥ ਨਹੀਂ ਹੋ ਸਕਦੇ।

CO4: ਸਿਧਾਂਤ ਪੱਧਰ ਦੇ ਗਿਆਨ ਤੋਂ ਬਾਦ ਇਸ ਗਿਆਨ ਦੇ ਆਧਾਰ ਤੇ ਪੁਰਾਤਨ ਲੋਕ ਗੀਤਾਂ ਜਾਂ ਲੋਕ ਕਹਾਣੀਆਂ ਦਾ ਵਿਹਾਰਕ ਅਧਿਐਨ ਕਰ ਸਕਣ ਦੇ ਸਮਰੱਥ ਬਣਾ ਸਕਣਾ ਹੈ।

CO5: ਇਸ ਪਰਚੇ ਦਾ ਯਤਨ ਨਿਸਚੈ ਹੀ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਆਪਣੀਆਂ ਜੜ੍ਹਾਂ ਪ੍ਰਤੀ ਸੁਚੇਤ ਕਰਨ ਤੇ ਯਤਨ ਨਾਲ ਸੰਬੰਧਿਤ ਹੈ।

Bachelor of Science (Medical) Semester- V (Session 2022-23)

Basic Punjabi

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code: BSML-5031

ਸਮਾਂ : 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਪਾਠਕ੍ਰਮ

ਯੂਨਿਟ-I

ਸਾਹਿਤ ਅਤੇ ਲੋਕ ਸਾਹਿਤ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ)
ਲੋਕ ਕਾਵਿ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ)
ਲੋਕ ਵਾਰਤਕ ਬਿਰਤਾਂਤ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ) 08 ਅੰਕ

ਯੂਨਿਟ-II

ਸੁਹਾਗ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ)
ਘੋੜੀਆਂ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ)
ਸਿੱਠਣੀਆਂ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ) 08 ਅੰਕ

ਯੂਨਿਟ-III

ਗਿੱਧਾ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ)
ਭੰਗੜਾ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ)
ਝੂਮਰ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ) 08 ਅੰਕ

ਯੂਨਿਟ-IV

ਲੋਕ ਖੇਡਾਂ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ)
ਲੋਕ ਤਮਾਸ਼ੇ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ)
ਲੋਕ ਕਲਾਵਾਂ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ) 08 ਅੰਕ

ਅੰਕਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ। ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।

2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।

3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕ ਹਨ।

4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

Bachelor of Science (Medical) Semester- V (Session 2022-23)

Punjab History & Culture

Course Title: Punjab History & Culture (From 1849-1947 A.D.)

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

Course Code: BSML-5431

Course outcomes

After completing the course students will be able to understand:

CO1: The causes that led to war between the British and Sikhs that led to the annexation of the Punjab and how the region was put under the control of Board of Administration

CO2: Various agrarian, industrial and educational policies introduced by the British in Punjab.

CO3: Analyse and evaluate the socio-religious reforms movements of Punjab

CO4: Factors that led to Gurudwara reform movement and various other freedom struggle movements in which the Punjab played a prominent role

Bachelor of Science (Medical) Semester- V (Session 2022-23)

Punjab History & Culture

Course Title: Punjab History & Culture (From 1849-1947 A.D.)

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

Course Code: BSML-5431

Examination Time: 3 Hours **Max. Marks: 50**

Theory: 40

CA: 10

Instructions for the Paper Setters

1. Question paper shall consist of four Units

2. Examiner shall set 8 questions in 600 words by selecting Two Questions of equal marks from each Unit.

3. Candidates shall attempt 5 questions in all, by at least selecting One Question from each Unit and the 5th question may be attempted from any of the four Units.

4. Each question will carry 8 marks

Unit- I

1. First Anglo-Sikh War.

2. Annexation of Punjab and Board of Administration

Unit-II

3. British Policy towards agriculture and industry

4. Spread of modern education

Unit-III

5. Socio- religious reform movements: Namdhari, Singh Sabha, AryaSamaj and Ad Dharm

6. Gadhar Movement

Unit-IV

7. Gurdwara Reform Movement

8. Contribution to freedom struggle: Jallianwala Bagh tragedy; Non-cooperation and Quit India Movement.

Suggested Readings

- Chopra, P.N.& Das, M.N. (1974), *A Social, Cultural & Economic History of India.* Vol.III, Macmillan India, 1974.
- Grewal, J.S., *The Sikhs of the Punjab*, New Cambridge House, New Delhi, 2005.
- Mittal, S.C, *Freedom Movement in the Punjab (1905-29),* Concept Publishing Company Delhi, 1977.
- Rai, Satya. M (1978), *Heroic Tradition in the Punjab (1900-1947*). Punjabi University, Patiala, 1978.
- Saini B. S, *The Social & Economic History of the Punjab 1901-1939,* EssEss Publications, Delhi, 1975.
- Singh, Fauja, *Freedom Struggle in the Punjab*, Publication Bureau, Punjabi University, Patiala, 1974.
- Singh, Fauja, *History and Culture of the Punjab*, Part II, Publication Bureau, Punjabi University, Patiala, 1987.
- Singh,Kushwant , *A History of the Sikhs*. Vol. II (1839-1998), Oxford University Press, Delhi, 1991.

Bachelor of Science (Medical) Semester- V (Session 2022-23)

ENGLISH

Course Title: ENGLISH (COMPULSORY)

Course Code: BSML-5212

Course Outcomes:

After passing this course, the students will be able to:

CO 1: Analyze and appreciate the dramatic technique, plot development and art of characterisation in the prescribed play, "All My Sons" by Arthur Miller

CO 2: Widen their knowledge about various literary devices used in poetry such as tone, style, imagery, figures of speech, symbolism etc. thorough the study of prescribed poems from the text "Poems of Nature and Culture"

CO 3: Develop the knowledge, skills and capabilities for effective business writing such as formal letter writing, job application and resume writing

Bachelor of Science (Medical) Semester- V (Session 2022-23)

ENGLISH

Course Title: ENGLISH (COMPULSORY)

Course Code: BSML-5212

Examination Time: 3 Hrs **Max. Marks: 50**

Theory: 40

CA: 10

Instructions for the Examiner:

Section A: Three questions from the play *All My Sons* from Unit I and three questions from *Poems of Nature and Culture* from Unit II requiring very short answers will be set. The students would be required to answer any five, each carrying two marks (50 words each).

(5x2=10)

Section B: Four questions requiring brief descriptive answers based on character, tone, plot and theme(s) in the play *All My Sons* from Unit I will be set and the students would be required to attempt any two, each carrying five marks (250 words each). **(2x5= 10)**

Section C: Four questions based on the central idea, theme, tone or style etc. of the prescribed poems from the textbook, *Poems of Nature and Culture* from Unit II will be set for the students to attempt any two of these, each carrying five marks (250 words each). The questions can also be set based on stanzas with reference to context. **(2x5= 10)**

Section D: Two questions with internal choice will be set based on (a) formal letter (b) Job application and Resume Writing, each carrying five marks. **(2x5=10)**

Unit I

All My Sons by Arthur Miller

Unit II

Poems of Nature and Culture

William Wordsworth: The World is Too Much with Us

Gordon Lord Byron: She Walks in Beauty

P.B. Shelly: Ozymandias

Alfred Lord Tennyson: In Memoriam

Mathew Arnold: Dover Beach

Wilfred Owen: Strange Meeting

Robert Graves: The Portrait

W.H. Auden: The Unknown Citizen

Ted Hughes: The Thought-Fox

Sylvia Plath: Mirror

Rabindranath Tagore: False Religion

Nissim Ezekiel: Night of Scorpion

Unit III

Formal letter, Job Application and Resume Writing

Texts Prescribed:

1. *All My Sons* by Arthur Miller
2. *Poems of Nature and Culture*, Guru Nanak Dev University, Amritsar
3. *Oxford Guide to Effective Writing and Speaking* by John Seely.

Bachelor of Science (Medical) Semester- V (Session 2022-23)

ZOOLOGY

Course Title: Developmental Biology

Course Code: BSMM-5483 (I)

(THEORY)

Course Outcomes

After successfully completing this course, students will be able to:

CO1: Understand the key events in early embryological development like gametogenesis, fertilization and parthenogenesis.

CO2: Explain the process of cleavage, gastrulation, determination and differentiation.

CO3: Elaborate the development of frog, its metamorphosis and chick up to three germ layers.

CO4: Describe the development of rabbit, formation of foetal membranes and placenta.

Bachelor of Science (Medical) Semester- V (Session 2022-23)

ZOOLOGY

Course Title: Developmental Biology

Course Code: BSMM-5483 (I)

(THEORY)

Examination Time: 3 Hrs. **Max Marks: 30**

Instructions for the Paper Setter

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

Gametogenesis with particular reference to differentiation of spermatozoa, vitellogenesis; role of

follicle/subtesticular cells in gametogenesis

Egg maturation; egg membranes; polarity of egg

Parthenogenesis

Fertilization

UNIT-II

Cleavage and its patterns

Gastrulation

Determination and differentiation

Tissue interactions, basic concepts of organizers and inductors and their role

Embryonic development of Herdmania

UNIT-III

Development up to three germinal layers and their fate in frog and chick

Fate maps of chick and frog embryos

Metamorphosis in Frog

UNIT-IV

Embryonic development of Rabbit

Foetal membranes, their formation and role

Mammalian placenta–its formation, types and functions

Suggested Readings:

1. Balinsky, B.I. (2007), An Introduction to Embryology, Saunders, Philadelphia.
2. Bellairs, R. (1971), Development Processes in Higher Vertebrates, University of Miami Press, Miami.
3. Berrill. N.J. (1971), Developmental Biology. McGraw Hill, New Delhi.
4. Gilbert, F. (2017), Developmental Biology, Sinaur.
5. Goel, S.C. (1984), Principles and Animal Developmental Biology, Himalaya, Bombay.
6. Karp. G. &Berrill, M.J. (1981), Development. McGraw Hill, New Delhi.
7. Pritchard, D.J. (1986), Foundation of Development Genetics, Taylor and Francis, London.
8. Saunders, J.W. (1982), Developmental Biology, Patterns, Principles, Problems, MacMillan,New York.
9. Waddigton CH. (1966), Principles of Development and Differentiation, MacMillan, NewYork.
10. Miller, W.A. (1997), Developmental Biology Springer Verlag, New York.

Bachelor of Science (Medical) Semester- V (Session 2022-23)

ZOOLOGY

Course Title: Genetics

Course Code: BSMM-5483 (II)

(THEORY)

Course Outcomes

After passing this course the student will be able to:

CO1: Comprehensive and detailed understanding of genetic methodology and how quantification of heritable traits in families and populations provides insight into cellular and molecular mechanisms. Understanding the role of genetic mechanisms like linkage, crossing over and multiple alleles.

CO2. Understand structure of nucleic acid, process of replication and translation, genetic code.

CO3: Understanding of how genetic concepts of mutations, regulation of gene expression and extranuclear inheritance.

CO4: Evolutionary and quantitative **genetics** including: the basis of **genetic** variation; heritability; Hardy-Weinberg Equilibrium and key concepts in population and how it affects broad societal issues including health and disease, food and natural resources, environmental sustainability, etc.

Bachelor of Science (Medical) Semester- V (Session 2022-23)

ZOOLOGY

Course Title: Genetics

Course Code: BSMM-5483 (II)

(THEORY)

Examination Time: 3 Hrs. **Max Marks: 30**

Instructions for the Paper Setter

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

Modification of Mendelian Ratios: Non-allelic gene interaction, Modified F2 ratios. (9:7;9:3:4;12:3:1;13:3;15:1;9:6:1), Gene modifications due to incomplete dominance; lethal factors(2:1); Pleiotropic genes.

Multiple Alleles: Blood group inheritance, eye colour in *Drosophila,* pseudoallelism.

Multiple Factors: Qualitative and quantitative characters, inheritance of quantitative traits (skin colour in man).

Linkage: Linkage, sex-linked characters

Crossing Over and Recombination: crossing over, frequency of crossing over, cytological basis of crossing over, synaptonemal complex. Recombination in Fungi (Tetrad analysis).

UNIT-II

Gene and Genetic Code: Structure of nucleic acids **(DNA & RNA).**

Replication & transcription of DNA

Expression of gene (Protein synthesis in Prokaryotes and Eukaryotes).

Genetic code: Properties of genetic code, codon assignment, wobble hypothesis, split and overlapping Genes.

UNIT-III

Mutations: Spontaneous and induced mutations, physical and chemical mutagen. Detection of mutations in Maize and *Drosophila.* Inborn errors of metabolism in man (Phenylketonuria, Alcaptonuria, Albinism). Somatic mutations and carcinogenesis.

Regulation of gene expressions in prokaryotes (Operon model) in eukaryotes.

Extranuclear inheritance: Chloroplast with special reference to *Mirabilis jalapa*and kappa particles in *Paramecium.*

UNIT-IV

Population genetics: Equilibrium of gene frequencies and Hardy-Weinberg law.

Genetic recombination in bacteria (conjugation, transduction and transformation) and in plasmids.

Applied Genetics: Recombination DNA, Genetic cloning and its applications in medicine and agriculture, DNA finger printing.

Suggested Readings:

1. Klug, Cummings, Spencer, Palladino, Killian (twelth edition), Concepts of Genetics
2. Gardener, E.J., Simmons, M.J. &Sunstad, Principles of Genetics, (8th ed), D.P. John Wiley & Sons, New York.
3. Benjamin A. Pierce, Genetics: a conceptual approach (6^{th} edition)
4. P.S. Verma and V. K. Aggarwal, Genetics (9^{th} edition) S. Chand publications.
5. Veer BalaRastogi, Genetics (4^{th} edition), Knrn publications.
6. Prof P. K. Gupta (5^{th} revised edition 2018-19), Genetics Rastogi publications.
7. C. B Powar (2018), Cell Biology Himalayan publishing house.
8. Miglani, G.S(2000), Basic Genetics, Narosa publishing house, New Delhi.
9. Weaver, R.F. and Hedrick, P.W. (1992), Genetics, Wm. C. Brown Publishers Dubuque.

Bachelor of Science (Medical) Semester- V (Session 2022-23)

ZOOLOGY

Course Title: PRACTICAL–V (Related to Developmental Biology and Genetics)

Course Code: BSMM-5483 (P)

Course Outcomes

CO1: Understanding of development patterns of frog, chick and Larva of *Herdmania*.

CO2: Knowledge of process of gametogenesis.

CO3: Understanding of pedigree analysis and preparation of family charts.

CO4: Understanding of inheritance of morphogenetic human characters.

CO5: Understanding of finger tip patterns.

Bachelor of Science (Medical) Semester- V (Session 2022-23)

ZOOLOGY

Course Title: PRACTICAL–V (Related to Developmental Biology and Genetics)

Course Code: BSMM-5483 (P)

Examination Time: 3 Hrs. **Marks: 20**

Instructions for the Practical Examiners: Question paper is to set on the spot jointly by the Internal and External Examiners. Two copies of the same should be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Guidelines for Conduct of Practical Examination: -

1.	Two Numerical based on Mendel/Hardy Weinberg Law.	6
2.	Perform the experiment for Dermatoglyphics/ Random mating/ Pod Length.	**3**
3.	Identification of given spots/slides.	**3**
4.	Make a pedigree chart from the given data.	**2**
5.	Chart/Assignment.	**2**
6.	Viva-voce and practical file.	**4**

1. Demonstrate the Law of segregation and independent assortment (use of coloured beads capsulesetc.).
2. Numericals for Segregation, Independent assortment,Epistasis&Hardy-Weinberg Law.
3. Demonstration of segregation in preserved material (Maize).
4. Demonstration of cytoplasmic inheritance in snails.
5. Inheritance of human characteristics.
6. Comparison of variance in respect of pod length and number of seeds/pods.
7. Calculation of gene frequencies and random mating (Coloured beads, capsules).
8. Pedigree analysis
9. Dermatoglyphics: Palm print and Finger tip patterns.
10. Study of the following permanent slides :
    - Polytene Chromosomes of *Chironomus.*
    - Stages of gametogenesis, structure of egg and sperm of a mammal.

- Larva of *Herdmania.*
- Developmental stages offrog-upto tadpole, chick-upto 96 hr.

11. Preparationof slide for Barr body from cheek cells.
12. **Assignment**: Preparation of charts showing developmental stages of any vertebrate.

Note:- Some changes can be made in the practicals depending on the availability of material.

Bachelor of Science (Medical) Semester-V Session 2022-23

MICROBIOLOGY

Course Code: BSMM-5343

Course Title: APPLIED MICROBIOLOGY-I

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the history and scope of industrial microbiology and preservation of stock cultures.

CO2: Understand the screening of microorganisms and composition and characteristics of fermentation media.

CO3: Learn about the fermenter and types of industrial fermentation.

CO4: Understand the downstream processing, fermentation economics and patent.

Bachelor of Science (Medical) Semester-V Session 2022-23

MICROBIOLOGY

Course Title: APPLIED MICROBIOLOGY-I

Course Code: BSMM-5343

(THEORY)

Examination Time: 3 Hours

Max. Marks: 100

Theory Marks: 60

Practical Marks: 20

CA: 20

Instructions for the Paper Setter: Eight questions of equal marks (12 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT- I

Microorganisms in Industry: Historical development, definition and scope of industrial microbiology; contribution of Louis Pasteur in fermentation; sources of industrial microorganisms and their essential characteristics, natural habitats, cultural collections and preservation of stock cultures.

UNIT- II

Screening of Microorganisms: Isolation of industrially important microorganisms, primary and secondary screening methods for isolating useful Yeast, Bacteria and Fungi. Fermentation media, composition of production media, characteristics of an ideal production medium, raw materials.

UNIT- III

Fermentation and Fermentation processes: Fermentation as biological activity, Types of industrial fermentations (submerged, solid state and continuous fermentation). Design of fermenter (body construction, aeration, agitation and control of septic conditions), Basics of batch culture, fedbatch culture and continuous culture.

UNIT- IV

Downstream Processing: Recovery and Purification of Fermentation Products; General principles of separation of fermentation products, solid particles, foam separation, separation by filtration, centrifugation, cell disruption, liquid - liquid chromatography, ion exchange chromatography. Fermentation economics; planning, fermentation designing, process designing, market potential and recovery costs for the industrial set up.

Patent: Introduction, composition, subject matter, characteristics, protection of rights of inventor, cost).

Books Recommended:

1. Casida, L.E. 2016, 2nd Edition.*Industrial Microbiology*. Wiley Eastern Ltd., New Delhi.
2. Stanbury, P.F. Whittaker, A. and Hall S.J. 2016, 3rd Edition. Principles of Fermentation Technology. Elsevier Science Ltd., U.K.
3. Patel, A.H. 2011, 2nd Edition. *Industrial Microbiology,* Macmillan India Ltd., Delhi.
4. Trevan M.D., Saffey, S., Goulding, K.H. and Stanberry, P. 2007. *Biotechnology: The Biological Principles,* Tata McGraw Hill Publishing Co. Ltd., New Delhi.
5. Freifelder, D. 2006, 2nd Edition. Microbial Genetics. Jones and Barttett Publishers Inc., Boston.
6. Applied Microbiology by Corinne Whitby and Torben Lund Skovhus. (Online available)
7. Applied Microbiology by Perlman. (Online available)

Bachelor of Science (Medical) Semester-V Session 2022-23

MICROBIOLOGY

Course Title: APPLIED MICROBIOLOGY-I

Course Code: BSMM-5343

(PRACTICAL)

Time: 3 Hours **Marks: 20**

Instructions for the practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

LIST OF PRACTICALS:

1. Isolation of microorganisms from (a) soil (b) fruits.
2. Screening of industrially important Amylase producing microorganisms.
3. Screening of industrially important Protease producing microorganisms
4. Protein estimation by Lowry method.
5. Preservation of industrially important microorganisms by various methods
   (a) Storage in 10% glycerol
   (b) Storage in mineral oil.
6. Determination of % viability of yeast cells by haemocytometer.

Bachelor of Science (Medical) Semester-V Session 2022-23

CHEMISTRY

COURSE TITLE: INORGANIC CHEMISTRY

COURSE CODE: BSMM/BSNM-5084 (I)

(THEORY)

Course outcomes

Students will be able to:

CO1: Use Crystal Field Theory to understand the structure, hybridisation, geometry and predict the colour of the complexes.

CO2: To describe the magnetic properties of coordination compounds.

CO3: Describe the stability of metal complexes by the use of formation constants and to calculate thermodynamic parameters from them.

CO4: To draw Orgel diagrams for d^1 to d^{10} systems and predict the possible transitions and to calculate number of microstate and ground state term symbols

CO5: Understand preparations, properties and applications of alkyls aryls of lithium and aluminium, bonding in metal-ethylenic complexes, mechanism of homogeneous hydrogenation.

Bachelor of Science (Medical) Semester-V Session 2022-23

CHEMISTRY

COURSE CODE: BSMM/BSNM-5084(I)

COURSE TITLE: INORGANIC CHEMISTRY

(THEORY)

Time: 3 Hrs. **Max. Marks: 30**

Instructions for the Paper Setters:

Eight questions of equal marks (6 each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

Unit-I

1.Metal-ligand Bonding in Transition Metal Complexes

Limitations of valence bond theory, an elementary idea of crystal-field theory, crystal field splitting in octahedral, tetrahedral and square planar complexes, factors affecting the crystal-field parameters.

Unit-II

2. Magnetic Properties of Transition Metal Complexes

Types of magnetic behaviour, methods of determining magnetic susceptibility, spin-only formula. L-S coupling, correlation of μ_s and μ_{eff} values, orbital contribution to magnetic moments, application of magnetic moment data for characterization of 3d-metal complexes.

3. Thermodynamic and Kinetic Aspects of Metal Complexes

A brief outline of thermodynamic stability of metal complexes and factors affecting the stability, substitution reactions of square planar complexes.

Unit-III

4. Electronic Spectra of Transition Metal Complexes

Term Symbols for $p^2$and d^2 systems, spectroscopic ground states for d^1-d^{10} electronic configurations. Types of electronic transitions, selection rules for d-d transitions, spectroscopic ground states, Orgel diagram for d^1-d^5.

Unit-IV

5. Organometallic Compounds

Definition, nomenclature and classification of organometallic compounds. EAN rule, preparation, properties, and applications of alkyls aryls of lithium and aluminium, bonding in metal-ethylenic complexes, Mechanism of homogeneous hydrogenation reactions.

Books Suggested:

1. Cotton, F.A., Wilkinson, G., Gaus, P.L., Basic Inorganic Chemistry; 3rd edition, Pubs: John Wiley Sons. 1995.
2. Lee, J.D., Concise Inorganic Chemistry; 4th edition, Pubs: Chapman Hall Ltd., 1991.
3. Shriver, D.E., Alkins, P.W., Langford, C.H., Inorganic Chemistry; 4th edition, Oxford Publisher: Oxford University Press, 2006.
4. Porterfield, W.W., Wesley, A., Inorganic Chemistry; Pubs: Addison-Wesley Publishing Company, 1984.
5. Miessler, G.L., Larr, D.A., Inorganic Chemistry; 3rd edition, Pubs: Pearson Education Inc., 2004.
6. Puri, B.R., Sharma, L.R., Kalia, K.C., Principles of Inorganic Chemistry; 30th edition, Pubs: Milestones Publisher, 2006-07.

Bachelor of Science (Medical) Semester-V Session 2022-23

CHEMISTRY

COURSE TITLE: PHYSICAL CHEMISTRY

COURSE CODE: BSMM/BSNM-5084(II)

(THEORY)

Course outcomes:

Students will be able to:

CO1: Understand conductance and its types, applications of conductivity measurements, conductometric titrations, transport numbers

CO2: Acquire knowledge about electrodes, reversible and irreversible cells, concentration cells, E.M.F, potentiometric titrations

CO3: Understand radioactivity, laws of radioactive decay, nuclear reactions, applications of radioactivity

CO4: Characterise the molecules with the help of various spectroscopic techniques such as vibrational, rotational, raman and electronic spectroscopy

Bachelor of Science (Medical) Semester-V Session 2022-23

CHEMISTRY

COURSE TITLE: PHYSICALCHEMISTRY

COURSE CODE: BSMM/BSNM-5084 (II)

(THEORY)

Time: 3 Hrs. **Max. Marks: 30**

Instructions for the Paper Setters:

Eight questions of equal marks (6 each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

Unit-I

1. Electrochemistry-I

Electrical transport-conduction in metals and in electrolyte solutions, specific conductance and equivalent conductance, measurement of equivalent conductance, variation of equivalent and specific conductance with dilution, migration of ions and Kohlrausch law, Arrhenius theory of electrolyte dissociation and its limitations, weak and strong electrolytes, Ostwald's dilution law, its uses and limitations. Debye-Huckel-Onsager's equation for strong electrolytes (elementary treatment only). Transport number, definition and determination by Hittorf method and moving boundary method. Applications of conductivity measurements: determination of degree of dissociation, determination of K_a of acids, determination of solubility product of a sparingly soluble salt, conductometric titrations.

Unit-II

2. Electrochemistry – II

Types of reversible electrodes-gas metal ion, metal ion, metal insoluble salt-anion and redox electrodes. Electrode reactions. Nernst equation, derivation of cell E.M.F. and single electrode potential, standard hydrogen electrode, reference electrodes, standard electrode potential, sign conventions, electrochemical series and its significance. Electrolytic and Galvanic cells -reversible and irreverisible cells, conventional representation of electrochemical cells.

EMF of a cell and its measurements. Computation of cell. EMF, Calculation of thermodynamic quantities of cell reactions (ΔG, ΔH and K), polarization, over potential and hydrogen overvoltage. Concentration cells with and without transport, liquid junction potential, application of concentration cells, valency of ions, solubility product and activity coefficient, potentiometric titrations.Definition of pH and pK_a, determination of pH using hydrogen, quinhydrone and glass electrodes by potentiometric methods. Buffers-mechanism of buffer action, Henderson-Hazel equation, Hydrolysis of salts. Corrosion-types, theories and methods of combating it.

Unit-III

3. Nuclear Chemistry

Introduction: Radioactivity, Nuclear Structure, Size of Nucleus, Mass Defects and Binding Energy, Nuclear Stability, Nuclear Forces, Nuclear Spin and Moments of Nuclei, Nuclear Models, Nuclear Decay Processes, The Laws of Radioactive Decay, Soddy-Fajans Group Displacement Law, Rate of Nuclear Decay and Half Life Time (Kinetics of Radioactive Decay), Induced Nuclear Reactions, Types of Nuclear Processes, High Energy Nuclear Reactions, Nuclear Reaction Cross-Section, Artificial radioactivity, Detection and Measurement of Radioactivity, Nuclear Fission, Nuclear Fusion, Applications of Radioactivity.

Unit-IV

4. Spectroscopy

Introduction: Electromagnetic radiation, regions of the spectrum, basic features of different spectrometers, statement of the Born-Oppenheimer approximation, degrees of freedom.

5. Rotational Spectrum

Diatomic molecules. Energy levels of a rigid rotor (semiclassical principles), selection rules, spectral intensity, distribution using population distribution (Maxwell-Boltzmann distribution) determination of bond length, qualitative description of non-rigid rotor, isotope effect.

6. Vibrational Spectrum

Infrared spectrum: Energy levels of simple harmonic oscillator, selection rules, pure vibrational spectrum, intensity, determination of force constant and qualitative relation of force constant and bond energies, effect of anharmonic motion and isotope on the spectrum, idea of vibrational frequencies of different functional groups.

Raman Spectrum: Concept of polarizability, pure rotational and pure vibrational Raman spectra of diatomic molecules, selection rules.

7. Electronic Spectrum

Concept of potential energy curves for bonding and antibonding molecular orbitals, qualitative description of selection rules and Franck-Condon principle. Qualitative description of s, p, and n M.O., their energy levels and the respective transitions.

Books Suggested: -

1. Atkins, P., Paula, J.de, Atkins Physical Chemistry; 8th edition, Pubs: Oxford University Press, 2008.
2. Puri, B.R., Sharma, L.R., Pathania, M.S., Principles of Physical Chemistry; 43rd edition, Pubs: Vishal Publishing Co., 2008.
3. Barrow, G.M., Physical Chemistry; 6th edition, Pubs: McGraw Hill Companies Inc, 1996.
4. Berry, R.S., Rice, S.A., Ross, J., Physical Chemistry; 2nd edition, Pubs: Oxford University Press, 2000.
5. Albert, R.A., Silbey, R.J., Physical Chemistry; 1st edition, Pubs: John Wiley and Sons Inc., 1992.
6. Levine, I.N., Physical Chemistry; 5th edition, Pubs: Tata McGraw Hill Publishing Co. Ltd,2002.

Bachelor of Science (Medical) Semester-V Session 2022-23

CHEMISTRY PRACTICAL

COURSE TITLE: CHEMISTRY PRACTICAL

COURSE CODE: BSMM/BSNM-5084(P)

(THEORY)

Course outcomes:

Students will be able to

CO1: Synthesize and analyse the coordination compounds

CO2: Determine the end point of various conductometric titrations

CO3: Know the principle and working of Abbe's Refractometer

CO4: Determine the composition of unknown mixture of two liquids by refractive index measurements.

CO5: Learn the technique of Rast's methods

CO6: Learn phenomenon of adsorption of acetic acid and oxalic acid on charcoal

CO7: Learn distribution coefficient of of iodine between CCl_4 and water

Bachelor of Science (Medical) Semester-V Session 2022-23

CHEMISTRY PRACTICAL

COURSE TITLE: CHEMISTRY PRACTICAL

COURSE CODE: BSMM/BSNM-5084 (P)

(THEORY)

Duration: 3½ Hrs. **Max. Marks: 20**

Instruction for practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same should be submitted for the record to COE office, Kanya Maha Vidyalaya, Jalandhar.

(I) Synthesis and Analysis

(a) Preparation of Sodium trioxalatoferrate (III)

(b) Preparation of Ni-DMG Complex

(c) Preparation of Copper tetrammine complex

(d) Preparation of cis-bisoxalatodiaquachromate (III) ion

(II) Physical Chemistry

(a) Conductometric Titrations

(i) Determine the end point of the following titrations by the conductometric methods.
Strong acid-Strong base
Strong acid-Weak base
Weak acid-Strong base
Weak acid-Weak base

(ii) Determine the composition of a mixture of acetic acid and the hydrochloric acid by conductometric titration.

(b) (i) Molecular Weight Determination of acetanilide, napthalane, using camphor as solvent **(Rast's methods).**

(ii) To determine the molecular weight of a polymer by viscosity measurements. **(c) Adsorption** (i)To study the adsorption of acetic acid oxalic/acid from aqueous solutions by charcoal.

(d) Phase Equilibria (i) To determine the distribution coefficient of iodine between CCl_4 and water.

(e) Refractometry

(i) Determination of refractive index of a liquid by Abbe refractometer, and hence the specific and molar refraction.

(ii) To determine the composition of unknown mixture of two liquids by refractive index measurements.

Practical Examination

1) Inorganic Synthesis 07
2) Physical experiment 08
3) Viva- Voce 03
4) Note Book 02

Books Suggested: -

1. Experimental Inorganic Chemistry, W.G. Palmer, Cambridge.

2. Handbook of preparative Inorganic Chemistry, Vol. I and II, Brauer, Academic Press.

3. Inorganic Synthesis, McGraw Hill.

4. Experiments in General Chemistry, C.N.R. Rao and U.C. Aggarwal, East-West Press

5. Experiments in Physical Chemistry, R.C. Das and B. Behra, Tata McGraw Hill.

6. Advanced Practical Physical Chemistry, J.B. Yadav, Goel Publishing House.

7. Advanced Experimental Chemistry, Vol. I, Physical, J.N. Guru and R. Kapoor, S. Chand and Co.

8. Selected Experiments in Physical Chemistry, N.G. Mukherjee, J.N. Ghosh and Sons.

9. Experiments Physical Chemistry, J.C. Ghosh, Bharati Bhavan

Bachelor of Science (Medical) Semester-V Session 2022-23

BOTANY

Course Title: Plant Physiology

Course Code: BSMM-5075 (I)

(THEORY)

Course outcome: -

After passing this course the student will be able to:

CO1. Understand the plant cells in relation to water and mineral nutrition.

CO2. Learn about the movement of sap & absorption of water and growth in plant.

CO3. Understand the process of photosynthesis in higher plants with particular emphasis on light and dark reactions, C3 and C4 pathways.

CO4. Understand the growth regulator in higher plants.

Bachelor of Science (Medical) Semester-V Session 2022-23

BOTANY

Course Title: Plant Physiology

Course Code: BSMM-5075 (I)

(THEORY)

Examination Time: 3 Hrs **Max. Marks: 30**

Instructions for the Paper Setters:
Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

Unit-I

Plant-Water Relation: Importance of water to plant life, physical properties of water, (imbibition) diffusion and osmosis, absorption, transport of water and transpiration, physiology of stomata.
Mineral Nutrition: Essential macro-and micro-elements and their role, mineral uptake, deficiency and toxicity symptoms (hydroponics).

Unit-II

Transport of Organic Substances: Mechanism of phloem transport, source-sink relationship, factors affecting translocation.

Growth and Development: Definitions, phases of growth and development, kinetics of growth, seed dormancy, seed germination and factors of their regulation, plant movements, the concept of photoperiodism, physiology of flowering, florigen concept, biological clocks, physiology of senescence, fruit ripening.

Unit-III

Photosynthesis: Significance, historical aspects, photosynthetic pigments, action and absorption spectra and enhancement effects, concept of two photosystems, z-scheme, photophosphorylation, Calvin cycle, C4 pathway, CAM plants, photorespiration.

Unit-IV

Plant growth regulators - auxins, gibberellins, cytokinins, abscissic acid and ethylene, history of their discovery, biosynthesis and mechanism of action, general account of salicylic acid, jasmonates and brassinosteroids, photomorphogenesis, phytochromes and cryptochromes, their discovery, physiological role and mechanism of action.

Suggested Readings:-

1. Bhatia, K.N. (2019). Plant Physiology I and II. Trueman Book Company. New Delhi
2. Hopkins, W.G. and Huner, A. (2008). Introduction to Plant Physiology (4th Edition). JohnWiley and Sons. U.S.A.
3. Jain, V.K. (2017). Fundamentals of Plant Physiology. S. Chand Publishing. New Delhi.
4. Mandavia, C., Patel, S. V., Mandavia, M. K., Golakiya, B. A. and Chovatia, V. P. (2009). Glimpses in Plant Physiology. International Book Distributing Co., Lucknow, India.
5. Mohr, H. and Schopfer, P. (1995). Plant Physiology. Springer-Verlag, Berlin, Germany.
6. Pandey, S.N. and Sinha, B. K. (2005). Plant Physiology. Vikas Publishing. New Delhi.
7. Salisbury, F.B. and Ross, C.W. 2006. Plant Physiology (4th Edition). Wadsworth Publishing Co., California, USA.
8. Srivastava, H. N. (2019). Plant Physiology, Biochemistry and Biotechnology. Pradeep Publications, Jalandhar.
9. Taiz, L. and Zeiger, E. (2010). Plant Physiology (5th Edition). Sinauer Associates Inc. USA.

Bachelor of Science (Medical) Semester-V Session 2022-23

BOTANY

Course Title: Biochemistry &Biotechnology

Course Code: BSMM-5075 (II)

(Theory)

Course outcome: -

After passing this course the student will be able to:

CO1. Understand the properties and function of enzymes, and process of carbohydrate metabolism.

CO2. Understand the Properties of nitrogen metabolism & lipid metabolism and its significance in plants

CO3. Understand the fundamentals of Recombinant DNA Technology. Know about the Genetic Engineering.

CO4. Understand the principle and basic protocols for Plant Tissue Culture.

Bachelor of Science (Medical) Semester-V Session 2022-23

BOTANY

Course Title: Biochemistry & Biotechnology

Course Code: BSMM-5075 (II)

(Theory)

Examination Time: 3Hrs **Max. Marks: 30**

Instructions for the Paper Setters:

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

Unit-I

Basics of Enzymology: Discovery and nomenclature, characteristics of enzymes, concept of holoenzyme, apoenzyme, coenzymes and cofactors regulation of enzyme activity, mechanism of action.

Respiration: ATP-the biological energy currency, aerobic and anaerobic respiration, Kreb's cycle, electron transport mechanism (chemiosmotic theory), redox potential, oxidative phosphorylation, pentose phosphate pathway.

Unit-II

Nitrogen and Lipid Metabolism: Biology of nitrogen fixation, importance of nitrate reductase and its regulation, ammonium assimilation, structure and function of lipids, fatty acid biosynthesis, β-oxidation, saturated and unsaturated fatty acids, storage and mobilization of fatty acids.

Unit-III

Genetic Engineering: Tools and techniques of recombinant DNA technology, cloning vectors, genomic and cDNA library, transposable elements, techniques of gene mapping.

Unit-IV

Biotechnology: Functional definition, basic aspects of plant tissue culture, cellular totipotency, differentiation and morphogenesis, biology of Agrobacterium, vectors for gene delivery and marker genes, salient achievements in crop biotechnology.

Suggested Readings: -

1. Bhojwani, S.S. (1996). Plant Tissue Culture: Applications and Limitations. Elsevier Science Publishers, New York, USA.
2. Dennis, D.T., Turpin, D.H. Lefebvre, D.D. and Layzell (eds.) (1997**).** Plant Metabolism (2nd Edition). Longman, Essex, England.
3. Galston, A.W. (1994). Life Processes in Plants. Scientific American Library, Springer-Verlag, New York, USA.
4. Glick, B.R., Pasternak, J.J. (2010). Molecular Biotechnology- Principles and Applications of recombinant DNA. ASM Press, Washington.
5. Lea, P.J. and Leegood, R.C. (1999). Plant Biochemistry and Molecular Biology. John Wiley Sons, Chelichester, England.
6. Old, R.W. and Primrose, S.B. (2006). Principles of Gene Manipulation, Blackwell Scientific Publishers, Oxford, UK.
7. Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics (5th Edition). John Wiley and Sons Inc., U.S.A.
8. Stewart, C.N. Jr. (2008). Plant Biotechnology & Genetics: Principles, Techniques And Applications. John Wiley & Sons Inc. U.S.A.
9. Vasil, I.K. and Thorpe, T.A. (2012). Plant Cell and Tissue Culture. Kluwer Academic Publishers, The Netherlands

Bachelor of Science (Medical) Semester-V Session 2022-23

BOTANY

PRACTICAL – Plant physiology, Biochemistry & Biotechnology (I &II)

Course Code: BSMM-5075(P)

(PRACTICAL)

Course outcomes:

After passing this course the student will be able:

CO 1: Determine the osmotic potential of cell sap by plasmolytic method.

CO2: Determine the Diffusion Pressure Deficit (DPD) of plant cells.

CO3: Determine the effect of time period on the rate of imbibition in different types of seeds.

CO4: Determine the relation between absorption and transpiration.

Bachelor of Science (Medical) Semester-V (Session 2022-23)

BOTANY

Course Title: PRACTICAL – Plant physiology, Biochemistry & Biotechnology (I &II)

Course Code: BSMM-5075(P)

(PRACTICAL)

TIME: 3 Hours **Practical: 20**

Instructions for the paper setter: question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Suggested Laboratory Exercises

1. To study the permeability of plasma membrane using different**:** concentrations of organic solvents.
2. To study the effects of temperature on permeability of plasma membrane.
3. To prepare the standard curve of protein and determine the protein content in unknown samples.
4. To study the enzyme activity of catalase and peroxidase as influenced by pH and temperature.
5. Separation of chloroplast pigments by solvent method.
6. Determining the osmotic potential of vacuolar sap by plasmolytic method.
7. Determining the water potential of any tuber.
8. Separation of amino acids in a mixture by paper chromatography and their identification by comparison with standards.
9. Bioassay of auxin, cytokinin, GA, ABA and ethylene using appropriate plant material.
10. Demonstration of the technique of micropropagation by using different explants, e.g. axillary buds, shoot meristems.
11. Demonstration of the technique of another pollen culture.
12. Demonstrate the ascent of sap using a dye.
13. Demonstration of root and shoot formation from the apical and basal portion of stem segments in liquid medium containing different hormones.
14. Demonstrate the transpiration pull by mercury method.
15. Demonstration of osmosis by potato osmoscope.
16. Comparison of loss of water from two surfaces of leaf by $CoCl_2$ method/four leaf method.
17. Demonstration of imbibition by plaster of peris method.
18. Demonstration that O2 is evolved during photosynthesis.

19. Separation of pigments by paper chromatography/TLC method.
20. Demonstration of phototropism movements.
21. Demonstration the measurements of growth by arc auxanometer.
22. Requirements for setting up the tissue culture laboratory.
23. Preparation of nutrient medium.
24. Sterilization of glassware and plant material.
25. Preparation of explant for aseptic manipulation.

Suggested Readings (For Laboratory Exercises)

1. Bajracharya D. (1999). Experiments in Plant Physiology-A Laboratory Manual. Narosa Publishing House, New Delhi.
2. Devi, P. 2000. Principles and Methods of Plant Molecular Biology, Biochemistry and Genetics. Agrobios, Jodhpur, India.
3. Dixon, R.A. (Ed.) 1994. Plant Cell Culture: A Practical Approach, IRL Press, Oxford.
4. Kochhar, S. L. and Gujral, S. K. (2016). Comprehensive Practical Plant Physiology. Macmillan Publishers India Ltd., Delhi.
5. Moore, T.C. 2012. Research Experiences in Plant Physiology: A Laboratory annual. Springer-Verlag. Berlin.
6. Plummer, D.T. (2001). An Introduction to Practical Biochemistry (3rd Edition). Tata McGraw-Hill Publishing Co. Ltd. New Delhi.
7. Roberts, J. and Tuckar, G.A. (Eds.) 2000. Plant Hormone Protocols. Human Press, New Jersey, USA.
8. Scott, R.P.W. 1995. Techniques and Practices of Chromatography. Marcel Dekker, Inc., New York.
9. Smith, R.H. 2000. Plant Tissue Culture: Techniques and Experiments. Academic Press, New York.

Bachelor of Science (Medical) Semester-V (Session 2022-23)

FOOD SCIENCE

Course Title: Food Science and Quality Control (Vocational) (FOOD ANALYSIS)

Course Code: BSMM-5255

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the food composition and proximate analysis of food components.

CO2: Learn the analysis of micronutrients.

CO3: Understand the physical methods of food analysis including food rheology, refractometry and polarimetry.

CO4: Learn different chromatography techniques.

Bachelor of Science (Medical) Semester-V (Session 2022-23)

FOOD SCIENCE

Course Title: Food Science and Quality Control (Vocational) (FOOD ANALYSIS)

Course Code: BSMM-5255

(THEORY)

Examination Time: 3 Hours **Max. Marks: 100**

Theory Marks: 60

Practical Marks: 20

CA: 20

Instructions for the Paper Setter: Eight questions of equal marks (12 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

1. Food composition and factors effecting food composition.
2. Proximate composition analysis of food.

UNIT-II

3. Analysis of Micronutrients and minerals.

UNIT-III

4. General physical methods of analysis of foods: Refractometry & Polarimetry.
5. Introduction and principles of Food rheology, types of viscosity, equipments used to check the viscosity.

UNIT-IV

6. Basic principles and working of Column chromatography, Gas chromatography and High-Pressure Liquid Chromatography.

Books Recommended:

1. Manuals of Food Quality Control additions contaminants techniques, 1980.

2. The Chemical Analysis of Food and Food Products by Morries B Jacob, 3rd Edition., Roberte, Krieger.

3.Food Analysis, 2019, 4th Edition, S. Suzanne Nielsen. **(Online available)** **http://154.68.126.6/library/Food%20Science%20books/batch1/Food%20Analysis%20Fourth%20Edition.pdf**

4. Analysis and Quality Control for Fruit and Vegetable Products, S Ranganna, McGraw Hill Education (India) Private Limited, Chennai, India.

Bachelor of Science (Medical) Semester-V (Session 2022-23)

FOOD SCIENCE

Course Title: Food Science and Quality Control (Vocational) (FOOD ANALYSIS)

Course Code: BSMM-5255

(PRACTICAL)

Time: 3 hours **Marks: 20**

Instructions for the practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

List of Practicals:

1. Determination of milk quality by lactometer.
2. To find out the TSS of food sample by refractometer.
3. Determination of surface tension of food sample by using drop number method.
4. Determination of viscosity index of food sample.
5. Proximate composition of different types of food.
6. Estimation of different minerals in food.
7. Estimation of vitamins in food.
8. Determination of dry and wet gluten content in wheat flour.
9. Determination of Chlorophyll content in food sample.
10. Estimation of percent loss in weight after drying and dehydration.

Bachelor of Science (Medical) Semester-V (Session 2022-23)

Course Title: JOB READINESS COURSE

Course Code: SECJ-5551

Nature of Course: Audit Course (Value -added)

Course Duration: 30 hours **Course Credits: 2**

Objectives of the Course:

It is a specialised programme structured to prepare the students ready and adaptable for their professional career. The students will be able to set goals for themselves with the exposure provided to them during the course. The main purpose of the course is to enhance their life skills, increase their capacities for adapting to professional environment and teaming up. They will learn the importance and art of synergising with others and working in teams. It will help them to realize their potential and set high but realistic goals.

Learning Outcomes:

On successful completion of this course, students will be able to:

- Build confidence and have positive attitude
- Have an overview and exposure of job markets to realize their potential
- Get inputs on critical thinking and leadership qualities
- Comprehend how speaking skills can help them excelling in job interviews
- Acquire knowledge of team work
- Share their ideas in the group and improve their listening skills

Learn skills of self-introduction to represent themselves and to write a well drafted resume

Bachelor of Science (Medical) Semester-V (Session 2022-23)

Course Title: JOB READINESS COURSE

Nature of Course: Audit Course (Value -added)

Course Code: SECJ-5551

CURRICULUM

Course Code: SECJ-5551 Course Credits: 02 Contact Hours: 30 **MODULE**	**TITLE**	**HOURS**
I	Goal Setting and Ambition	2 Hours
II	Positive Attitude and Self Confidence	2 Hours
III	Career Options and Job Markets	2 Hours
IV	Resume Building	4 Hours
V	Presentation Skills	4 Hours
VI	Public Speaking	4 Hours
VII	E-Mail Etiquette and Telephonic Conversation	2 Hours
VIII	Organizational Structure and Corporate Jargons	2 Hours
IX	Personal Interviews	4 Hours
X	Final Assessment, Feedback and Closure	4 Hours

Bachelor of Science (Medical) Semester-V (Session 2022-23)

INNOVATION, ENTREPRENEURSHIP AND CREATIVE THINKING

Course Title: Innovation, Entrepreneurship and Creative Thinking

Nature of Course: Audit Course (Value-added)

Course Code: SECI-5541

Course Duration: 30 hours

Course Credits: 2 (For credit based continuous evaluation grading system)

Objectives of the Course:

It is a distinctive and innovative programme structured to prepare the students professionally for meaningful social engagement by setting new patterns and possibilities for employment generation through innovations and entrepreneurship. The purpose of the course is to help students acquire necessary knowledge and skills required for carrying out innovative and entrepreneurial activities, and to develop the ability of analyzing and understanding business situations.

Learning Outcomes:

On successful completion of this course, students will be able to:

- Assess and analyze entrepreneurship as a career choice,
- Develop creative and innovative skills,
- Analyse the business environment in order to identify business opportunities,
- Consider the legal and financial conditions for starting a business venture,
- Explain the importance of marketing and management in small businesses venture,
- Develop a business idea into a comprehensive and highly scalable business model,
- Design a successful business plan and launch their product or service in the market
- Understand personal creativity, identify what are the creative tools and improve their creative problem-solving skills.

Bachelor of Science (Medical) Semester-V (Session 2022-23)

INNOVATION, ENTREPRENEURSHIP AND CREATIVE THINKING

Course Title: Innovation, Entrepreneurship and Creative Thinking

Nature of Course: Audit Course (Value-added)

Course Code: SECI-5541

Course Credits: 2 **Total contact hours: 30**

MODULE	TITLE	HOURS
I	Introduction to Entrepreneurship	3 Hrs.
II	Creativity & Innovation	3 Hrs.
III	Entrepreneurial Competencies	3 Hrs.
IV	Management Skills & Functions	3 Hrs.
V	Business Opportunity Identification & Market Analysis	3 Hrs.
VI	Business Plan Preparation	3 Hrs.
VII	Business Model Canvas	3 Hrs.
VIII	Start-Up Financing & Launching	3 Hrs.
IX	Workshop on Design Thinking	4 Hrs.
X	Final Assessment Feedback and Closure	2 Hrs.

EXAMINATION

- **Total Marks: 25 (Final Exam: 20; Internal Assessment: 5)**
- **Final Exam: Multiple Choice Questions: Marks- 20; Time: 1 hour**
- **Internal Assessment: 5 (Assessment: 3; Attendance:2)**

A comprehensive multiple-choice quiz at the close of the programme. Marks: 3; Time: 0.5 hour (30 minutes).

- **Total marks: 25 converted to grade for final result.**

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

PUNJABI

Course Title: PUNJABI (COMPULSORY)

Course Code: BSML-6421

Course Outcomes

CO1: ਕਾਵਿ ਗੌਰਵ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਵਿਤਾਵਾਂ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ।

CO2: ਧਰਤੀਆਂ ਦੇ ਗੀਤ(ਸਫ਼ਰਨਾਮਾ)ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਸਫ਼ਰਨਾਮਾ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਇਸ ਸਾਹਿਤ ਰੂਪ ਨਾਲ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO3: ਲੇਖ ਰਚਨਾ ਅਤੇ ਸੰਖੇਪ ਰਚਨਾ ਕਰਨ ਨਾਲ ਵਿਦਿਆਰਥੀ ਆਪਣੀ ਗੱਲ ਨੂੰ ਕਹਿਣ ਦੀ ਜਾਚ ਸਿੱਖਣਗੇ ਅਤੇ ਇਹ ਦਿਮਾਗੀ ਕਸਰਤ ਵਿਚ ਸਹਾਈ ਹੋਵੇਗੀ।

CO4: ਵਿਆਕਰਨਕ ਸ਼੍ਰੇਣੀਆਂ : ਲਿੰਗ, ਵਚਨ,ਕਾਰਕ ਕਿਰਿਆ ਵਾਕੰਸ਼ : ਪਰਿਭਾਸ਼ਾ, ਬਣਤਰ ਤੇ ਪ੍ਰਕਾਰ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

PUNJABI

Course Title: PUNJABI (COMPULSORY)

Course Code: BSML-6421

ਸਮਾਂ : 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਪਾਠਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਕਾਵਿ ਗੌਰਵ(ਪਹਿਲੇ ਛੇ ਕਵੀ)(ਸੰਪਾ.ਬਿਕਰਮ ਸਿੰਘ ਘੁੰਮਣ, ਕਰਮਜੀਤ ਕੌਰ),ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅਮ੍ਰਿਤਸਰ,
(ਸ਼ੇਖ ਫ਼ਰੀਦ, ਸ਼ਾਹ ਹੁਸੈਨ, ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਜੀ, ਗੁਰੂ ਅਰਜਨ ਦੇਵ ਜੀ,ਵਾਰਿਸ ਸ਼ਾਹ, ਸ਼ਾਹ ਮੁਹੰਮਦ)
(ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ/ਵਿਸ਼ਾ ਵਸਤੂ/ਸਾਰ) ੪ ਅੰਕ

ਯੂਨਿਟ-II

ਧਰਤੀਆਂ ਦੇ ਗੀਤ(ਸਫ਼ਰਨਾਮਾ), ਬਰਜਿੰਦਰ ਸਿੰਘ ਹਮਦਰਦ,ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ
(ਸਮਾਜ ਸਭਿਆਚਾਰ ਪਰਿਪੇਖ/ਸਫਰਨਾਮੇ ਦੇ ਤੌਰ ਤੇ ਪਰਖ) ੪ ਅੰਕ

ਯੂਨਿਟ-III

(ੳ) ਲੇਖ ਰਚਨਾ(ਵਿਗਿਆਨ, ਤਕਨਾਲੋਜੀ ਅਤੇ ਚਲੰਤ ਮਸਲਿਆਂ ਸਬੰਧੀ)
(ਅ) ਆਧੁਨਿਕ ਸਾਹਿਤ ਰੂਪ : ਕਵਿਤਾ, ਕਹਾਣੀ, ਨਾਵਲ, ਨਾਟਕ, ਇਕਾਂਗੀ

੪ ਅੰਕ

ਯੂਨਿਟ-IV

ਵਿਆਕਰਣ :
(ੳ) ਵਿਆਕਰਨਕ ਸ੍ਰੇਣੀਆਂ : ਲਿੰਗ, ਵਚਨ,ਕਾਰਕ
(ਅ) ਕਿਰਿਆ ਵਾਕੰਸ਼ : ਪਰਿਭਾਸ਼ਾ, ਬਣਤਰ ਤੇ ਪ੍ਰਕਾਰ ੪ ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

Basic Punjabi

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code: BSML-6031

Course Outcomes

CO1: ਇਸ ਪਰਚੇ ਵਿਚ ਵਿਦਿਆਰਥੀ ਸਭਿਆਚਾਰ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਲੱਛਣ ਸਭਿਆਚਾਰਕ ਪਰਿਵਰਤਨਾਂ ਦੇ ਨਾਲ ਇਸ ਦਾ ਭੂਗੋਲ, ਮਨੋਵਿਗਿਆਨ ਤੇ ਆਰਥਕਤਾ ਨਾਲ ਸੰਬੰਧਾਂ ਬਾਰੇ ਜਾਨਣ ਤੋਂ ਬਾਅਦ ਸਭਿਆਚਾਰ ਤੇ ਸਭਿਅਤਾ, ਸਭਿਆਚਾਰ ਤੇ ਸਾਹਿਤ, ਸਭਿਆਚਾਰ ਤੇ ਭਾਸ਼ਾ ਦੇ ਆਪਸੀ ਸੰਬੰਧਾਂ ਦਾ ਅਧਿਐਨ ਕਰਨਗੇ।

CO2: ਇਸ ਤੋਂ ਇਲਾਵਾ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੇ ਮੂਲ ਸੋਮੇ ਤੇ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੇ ਨਿਵੇਕਲੇ ਲੱਛਣਾਂ ਬਾਰੇ ਜਾਣ ਸਕਣਗੇ।

CO3: ਸਾਹਿਤ ਕਿਸੇ ਸਭਿਆਚਾਰ ਦੀ ਪੇਸ਼ਕਾਰੀ ਹੀ ਹੁੰਦੀ ਹੈ ਤੇ ਇਸ ਪਰਚੇ ਰਾਹੀਂ ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦਾ ਅਧਿਐਨ ਕਰਕੇ ਇਸ ਦੇ ਸਜੀਵ ਤੇ ਗੁਣਵਾਨ ਲੱਛਣਾਂ ਤੇ ਪ੍ਰਵਿਰਤੀਆਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

Basic Punjabi

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code: BSML-6031

ਸਮਾਂ : 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਪਾਠਕ੍ਰਮ

ਯੂਨਿਟ-I

ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦਾ ਪਿਛੋਕੜ
ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੀ ਭੂਗੋਲਿਕ ਸਥਿਤੀ
ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੇ ਨਿਖੜਵੇ ਲੱਛਣ 08 ਅੰਕ

ਯੂਨਿਟ-II

ਪੰਜਾਬ ਦੇ ਮੇਲੇ
ਪੰਜਾਬ ਦੇ ਤਿਉਹਾਰ
ਪੰਜਾਬ ਦੇ ਪ੍ਰਮੁੱਖ ਧਾਰਮਿਕ ਸਥਾਨ 08 ਅੰਕ

ਯੂਨਿਟ-III

ਜਨਮ ਨਾਲ ਸੰਬੰਧਿਤ ਰੀਤਾਂ ਰਸਮਾਂ
ਵਿਆਹ ਨਾਲ ਸੰਬੰਧਿਤ ਰੀਤਾਂ ਰਸਮਾਂ
ਮੌਤ ਨਾਲ ਸੰਬੰਧਿਤ ਰੀਤਾਂ ਰਸਮਾਂ 08 ਅੰਕ

ਯੂਨਿਟ-IV

ਪੰਜਾਬ ਦਾ ਖਾਣ ਪੀਣ
ਪੰਜਾਬ ਦਾ ਪਹਿਰਾਵਾ
ਪੰਜਾਬ ਦੇ ਲੋਕ ਵਿਸ਼ਵਾਸ 08 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

PUNJAB HISTORY AND CULTURE

Course Title: Punjab History and Culture (1947- 2000 A.D.) (Special paper in lieu of Punjabi Compulsory) (For those students who are not domicile of Punjab)

Course Code: BSML-6431

Course Outcomes: -

After completing this paper, the students will be able to

CO1: Comprehend Punjab's contribution in the freedom struggle, the exodus and Rehabilitation

CO1 (a): Understand the history of Punjab from independence with special reference to partition

CO2: Comprehend the causes that led to the formation of New Punjab in 1966 and outcomes of Green Revolution in the Punjab

CO3: Understand nature of diaspora and growth of education in Punjab Punjabi literature and Drama in the Punjab after Independence

CO4: Understand the drug abuse problem, management and prevention in the Punjab

CO4 (a) Understand the problem of drug addiction and Female Foeticide in context to the Punjab

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

PUNJAB HISTORY AND CULTURE

Course Title: Punjab History and Culture (1947- 2000 A.D.) (Special paper in lieu of Punjabi Compulsory) (For those students who are not domicile of Punjab)

Course Code: BSML-6431

Examination Time: 3 Hours **Max. Marks: 50**

Theory: 40

CA: 10

Instructions for the Paper Setters

1. Question paper shall consist of four Units
2. Examiner shall set 8 questions in all by selecting Two Questions of equal marks from each Unit.
3. Candidates shall attempt 5 questions in 600 words, by at least selecting One Question from each Unit and the 5th question may be attempted from any of the four Units.
4. Each question will carry 8 marks

UNIT I

1. Partition and its Impact on Punjab
2. Rehabilitation.

UNIT II

3. Punjabi Suba Movement and Act of 1966.
4. Green Revolution.

UNIT III

5. Punjabi Diaspora (Canada)
6. Development of education in Punjab after Independence

UNIT IV

7. Development of Punjabi Literature and Drama. (With Special Reference to Bhai Veer Singh, Shiv Kumar Batalvi)
8. Emerging Concerns: Drug Addiction and Female Foeticide (In context to the Punjab)

Suggested Readings

- Chopra, P.N. & Das, M.N. (1974), *A Social, Cultural & Economic History of India.* Vol.III, Macmillan India, New Delhi, 1974.
- Grewal, J.S., *Social and Cultural History of Punjab: Prehistoric, Ancient and Early Medieval*. Foundation Books Pvt Ltd Cambridge House, New Delhi, 2004.
- Grewal, J.S., *The Sikhs of Punjab*. New Cambridge House, New Delhi, 2005
- Rai Satya M. , *Heroic Tradition in Punjab(1900-1947)*. Publication Bureau, Punjabi University, Patiala, 1978
- Singh, Fauja., *Freedom Struggle in Punjab*. Publication Bureau, Punjabi University, Patiala, 1974
- Singh, Fauja, *History and Culture of the Punjab*. Part II, Publication Bureau, Punjabi University, Patiala, 1987.
- Singh, Kushwant, *A History of the Sikhs*. Vol. II (1839-1998), Oxford University Press, Delhi, 1991.
- Yadav, K.C., *Haryana Aitihasik Simhavalokan* (Hindi). Haryana Sahitya Akademy, Chandigarh, 1991

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

ENGLISH

Course Title: ENGLISH (COMPULSORY)

Course Code: BSML-6212

Course Outcomes

After passing this course, the students will be able to:

CO 1: Comprehend, appreciate and critically analyse a novel through the story of the novel *Train to Pakistan* by Khushwant Singh

CO2: Analyze and appreciate the dramatic technique, plot development and art of characterisation through the study of the prescribed plays from the book *Glimpses of Theatre*

CO 3: Enhance their writing skills by writing essay on any given topics well as to write report on any incident witnessed

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

ENGLISH

Course Title: ENGLISH (COMPULSORY)

Course Code: BSML-6212

Examination Time: 3 Hrs **Max. Marks: 50**

Theory: 40

CA: 10

Instructions for the Examiner:

Section A: Three questions from the novel *Train to Pakistan* from Unit I and three questions from *Glimpses of Theatre* from Unit II requiring very short answers will be set. The students would be required to answer any five, each carrying 2 marks (50 words each). **(5x2=10)**

Section B: Four questions requiring brief descriptive answers based on character, plot and theme(s) in the novel *Train to Pakistan* from Unit I will be set and students would be required to attempt any two, each carrying 5 marks (250 words each). **(2x5=10)**

Section C: Four questions based on the central idea, theme, tone or style etc. of the prescribed plays from the textbook, *Glimpses of Theatre* from Unit II will be set for the students to attempt any two, each carrying 5 marks (250 words each). **(2x5=10)**

Section D: Two questions with internal choice will be set based on (a) Essay Writing, carrying six marks (word limit 300 words) (b) Report Writing, carrying four marks (word limit 200 words). **(1x6+1x4=10)**

Unit I

Train to Pakistan by Khushwant Singh

Unit II

Glimpses of Theatre
i) The Will
ii) Villa for Sale
iii) Progress
iv) The Monkey's Paw

Unit III

Essay Writing and Report Writing

Texts Prescribed:

1. *Train to Pakistan* by Khushwant Singh

2. *Glimpses of Theatre*, Guru Nanak Dev University Amritsar

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

ZOOLOGY

Course title: -MEDICAL ZOOLOGY

Course Code: BSMM-6483 (I)

(THEORY)

Course Outcomes

After successfully completing this course, students will be able to:

CO-1. Understand about various pathogenic microbes, life history of various pathogenic protozoans and helminths as well as diseases caused by them.

CO-2. Know about life history, diseases and control measures of arthropod vectors and awareness about epidemic diseases.

CO-3. Provide basics knowledge about immune responses, antigens, antibody structure and immunoglobulins.

CO-4. Understand antigen-antibody interactions and gain knowledge about vaccines.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

Course Title: -MEDICAL ZOOLOGY

Course Code: BSMM-6483 (I)

(THEORY)

Max. Time: 3 Hrs. **Max Marks: 30**

Instructions for the Paper Setter

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

1. Introduction of Parasitology (various terminologies in use).
2. Brief introduction to pathogenic microbes, viruses, Rickettsiae, spirochaetes and bacteria.
3. Brief accounts of life history, mode of infection and pathogenicity of the following with reference to man; prophylaxis and treatment:

a) Pathogenic protozoa: *Entamoeba, Trypanosoma, Leishmania, Giardia, Trichomonas* and *Plasmodium.*

b) Pathogenic helminthes: *Fasciola, Schistosoma, Echinococcus, Ancylostoma, Trichinella, Wuchereria, Dracunculus* and *Oxyuris.*

UNIT-II

4. Life cycle and control measures of arthropod vectors of human disease: Malaria *(Anopheles stephens, A.culicifaces,* Yellow fever, Dengue, Dengue haemorrhagic fever and Chickengunea. *(Aedes aegypti A. Albopicuts)*; Filariasis *(Culex pipien satigeans) Mansonia* sp. Japanese Encephalitis *(C. trinanelorhynchus);* Plague *(Stenophalide cheopis)* and Epidemic Typhus *(Pediculus spp).*
5. Epidemic diseases, such as Typhoid, Cholera, Small pox; their occurrence and eradication programs.

UNIT-III

6. Brief introduction to human defence mechanisms.
7. Humoral and cell mediated immune response. Physical & chemical properties of antigens. Antibody structure and function of M, G, A, E and D immunoglobulins.

UNIT-IV

8. Antigen and antibody interactions-Serodiagnostic assays (Precipitation, agglutination immunodiffusion, ELISA, RIA)
9. Vaccines

Suggested Readings:

1. Baker,F.J.andSilverton,R.E.(1985)IntroductiontoMedicalLaboratoryTechnology,(6th ed), Butlerworth and Co.Ltd.
2. Chatterjee, K.D. (2019), Parasitology, Protozoology and Helminthology (13thed).
3. Cheesborough, M. (1991), Medical Laboratory Technology for Tropical countries, Butlerworth and Co.,Ltd.
4. Garcia, L.S. (2001), Diagnostic Medical Parasitology, (4th ed), ASM Press Washington.
5. Kimball,J.W.(1987),Introduction of Immunology, (2nd ed),MacMillian Publishing Co., NewYork.
6. Kuby, J. (2013), Immunology, 7th Edition W.H. Freeman & Co.,USA.
7. Roitt, I. (2017), Essential Immunology, 13th Edition, Blackwell Scientific Publications, Oxford.
8. Talib, V.H. (2019), Essential Laboratory Manual,2nd edition, Mehta Publishers, New Delhi.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

ZOOLOGY

Course Title: MEDICAL LABORATORY TECHNOLOGY

Course Code: BSMM-6483 (II)

(THEORY)

Course Outcomes

After successfully completing this course, students will be able to:

CO 1: Comply with safety regulations and universal precautions during lab investigations and perform basic laboratory techniques on biological specimens.

CO 2: Know about routine clinical laboratory investigations including collection of different samples and perform other routine hematological procedures.

CO 3: Describe basic scientific principles in learning new techniques and procedures in bacteriology and microbiology.

CO 4: Apply knowledge and technical skills associated histopathology, staining techniques and biochemical estimations.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

ZOOLOGY

Course Title: MEDICAL LABORATORY TECHNOLOGY

Course Code: BSMM-6483 (II)

(THEORY)

Max. Time: 3 Hrs. **Max Marks: 30**

Instructions for the Paper Setter

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

Laboratory safety rules, hazards and precautions during sample collection and laboratory investigations.

Laboratory Techniques: Colorimetry, Microscopy, Autoclaving, Centrifugation and Spectrophotometry

UNIT-II

Collection, transportation and preservation of different clinical samples.

Haematology: collection of blood (venous and capillary), anticoagulants (merits and demerits), Romanowsky's stains, total RBC count, erythrocyte sedimentation rate, TLC, DLC, platelet count.

UNIT-III

Bacteriology: sterilization (dry heat, moist heat, autoclave, filtration), disinfection, staining techniques,(gram stain, AFB stain,etc),culture media (defined and synthetic media & routine laboratory media), bacterial culture (aerobic and anaerobic) and antibiotic sensitivity.

UNIT-IV

Histopathology: Common fixatives and staining techniques.

Biochemistry: Principal/theory and significance of estimation of urea, sugar, cholesterol, creatinine, enzymes (transaminase, phosphatase, amylase and lipase), uric acid in blood, estimation of proteins, sugar, bile salts, ketone bodies in urine and liver function test.

Suggested Readings:

1. Baker, F.J. and Silverton, R.E. (1985) Introduction to Medical Laboratory Technology, (6th ed), Butlerworth and Co. Ltd.
2. Chatterjee, K.D. (2019), Parasitology, Protozoology and Helminthology (13thed).
3. Cheesborough, M. (1991), Medical Laboratory Technology for Tropical countries,Butlerworth and Co., Ltd.
4. Garcia, L.S.(2001), Diagnostic Medical Parasitology, (4th ed), ASM Press Washington.
5. Kimball, J.W. (1987),IntroductionofImmunology, (2nd ed),MacMillian Publishing Co., NewYork.
6. Kuby, J. (2013), Immunology, 7th Edition W.H. Freeman & Co.,USA.
7. Roitt, I. (2017), Essential Immunology, 13th Edition, Blackwell Scientific Publications, Oxford.
8. Talib, V.H. (2019), Essential Laboratory Manual, 2nd edition, Mehta Publishers, NewDelhi.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

ZOOLOGY

Course Title: PRACTICAL–V (Related to Medical Zoology & Medical Laboratory Technology)

Course Code: BSMM-6483 (P)

(PRACTICAL)

Course Outcomes

CO1: Apply knowledge and technical skills associated with medical laboratory technology for delivering quality clinical investigations support.

CO2: Perform basic clinical laboratory procedures using appropriate laboratory techniques and instrumentation in accordance with current laboratory safety protocol

CO3: Recognize the role of medical laboratory technology in the context of providing quality patient health care.

CO4: Understanding of sterilization techniques and will also learn about various histotechniques, handling and processing of tissue specimens as well as staining procedures.

CO5: Understanding of estimation of protein & sugar

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

ZOOLOGY

Course Title: PRACTICAL–VI (Related to Medical Zoology & Medical Laboratory Technology)

Course Code: BSMM-6483 (P)

(PRACTICAL)

Time: 3 hrs. **Max. Marks:20**

Instructions for the Practical Examiners: Question paper is to set on the spot jointly by the Internal and External Examiners. Two copies of the same should be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar

1. Demonstration of safety rules in laboratory like proper handling of patients, specimens and disposal of syringes, needles etc.
2. Demonstration of the use of autoclave, centrifuge and spectrophotometer.
3. Cleaning and sterilization of glass ware, using hot air oven, autoclave etc.
4. Physico-chemical examination of urine.
5. Preparation of thick and thin blood smear.
6. Counting of WBC, RBC and DLC.
7. Study of permanent slides and specimens of parasitic protozoans, helminthes and arthropods mentioned in the theory syllabus.
8. ESR and haematocrit.
9. Estimation of blood sugar, protein.
10. Demonstration of fixation, embedding, cutting of tissue sections, and their staining (routine haematoxylin and eosin).
11. Visit to a pathology Lab and preparation of report.

Guidelines for conduct of Practical Examination:

1.	Write down the principle and working of the given equipment.	4
2.	Write down the procedure, precautions and perform the experiment for physico-chemical examination of urine/ haematology.	4
3.	Identification, pathogenicity and host of parasitic organism.	4
4.	Estimation of blood sugar / protein in the given sample.	4
5.	Viva-voce and practical file	4

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

MICROBIOLOGY

Course Title: APPLIED MICROBIOLOGY-II

Course Code: BSMM-6343

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the processing of fermented foods.

CO2: Understand the Microbial Cell as Fermentation Products and production of different industrial chemicals.

CO3: Understand the role of microorganisms in preparation of alcoholic beverages and industrial enzymes.

CO4: Understand the role of microorganisms in the production of vitamins, amino acids and antibiotics.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

MICROBIOLOGY

Course Title: APPLIED MICROBIOLOGY-II

Course Code: BSMM-6343

(THEORY)

Time: 3 Hours **Max Marks: 100**

Theory Marks: 60

Practical Marks: 20

CA: 20

Instructions for the Paper Setters: Eight questions of equal marks are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

Fermentation Process of Fermented Foods: Fermented cereal, legume and milk products. Microbiology of natural fermentation. Sauerkraut, Yoghurt, Soya sauce, Cheese.

UNIT-II

Microbial Cell as Fermentation Products: Baker's and brewer's yeast, single cell protein, mushroom farming. Production of industrial chemicals: Acetic acid, Citric acid, Acetone and Butanol.

UNIT-III

Production of alcoholic Beverages: Beer, wine and distilled beverages – Whisky, Brandy, Vodka, Gin production and applications of industrial enzymes: Amylases, Proteases, immobilization of enzymes.

UNIT-IV

Vitamins and Amino acids production by Microorganisms: Riboflavin (B2) and Cyanocobalamin (B12), Glutamic acid. Production of antibiotics: Penicillin and Streptomycin.

Books Recommended:

1. Read, G. 1982. Prescott and Dunn, *Industrial Microbiology*. CBS Publishers & Distributers, New Delhi.
2. Casida, L.E. 1991. *Industrial Microbiology*. Wiley Eastern Ltd., New Delhi.
3. Patel, A.H. 1984. *Industrial Microbiology*. Macmillan India Ltd., Delhi.
4. Trevan, M.D. Saffey, S., Goulding, K.H. and Stanberry, P. 1988. *Biotechnology: The Biological Principles*, Tata McGraw Hill Publishing Co. Ltd., New Delhi
5. Wiseman, A. 1995. *Handbook of Enzyme Biotechnology*. Ellis Harwood Ltd., London.
6. Wood, J.B.B., 1998. *Microbiology of Fermented Foods*, Volumes 1 and 2, Blackie Academic and Professional, London.
7. Power C.B. and Dagniwala, H.F. 1992. *General Microbiology*. Volume-2. Himalaya Publishing House, New Delhi.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

MICROBIOLOGY

Course Title: APPLIED MICROBIOLOGY-II

Course Code: BSMM-6343

(PRACTICAL)

Time: 3 Hours **Marks: 20**

Instructions for the practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

LIST OF PRACTICALS:

1. Production of amylases and proteases in liquid medium using the selected organisms.
2. Assay of crude enzyme preparation for Amylase.
3. Assay of crude enzyme preparation for Protease.
4. Production of alcohol from molasses and cereal grains.
5. Immobilization of microbial cells and enzyme preparations by calcium alginate entrapment method.
6. Comparison of submerged and solid-state fermentation techniques for amylase production.
7. To study the production of wine and vinegar.
8. To study the kinetics of growth of yeast in batch/continuous culture.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

CHEMISTRY

COURSE TITLE: Molecular Spectroscopy

COURSE CODE: BSMM-6084 (I)

(THEORY)

Course Outcomes

Students will be able to

CO1: Understand the principle and applications of ultraviolet and apply Woodward Fisher Rule to calculate λ_{max}

CO2: Understand the concepts of Vibrational spectroscopy, Vibrational coupling overtones and Fermi resonance and its application in Organic Chemistry

CO3: Know about the Nuclear magnetic resonance spectroscopy. Proton chemical shift, spin-spin coupling, coupling constants and its applications to determine organic structures

CO4: To understand different cleavage patterns of organic compounds in Mass spectrometry and apply the knowledge for interpretation of the spectrum of an unknown compound.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

CHEMISTRY

COURSE TITLE: Molecular Spectroscopy

COURSE CODE: BSMM-6084 (I)

(THEORY)

Examination Time: 3 Hrs. **Max. Marks: 30**

Instructions for the Paper Setters:

Eight questions of equal marks (six marks each) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

UNIT –I

1. Energy and ElectromagneticSpectrum

Introduction, electromagnetic spectrum and Units, Regions of the spectrum,Statement of Born-Oppenheimer approximation, Degree of freedom, Frank Condon Principle, Fluorescence and Phosphorescence.

II. Ultraviolet and Visible Spectroscopy

The energy of electronic excitation, Measurement techniques, Beer-Lambert Law, Molar extinction coefficient. Different types of transition noticed in UV spectrum of organic functional groups and their relative energies. Chromophore, Auxochromes, Absorption and intensity shifts, Factors affecting λ_{max} , Effect of steric hindrance to coplanarity, Solvent effects.

UNIT – II

III. Infrared Spectroscopy

Vibrational energy levels, Selection rules, Force constant, Fundamental vibration frequencies, Factors influencing Vibrational Frequencies (Vibrational Coupling, Hydrogen Bonding, Electronic effect, Bond Angles, Field Effect) of different functional groups, Sampling techniques.

IV. Applications of UV and IR Spectroscopy

Applications of UV spectroscopy, Woodward Fieser rules for calculating λ_{max} of conjugated polyenes and α,ß -unsaturated carbonyl compounds. Applications of IR

spectroscopy, Absorption of Common functional Groups, Interpretation of simple IR spectra, Finger print regions. Simple numerical problems based on UV and IR spectroscopy.

UNIT-III

V. Proton Magnetic Resonance spectroscopy (^{1}HNMR)

The Nuclear spin, Larmor frequency, the NMR isotopes, Population of nuclear spin level, Spin and Spin lattice relaxation, Measurement techniques (CW and FT method), Solvent used, Reference compounds, Chemical shift, nuclear shielding and deshielding, chemical shift, spin-spin splitting and coupling constants, Anisotropic effect, Application of structure elucidation of simple organic molecules

UNIT- IV

VI. Mass Spectrometery

Basic Principles, Elementary theory, Molecular ions, isotope ions, Fragment ions of odd and even electron types, Nitrogen rule, Factors affecting cleavage patterns, Simple cleavage, Cleavages at a hetero atom, Multicentre fragmentations, Rearrangements, Diels – Alder fragmentation, Mc Lafferty rearrangement, Interpretation of the spectrum of unknown simple molecules.

Books Recommended:

1. Organic Spectroscopy By W. Kemp; Publisher- Palgrave, NewYork
2. D.H. Williams and I. Fleming. Spectroscopic Methods in Organic Chemistry.
3. Spectrometric Identification of Organic Compounds - R.M. Silverstein and F. X. Webster; Publisher: John Willey and Sons,Inc.
4. Introductory Problems in Spectroscopy- By R.C. Banks, E.R. Matjeha and G. Mercer; Publisher: The Benzamine / Cummings Publishing CompanyInc.
5. Introduction to Spectroscopy – D. L. Pavia, G. M .Lampman, and G. S. Kriz Publisher: Brooks / Cole, a part of cengage learning

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

CHEMISTRY

Course Title: PHYSICAL CHEMISTRY

Course Code: BSMM-6084 (II)

(THEORY)

Course outcomes:

Students will be able to

CO1: Understand schrodinger wave equation (S.W.E) and its applications to partical in one, two and three dimensional boxes.

CO2: Understand the applications of S.W.E to rigid rotator, harmonic oscillators, hydrogen and hydrogen like atoms, quantum numbers

CO3: Acquire knowledge about unit cell,space lattice, miller indices, symmetry operations, Bragg equation, powder method

CO4: Understand photophysical, photo chemical, radioative and non-radiative processes, quantum yield, energy transfer processes

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

CHEMISTRY

Course Title: PHYSICAL CHEMISTRY

Course Code: BSMM-6084 (II)

(THEORY)

Time: 3 Hrs. **Max. Marks: 30**

Note: Instructions for the Paper Setter

Eight questions of equal marks (6 each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT–I

1. Quantum Mechanics-I (12 Hrs)

Black-body radiation, Planck's radiation law, Photoelectric effect, heat capacity of solids, Bohr's
model of hydrogen atom (no derivation) and its defects, Compton effect. de Broglie hypothesis, Heisenberg's uncertainty principle, Sinusoidal wave equation, Hamiltonian operator, Schrodinger wave equation and its importance, physical interpretation of the wave function, postulates of quantum mechanics, particle in a one dimensional box, quantization of energy levels, extension to two and three dimensional boxes, degeneracy.

UNIT–II

2. Quantum Mechanics-II (12 Hrs)

Simple harmonic oscillator model of vibrational motion, setting up Schrodinger equation and discussion of solution and wave functions. Rigid rotator model of rotation of diatomic molecules
transformation to spherical polar coordinates spherical harmonics and their discussion. Qualitative
investigation H-atom, setting up Schrodinger equation, radial and angular part, radial distribution
functions of 1s, 2s, 2p, 3s, 3p and 3d

UNIT–III

3. Solid State (10 Hrs)

Definition of space lattice and unit cell, Law of crystallography- (i) Law of constancy of interfacial
angles, (ii) Law of rationality of indices, (iii) Symmetry elements in crystals. X-ray diffraction by crystals. Derivation of Bragg's Law in Reciprocal space.Determination of crystal structure of NaCl, KCl by use of Powder method; Laue's method.

UNIT-IV

4.Photochemistry (11Hrs)

Interaction of radiation with matter, difference between thermal and photochemical processes. Laws of photochemistry: Grothus–Drapper law, Stark–Einstein law, Jablonski diagram depicting various processes occurring in the excited state, qualitative description of flourescence, phosphorescence, non–radiative processes (internal conversion, intersystem crossing), quantum yield, photosensitized reactions–energy transfer processes (simple examples).

Books Suggested:

1. Atkins, P., Paula, J.de, Atkins, Physical Chemistry; 8th edition, Pubs: Oxford University Press, 2008.
2. Puri, B.R., Sharma, L.R., Pathania, M.S., Principles of Physical Chemistry; 43rd edition, Pubs: Vishal Publishing Co., 2008.
3. Barrow, G.M., Physical Chemistry; 6th edition, Pubs: McGraw Hill Company Inc., 1996.
4. Rao, C.N.R., University General Chemistry; Pubs: Macmillan of India, 1985.
5. Berry, R.S., Rice, S.A., Ross, J., Physical Chemistry; 2nd edition, Pubs: Oxford University Press, 2000.
6. Albert, R.A., Silbey, R.J., Physical Chemistry; I edition, Pubs: John Wiley and Sons Inc., 1992.
7. Dogra, S.K., Dogra, S., Physical Chemistry Through Problems, Pubs: Wiley Eastern Ltd., 1991.
8. Levine, I.N., Physical Chemistry; 5th edition, Pubs : Tata McGraw Hill Publishing Co. Ltd.,2002.
9. Moore, W.J., Basic Physical Chemistry; Pubs : Prentice Hall of India Pvt. Ltd., 1983.
10. Metz, C.R., Theory and Problems of Physical Chemistry; Schaum's outline series, 2nd edition, Pubs:McGraw-Hall Book Company, 1989.
11. Banwell, C.N., McCash, E.M., Fundamentals of Molecular Spectroscopy; 4th edition, Pubs:Tata McGraw Hill Publishing Co. Ltd., 1999.
12. Atkins, P. Friedman, R., Molecular Quantum Mechanics; 4th edition Pubs: Oxford University Press, 2007.

13. Levine, I.N., Quantum Chemistry; 5th edition, Pubs: Prentice Hall International Inc., 2000.
14. Inorganic Chemistry, W.W. Porterfield Addison-Wesley.
15. Inorganic Chemistry, A.G. Sharpe, ELBS.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

CHEMISTRY

Course Title: CHEMISTRY PRACTICAL

Course Code: BSMM-6084 (P)

(PRACTICAL)

Course outcomes:

Students will be able to

CO1: Separate the various mixtures by Column Chromatography technique

CO2: Synthesize different Organic Compounds

CO3: Synthesise the different compounds by Green Approach

CO4: Prepare the different dyes

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

CHEMISTRY PRACTICAL

Course Title: CHEMISTRY PRACTICAL

Course Code: BSMM-6084 (P)

(PRACTICAL)

Duration: 3½ hrs. **Max. Marks: 20**

Instruction for practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same should be submitted for the record to COE office, Kanya Maha Vidyalaya, Jalandhar.

(I) Organic Chemistry Laboratory Techniques

(a) Column Chromatography

Separation of o and p nitrophenol

Separation of Leaf pigments from Spinnach leaves

Separation of o and p nitro aniline

Separation of dyes.

(b) Synthesis of Organic Compounds

Preparation of p-nitroacetanilide

Preparation of p-bromoacetanilide

Green Chemistry Experiment: Preparation of benzilic acid from Benzyl-using green approach.

Preparation of Methyl Orange, Methyl Red

Preparation of benzilic acid from benzyl-using green approach

Practical Examination

1) Column Chromatography= 07

2) Organic Synthesis =16

3) Viva-Voce =04

4) Note Book= 03

Books suggested:

1. Experimental Organic Chemistry, Vol. I and II, P.R. Singh, D.S. Gupta and K.S. Bajpai, Tata McGraw Hill.
2. Laboratory Manual in Organic Chemistry, R.K. Bansal, Wiley Eastern.
3. Vogel's Textbook of Practical Organic Chemistry, B.S. Furniss, A.J. Hannaford, V. Rogers, P.W.G. Smith and A.R. Tatchell, ELBS.
4. Experiments in General Chemistry, C.N.R. Rao and U.C. Aggarwal, East-West Press.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

BOTANY

Course Title: Ecology

Course Code: BSMM-6075 (I)

(THEORY)

Course outcomes: -

After passing this course the student will develop:

CO1.Understand the abiotic components and relationship with living organism.

CO2.Demonstrate an understanding keys of community ecology and biodiversity

CO3.Understand the structure and function of ecosystem and growth curve

CO4. Study the biogeographical region and vegetation of India

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

BOTANY

Course Title: Ecology

Course Code: BSMM-6075 (I)

(Theory)

Examination Time: 3Hrs **Max. Marks: 30**

Instructions for the Paper Setters:

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

.

Unit-I

Plants and Environment: Atmosphere (gaseous compositions), water (properties of water cycle),light (global radiation, photosynthetically active radiation), temperature, soil (development, soil profiles, physico-chemical properties), and biota.
Morphological, anatomical and physiological responses of plants to water (hydrophytes and xerophytes), temperature (thermoperiodicity and vernalization), light (photoperiodism, heliophytes and sciophytes) and salinity.

Unit-II

Community Ecology: Community characteristics, absolute and relative frequency, density and dominance, basal area and importance value index (IVI), Whittaker's classification of biodiversity, indices of alpha, beta and gamma diversity, life forms, biological spectrum, ecological succession.

Unit-III

Population Ecology: Growth curves, ecotypes, ecads.
Ecosystem: Structure, abiotic and biotic components, food chain, food web, ecological pyramids, energy flow, biogeochemical cycles of carbon, nitrogen and phosphorus.

Unit-IV

Biogeographical Regions of India
Vegetation types of India: Forests and grasslands
Landscape Ecology: Definition & concept, effect of patch size and shape on biodiversity, dynamics of land use.

Suggested Readings:

1. De, Debapriya and De, Debasish (2014). Fundamentals of Environment and Ecology. S. Chand Publishing, New Delhi

2. Kumar, H.D. (2018). Modern Concepts of Ecology 8th edition.Vikas Publishing House, New Delhi.
3. Mackenzie, A., Ball, A. and Virdee, S. (2001). Instant Notes in Ecology. Taylor & Francis, London, United Kingdom
4. Odum, E.P. and Barrett, G.W. (2012). Fundamentals of Ecology. Cengage Learning India Pvt.Ltd., New Delhi.
5. Saini, A. (2019). Plant Ecology. Trueman Book Company. New Delhi.
6. Sharma, P.D. (2017). Environmental Biology and Toxicology. 3rd edition. Rastogi Publications, Meerut.
7. Srivastava, H. N. (2020). Botany Vol VI, Ecology and Utilization of Plants. Pradeep publications, Jalandhar.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

BOTANY

Economic Botany

Course Code: BSMM-6075 (II)

(THEORY)

Course outcome: -

After passing this course the students will be able to:

CO1: Understand the cultivation and economic importance of various food plant crops, fibre and oil yielding plants.

CO2: Understand the economic importance of spices and condiments.

CO3: Understand economic importance of medicinal plants.

CO4: Understand the processing and economic value of beverages, rubber plant, firewood, timber and bamboos.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

BOTANY

Course Title: Economic Botany

Course Code: BSMM-6075 (II)

(THEORY)

Examination Time: 3 Hrs **Max. Marks: 30**

Instructions for the Paper Setters:

Eight questions of equal marks (6 marks each) are to be set, two in each of the four Sections (I-IV). Questions of Sections I-IV should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

Unit-I

Food Plants: *Oryza sativa* (Rice), *Triticum aestivum* (Wheat), *Zea mays* (Maize), *Solanum tuberosum* (Potato), *Saccharum officinarum* (Sugarcane).

Fibres: *Gossypium hirsutum* (Cotton) and *Chorchorus capsularis* (Jute).

Vegetable Oils: *Arachis hypogea* (Groundnut), *Brassica campestris* (Mustard) and *Cocos nucifera* (Coconut).

Unit-II

Spices: General account of *Piper nigrum* (Black pepper), *Eugenia caryophyllum* (Cloves), *Cinnamomum verum* (Cinnamomum), *Elettaria cardamomum* (cardamom), *Zingiber officinalis* (Ginger), *Curcuma longa* (Turmeric), *Coriandrum sativum* (Coriander), *Foeniculum vulgaris*(Fennel) and *Mentha arvensis* (Mint).

Unit-III

Medicinal Plants: General account of *Terminalia chebula* (Harar), *Terminalia belerica* (Bahera), *Azadirachta indica* (Neem), *Phyllanthus emblica* (Amla), *Aconitum napellus* (Aconite), *Rauwolfia serpentina* (Sarpagandha), *Atropa belladonna* (Belladonna), *Datura stramonium* (Datura), *Withania somnifera* (Ashwagandha) *and Papaver somniferum* (Poppy).

Unit-IV

Beverages: *Camellia sinensis* (Tea) and *Coffea arabica* (Coffee).

Rubber: Morphology of *Hevea brasiliensis* (Rubber), Processing and Uses. General account of sources of firewood, timber and bamboos.

Suggested Readings:

1. Verma, V. (2016). Textbook of Economic Botany, ANE Books, New Delhi.
2. Das, K. (2014). Medicinal plants- Their importance in Pharmaceutical Sciences, Kalyani Publishers, New Delhi.
3. Kocchar, S.L. (2016). Economic Botany of the Tropics, Macmillan India Pvt. Ltd., New Delhi.
4. Prinentel, D. and Hall, C.W. (Eds.) (2001). Food and Natural Resources. Academic Press,London, New York.
5. Reddy, K. et al. (2015). Advances in Medicinal plants, Universities Press, Hyderabad.
6. Sharma, O.P. (1996). Hill's Economic Botany. Tata McGraw Hill Co. Ltd., New Delhi.
7. Swaminathan, M.S. and Kocchar, S.L. (Eds) (2009). Plants and Society. Macmillan Publications Ltd., London.
8. Council of Scientific & Industrial Research (1986). The Useful Plants of India. Publications and Information Directorate. CSIR, New Delhi.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

BOTANY

Course Title: PRACTICAL: - Ecology and Economic Botany (I &II)

Course Code: BSMM-6075 (P)

(PRACTICAL)

Course Outcomes:

On completion of this course, the students will be able to:

CO1. Determination of abundance and frequency of species by quadrate method.

CO2. To measure the dissolved oxygen content in polluted and unpolluted water samples.

CO3. Study of anatomical peculiarities with reference to ecological adaptations.

CO4. Preparation of different stains, solutions and reagents as per theory paper.

CO5. To understand the economic importance of plants.

CO6. To acquire knowledge in the preparation of herbarium techniques. Submission of field report and practical records.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

BOTANY

Course Title: PRACTICAL: - Ecology and Economic botany (I &II)

Course Code: BSMM-6075 (P)

(PRACTICAL)

TIME: 3 Hrs **Marks: 20**

Instructions for the paper setter: question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Suggested Laboratory Exercises

1. To determine minimum number of quadrats required for reliable estimate of biomass in grasslands through species area curves.
2. To study the frequency of herbaceous species in grassland and to compare the frequency distribution with Raunkiaer's Standard Frequency Diagram.
3. To estimate Importance Value Index for grassland species on the basis of relative frequency, relative density and relative dominance in protected and grazed grassland.
4. To measure the vegetation cover of grassland through point frame method.
5. To measure the above ground plant biomass in a grassland.
6. To study the morphological anatomical features of hydrophytes (*Hydrilla, Eichhornia*) Xerophytes (*Nerium, Calotropis*).
7. To determine diversity indices (richness, Simpson, Shannon-Weaver) in grazed and protected grassland.
8. To estimate bulk density and porosity of grassland and woodland soils.
9. To determine moisture content and water holding capacity of grassland and woodland soil.
10. To study the vegetation structure through profile diagram.
11. To estimate transparency, pH and temperature of different water bodies.
12. To measure dissolved oxygen content in polluted and unpolluted water samples.
13. To estimate salinity of different water samples.
14. To determine the percent leaf area injury of different leaf samples collected around polluted sites.
15. To estimate dust-holding capacity of the leaves of different plant species.

16. **Food Plants:** Study of the morphology, structure and simple microchemical tests of the foods storing tissues rice, wheat, maize, potato and sugarcane. Microscopic examination of starchinthese plants (excepting sugarcane).
17. **Fibres:** Study of cotton flowers, sectioning of the cotton ovules/developing seeds to trace the origin and development of cotton fibers. Microscopic study of cotton and test for cellulose.
18. Sectioning and staining of jute stem to show the location and development of fibers.
19. Microscopic structure. Tests for lignocelluloses.
20. **Vegetable Oils:** Study of hand sections of groundnut, mustard and coconut and staining ofoildroplets by Sudan III and Sudan Black.
21. **Field Visits:** To study sources of firewood (10 plants)/timber yielding trees (10trees)/bamboos, list to be prepared mentioning special features, collection of plant based articles of common use.
22. **Spices:** Examine black pepper, cloves, cinnamon (hand sections) and opened of cardamom and describe them briefly.
23. Preparations of an illustrated inventory of 10 medicinal plants used in indigenous systems of medicine or allopathy: Write their botanical and common names parts used and diseases/disorders for which they are prescribed.
24. **Beverages:** Section boiled coffee beans and tea leaves to study the characteristic structural features.
25. Visit to *in situ* conservation site/Botanical Garden.

Suggested Readings (for laboratory exercises)

1. Council of Scientific & Industrial Research. (1986). The Useful Plants of India. Publications and Information Directorate. CSIR, New Delhi.
2. Kocchar, S.L. (2016). Economic Botany of the Tropics, Macmillan India Pvt. Ltd., New Delhi.
3. De, Debapriya and De, Debasish (2014). Fundamentals of Environment and Ecology. S. Chand Publishing, New Delhi
4. Kumar, H.D. (2018). Modern Concepts of Ecology 8thedition. Vikas Publishing House, New Delhi.
5. Mackenzie, A., Ball, A. and Virdee, S. (2001). Instant Notes in Ecology. Taylor & Francis, London, United Kingdom

6. Prinentel, D. and Hall, C.W. (Eds.) (2001). Food and Natural Resources. Academic Press, London, New York.
7. Sharma, O.P. (1996). Hill's Economic Botany. Tata McGraw Hill Co. Ltd., New Delhi.
8. Swaminathan, M.S. and Kocchar, S.L. (Eds.) **(2009).** Plants and Society. Macmillan Publications Ltd., London.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

Course Title: Food Science and Quality Control (Vocational) (FOOD PLANT LAYOUT AND MANAGEMENT)

Course Code: BSMM-6255

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the importance of plant layout and learn how to set up the proper plant layout to reduce the production cost and increase the productivity.

CO2: Learn how market research helps to understand the consumers, their needs and their satisfaction level.

CO3: Understand the societal changes and their impact on food consumption trends.

CO4: Learn about product development and different types of food products.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

Course Title: Food Science and Quality Control (Vocational) (FOOD PLANT LAYOUT AND MANAGEMENT)

Course Code: BSMM-6255

(THEORY)

Examination Time: 3 Hours

Max. Marks: 100

Theory Marks: 60

Practical Marks: 20

CA: 20

Instructions for the Paper Setter: Eight questions of equal marks (12 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

1. Importance of a plant layout, selection of site and layouts of different food industries.
2. Selection of equipments, machinery and building material, selection and planning of manufacturing process and service facilities
3. Maintenance and replacement, Depreciation of machinery, Management set up in a plant.

UNIT-II

4. Market and Consumer Research
5. Economic, Psychological, Anthropological and Sociological dimensions of food consumption pattern. Food situation in India and outside.

UNIT-III

6. Needs and types of Food consumption trends. Trends in social change and its role in diet pattern using social trends as a framework in new product innovation.
7. Trapping the unconventional post-harvest losses and prospects of food processing for export.

UNIT –IV

8. Traditional foods-Status and need for revival in the context of westernized non-traditional foods, urbanization and such factors.

9. Product development: Primary Processing, Secondary Processing, Types of products e.g. Quick cooking, fast foods, fabricated food, convenience foods.

Books Recommended:

1. Principle of Food Sanitation by Marriott, 5th ed., 2006, CBS Publishers, New Delhi.
2. Food Processing Waste Management by Green JH and Kramer A, 1979, AVI Publishers, USA.
3. Food Science by Potter NN, 5th ed., 2006, CBS Publishers, New Delhi.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

Course Title: Food Science and Quality Control (Vocational) (FOOD PLANT LAYOUT AND MANAGEMENT)

Course Code: BSMM-6255

(PRACTICAL)

Time: 3 hours **Marks: 20**

Instructions for the practical examiner: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE office, Kanya Maha Vidyalaya, Jalandhar.

List of Practicals

1. Calculation of depreciation and processing costs.
2. Preparation of layout and Process diagram of potato chips manufacturing plant.
3. Preparation of layout and Process diagram of jam/marmalade manufacturing plant.
4. Preparation of layout and Process diagram of bread making plant.
5. Preparation of layout and Process diagram of dairy industry.
6. Preparation of layout and Process diagram of wine making unit.
7. Preparation of layout and Process diagram of modern slaughter plant.
8. Preparation of layout and Process diagram of confectionary unit.
9. Determination of sanitary status of plant equipment.
10. Visit to various food industries.