FACULTY OF SCIENCES

SYLLABUS

For

BACHELOR OF SCIENCE (Non-Medical)

(Semester I-VI)

(Under Continuous Evaluation System)

Session: 2020-21

The Heritage Institution

KANYA MAHA VIDYALAYA JALANDHAR (AUTONOMOUS)

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

CURRICULUM AND SCHEME OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAM

BACHELOR OF SCIENCE (Non-Medical)

Session-2020-2021

Bachelor of Science(Non-Medical)

Semester I

Course Code		Course Name	Course Type	Total	Ext.		CA	Examination time (in Hours)
					L	P		
BSNL-1421 BSNL-1031 BSNL-1431		Punjabi (Compulsory) [1]Basic Punjabi [2]Punjab History & Culture	C	50	40	-	10	3
BSNl-1212		English (Compulsory)	C	50	40	-	10	3
BSNM-1333	(I)	**Mathematics** (Algebra)	C	100	80 (40+40)	-	20	3+3
	(II)	**Mathematics** (Calculus and Trigonometry)						
BSNM-1084	(I)	**Chemistry** (Inorganic Chemistry)	C	100	60 (30+30)	20	20	3+3+3½
	(II)	**Chemistry** (Organic Chemistry)						
	(P)	**Chemistry** (Practical)						
BSNM-1395	(I)	**Physics** (Mechanics)	C	100	60 (30+30)	20	20	3+3+3
	(II)	**Physics** (Electricity And Magnetism)						
	(P)	**Physics** (Practical)						
AECD-1161		*Drug Abuse: Problem Management and Prevention (Compulsory)	AC	50	40	-	10	3
SECF-1492		*Foundation Programme	AC	25	25	-	-	2
Total				400				

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CURRICULUM AND SCHEME OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAM

BACHELOR OF SCIENCE (Non-Medical)

Session-2020-2021

BACHELOR OF SCIENCE (Non-Medical)

Semester II

Course Code		Course Name	Course Type	Total	Ext.		CA	Examinati on time (in Hours)
					L	P		
BSNL-2421 BSNL-2031 BSNL-2431		Punjabi (Compulsory) [1]Basic Punjabi [2]Punjab History & Culture	C	50	40	-	10	3
BSNL-2212		English (Compulsory)	C	50	40	-	10	3
BSNM-2333	(I)	**Mathematics** (Calculus and Differential equations)	C	100	80 (40+40)	-	20	3+3
	(II)	**Mathematics** (Calculus)						
BSNM-2084	(I)	**Chemistry** (Inorganic Chemistry)-I	C	100	60 (30+30)	20	20	3+3+3
	(II)	**Chemistry** (Physical Chemistry)-II						
	(P)	**Chemistry** (Practical)						
BSNM-2395	(I)	**Physics** (Relativity And Electromagnetism)	C	100	60 (30+30)	20	20	3+3+3
	(II)	**Physics** (Vibration And Waves)						
	(P)	**Physics** (Practical)						
AECD-2161		*Drug Abuse: Problem Management and Prevention (Compulsory)	AC	50	40	-	10	3
SECM-2502		*Moral Education Programme	AC	25	20	-	5	2

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CURRICULUM AND SCHEME OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAM

BACHELOR OF SCIENCE (Non-Medical)

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Bachelor of Science(Non-Medical) **Semester III**								
Course Code		**Course Name**	**Course Type**	**Total**	**Ext.**		**CA**	**Examination time (in Hours)**
					L	**P**		
BSNL-3421 BSNL-3031 BSNL-3431		Punjabi (Compulsory) [1]Basic Punjabi [2]Punjab History & Culture	C	50	40	-	10	3
BSNl-3212		English (Compulsory)	C	50	40	-	10	3
BSNM-3333	(I)	**Mathematics** (Analysis)	C	100	80 (40+40)	-	20	3+3
	(II)	**Mathematics** (Analytical Geometry)						
BSNM-3084	(I)	**Chemistry** (organic Chemistry)	C	100	60 (30+30)	20	20	3+3+3½
	(II)	**Chemistry** (Physical Chemistry)						
	(P)	**Chemistry** (Practical)						
BSNM-3395	(I)	**Physics** (Statistical Physics & Thermodynamics)	C	100	60 (30+30)	20	20	3+3+3
	(II)	**Physics** (Optics)						
	(P)	**Physics** (Practical)						
AECE-3221		*EVS (Compulsory)	AC	50	40	-	10	3
SECP-3512/SECG-3531		* Personality Development Programme/ Gender Sensitization	AC	25	Grade only			1
Total				400				

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CURRICULUM AND SCHEME OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAM

BACHELOR OF SCIENCE (Non-Medical)

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BACHELOR OF SCIENCE (Non-Medical)

Semester IV

Course Code		Course Name	Course Type	Examination time (in Hours)				
				Total	Ext.		CA	
					L	P		
BSNL-4421 BSNL-4031 BSNL-4431		Punjabi (Compulsory) [1]Basic Punjabi [2]Punjab History & Culture	C	50	40	-	10	3
BSNL -4212		English (Compulsory)	C	50	40	-	10	3
BSNM-4333	(I)	**Mathematics** (Statics and Vector Calculus)	C	100	80 (40+40)	-	20	3+3
	(II)	**Mathematics (**Solid Geometry)						
BSNM-4084	(I)	**Chemistry** (Inorganic Chemistry)-I	C	100	60 (30+30)	20	20	3+3+3
	(II)	**Chemistry** (Organic Chemistry)-II						
	(P)	**Chemistry** (Practical)						
BSNM-4395	(I)	**Physics** (Quantum Mechanics)	C	100	60 (30+30)	20	20	3+3+3
	(II)	**Physics** (Atomic Spectra & Lasers)						
	(P)	**Physics** (Practical)						
SECS-4522		* Social Outreach	AC	Grade only				10 hours per sem

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CURRICULUM AND SCHEME OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAM

BACHELOR OF SCIENCE (Non-Medical)

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Semester V

Course Code		Course Name	Course Type	Total	Ext.		CA	Examination time (in Hours)
					L	P		
BSNL-5421 BSNL-5031 BSNL-5431		Punjabi (Compulsory) [1]Basic Punjabi [2]Punjab History & Culture (From 1849-1947 A.D.)	C	50	40	-	10	3
BSML-5212		English (Compulsory)	C	50	40	-	10	3
BSNM-5333	(I)	**Mathematics** (Dynamics)	E	100	80	-	20	3+3
	(II)	**Mathematics** (Number Theory)			(40+40)			
BSNM-5084	(I)	**Chemistry** (Inorganic Chemistry)	E	100	60 (30+30)	20	20	3+3+ 3½
	(II)	**Chemistry** (Physical Chemistry)						
	(P)	**Chemistry** (Practical)						
BSNM-5184	(I)	**Electronics** Microprocessor Architecture (501)						
	(II)	**Electronics** Electronic Communication System (502)						
	(P)	**Electronic** Communication Systems Lab						
BSNM-5395	(I)	**Physics** (Condensed Matter Physics)	E	100	60 (30+30)	20	20	3+3+3
	(II)	**Physics** (Nuclear Physics)						
	(P)	**Physics** (Practical)						
BSNM-5046	(T)	**Bioinformatics (Vocational)** (Computer Methods for Sequence Analysis)	E	100	60	20	20	3+3
	(P)	**Bioinformatics (Vocational)** (Lab in Computer Methods for Sequence Analysis)						
Total				400				

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CURRICULUM AND SCHEME OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAM

BACHELOR OF SCIENCE (Non-Medical)

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BACHELOR OF SCIENCE (Non-Medical)

Semester VI

Course Code		Course Name	Course Type	Examination time (in Hours)				
				Total	Ext.		CA	
					L	P		
BSNL-6421 BSNL-6031 BSNL-6431		Punjabi (Compulsory) [1]Basic Punjabi [2]Punjab History & Culture	C	50	40	-	10	3
BSNL-6212		English (Compulsory)	C	50	40	-	10	3
BSNM-6333	(I)	**Mathematics** (Linear Algebra)	C	100	80 (40+40)	-	20	3+3
	(II)	**Mathematics (**Numerical Analysis)						
BSNM-6084	(I)	**Chemistry** (Organic Chemistry)-I	E	100	60 (30+30)	20	20	3+3+3
	(II)	**Chemistry** (Physical Chemistry)-II						
	(P)	**Chemistry** (Practical)						
BSNM-6184	(I)	**Electronics**(Microprocessor Programming)						
	(II)	**Electronics** (Optical Fiber Communication)						
	(P)	Microprocessor lab						
BSNM-6395	(I)	**Physics**(Radiation and Particle Physics)	E	100	60 (30+30)	20	20	3+3+3
	(II)	**Physics**(Electronics)						
	(P)	**Physics** Practical						
BSNM-6046	(T)	**Bioinformatics** (Vocational) Structural Biology and Molecular Modelling	E	100	60	20	20	3+3
	(P)	**Bioinformatics** (Vocational) (Lab in Structural Biology and Molecular Modelling						

C-Compulsory

E-Elective

AC- Audit Course

AECC- Ability Enhancement Compulsory Course

VBCC- Value Based Compulsory 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**

Programme Specific Outcomes

BACHELOR OF SCIENCE (Non-Medical) (Phy. Chem. Maths.)

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

PSO1. demonstrate proficiency in mathematics and the mathematical concepts needed for a proper understanding of physics and chemistry.

PSO2: solve complex mathematical problems by critical understanding, analysis and synthesis.Student will also be able to provide a systematic understanding of the concepts and theories of mathematics and there application in the real world – to an advanced level, and enhance career prospects in a huge array of fields or suitable to succeed at an entry-level position in mathematics post graduate programme.

PSO3:demonstrate knowledge of mechanics, electromagnetism, quantum mechanics, optics & lasers, waves & vibrations, statistical physics, condensed matter physics, electronics, nuclear & particle physics and be able to apply this knowledge to analyse a variety of physical phenomena.

PSO4: demonstrate knowledge of organic, inorganic and physical chemistry and apply this knowledge toanalyse a variety of chemical phenomena and will be able to interpret and analyse quantitative data.

PSO5: understand theoretical concepts of instruments that are commonly used in most physics and chemistry fields as well as interpret and use data generated in instrumental physical and chemical analyses.

PSO6: show that they have learned laboratory skills, enabling them to take measurements in a physics laboratory and analyse the measurements to draw valid conclusions. 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 physics/chemistry postgraduate program.

PSO7: capable of oral and written scientific communication i.e. able to communicate effectively by oral, written, computing and graphical means.

Semester I

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Semester I

PUNJABI (COMPULSORY)

COURSE CODE-BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-1421 COURSE

OUTCOMES

CO1ਦੋ ਰੰਗ (ਕਵਿਤਾਭਾਗ) ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਕਵਿਤਾਪ੍ਰਤੀਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ ਤਾਂਕਿ ਉਹ ਆਧੁਨਿਕਦੌਰਵਿਚਚੱਲਰਹੀਆਂਕਾਵਿਧਾਰਾਵਾਂ ਅਤੇ ਕਵੀਆਂਬਾਰੇ ਗਿਆਨਹਾਸਿਲਕਰ ਸਕਣ।

CO2:ਇਸ ਦਾ ਹੋਰਮਨੋਰਥਕਵਿਤਾ ਦੀ ਵਿਆਖਿਆ, ਵਿਸ਼ਲੇਸ਼ਣ ਤੇ ਮੁਲੰਕਣ ਦੀ ਪ੍ਰਕਿਰਿਆਤੋਂਜਾਣੂ ਕਰਾਉਣਾ ਵੀ ਹੈ ਤਾਂਕਿ ਉਹ ਸਮਕਾਲੀ ਸਮਾਜਦੀਆਂ ਸਮੱਸਿਆਵਾਂਨੂੰ ਸਮਝ ਸਕਣ ਅਤੇ ਆਲੋਚਨਾਤਮਕਦ੍ਰਿਸ਼ਟੀਬਣਾ ਸਕਣ।

CO3:ਸੰਸਾਰਦੀਆਂਪ੍ਰਸਿਧਹਸਤੀਆਂਜੀਵਨੀ ਦੀ ਵਿਧਾਨੂੰ ਸਿਲੇਬਸ ਵਿਚਸ਼ਾਮਿਲਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂਅੰਦਰਜੀਵਨੀਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ ਅਤੇ ਜੀਵਨੀਜਗਤਨਾਲਜੋੜਣਾ ਹੈ।

CO4:ਪੈਰ੍ਹਾ ਰਚਨਾ ਅਤੇ ਪੈਰ੍ਹਾਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ ਦੇਣ ਦਾ ਮਨਰੋਥਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰਕਰਨਾ ਹੈ।

CO6:ਧੁਨੀਵਿਉਂਤ ਪੜ੍ਹਣਨਾਲਵਿਦਿਆਰਥੀ ਧੁਨੀਆਂ ਦੀ ਉਚਾਰਨਪ੍ਰਣਾਲੀਤੋਂਵਾਕਫ਼ ਹੋਣਗੇ।

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Semester I

PUNJABI (COMPULSORY)

COURSE CODE-BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-1421

ਸਮਾਂ: 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10 ਪਾਠਕ੍ਰਮ ਅਤੇ ਪਾਠਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਦੋ ਰੰਗ (ਕਵਿਤਾਭਾਗ) (ਸੰਪਾ.ਹਰਜਿੰਦਰਸਿੰਘਢਿਲੋਂ ਅਤੇ ਪ੍ਰੀਤਮਸਿੰਘ ਸਰਗੋਧੀਆ), ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

(ਕਵਿਤਾਦਾਵਿਸ਼ਾ -ਿਸਤੂ $ਸਾਰ)8 ਅੰਕ

ਯੂਨਿਟ-II

ਸੰਸਾਰਦੀਆਂਪ੍ਰਸਿਧਹਸਤੀਆਂ (ਜੀਵਨੀਨੰ: 1 ਤੋਂ 9 ਤਕ)

(ਸੰਪਾ.ਪ੍ਰਿੰ. ਤੇਜਾਸਿੰਘ, ਹਰਨਾਮਸਿੰਘਸ਼ਾਮ),ਪੰਜਾਬੀ ਸਾਹਿਤਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।

(ਵਿਸ਼ਾ -ਿਸਤੂ /ਸਾਰ) 8 ਅੰਕ

ਯੂਨਿਟ-III

(ੳ) ਪੈਰ੍ਹਾਰਚਨਾ (ਤਿੰਨਵਿਚੋਂਇਕ)

(ਅ) ਪੈਰ੍ਹਾਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ। 8 ਅੰਕ

ਯੂਨਿਟ-IV

(ੳ) ਪੰਜਾਬੀਧੁਨੀਵਿਉਂਤ : ਪਰਿਭਾਸ਼ਾ ਤੇ ਉਚਾਰਨਅੰਗ

(ਅ) ਸਵਰ, ਵਿਅੰਜਨ 8 ਅੰਕਅੰਕਵੰਡ ਅਤੇ

ਪਰੀਖਿਅਕਲਣੀਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨਹੋਣਗੇ।ਸੈਕਸ਼ਨA-Dਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟI-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।

2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁਲ ਪੰਜਪ੍ਰਸ਼ਨਕਰਨੇ ਹਨ।ਹਰ ਸੈਕਸ਼ਨਵਿਚੋਂਇਕਪ੍ਰਸ਼ਨਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂਪ੍ਰਸ਼ਨਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨਵਿਚੋਂਕੀਤਾਜਾ ਸਕਦਾ ਹੈ।

3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕਹਨ।

4. ਪੇਪਰ ਸੈੱਟਕਰਨਵਾਲਾਜੇਕਰਚਾਹੇ ਤਾਂਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡਅੱਗੋਂਵੱਧਤੋਂਵੱਧਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂਵਿਚਕਰ ਸਕਦਾ ਹੈ।

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BASIC PUNJABI

In lieu of Punjabi (Compulsory)

COURSE CODE -BARL/BSML/BSNL/BCSL/BECL/BCRL/BBRL/BJML/BFDL/ BHSL/BCAL/BITL/BBTL/BOEL/BOML/ BACL/BCOL/BOPL-1031

Course outcomes

CO1:ਮੁੱਢਲੀਪੰਜਾਬੀਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀਭਾਸ਼ਾ ਨੂੰ ਸਿਖਾਉਣ ਦੀ ਪ੍ਰਕਿਰਿਆਵਿਚਪਾ ਕੇ ਇਕਹੋਰਭਾਸ਼ਾਸਿੱਖਣ ਦਾ ਮੌਕਾਪ੍ਰਦਾਨਕਰਨਾ ਹੈ।

CO2:ਇਸ ਵਿਚਵਿਦਿਆਰਥੀ ਨੂੰ ਬਾਰੀਕਬੀਨੀਨਾਲਭਾਸ਼ਾ ਦਾ ਅਧਿਐਨਕਰਵਾਇਆਜਾਵੇਗਾ।

CO3:ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀਸ਼ਬਦਰਚਨਾਤੋਂਜਾਣੂ ਕਰਵਾਇਆਜਾਵੇਗਾ।

CO4:ਮੁੱਢਲੀਪੰਜਾਬੀਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਨਿੱਤਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀਸ਼ਬਦਾਵਲੀਬਾਰੇ ਦੱਸਣਾ ਹੈ।

CO5:ਮੁੱਢਲੀਪੰਜਾਬੀਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਦਾ ਸ਼ਬਦ ਘੇਰਾ ਵਿਸ਼ਾਲਕਰਨਾ ਹੈ।

CO6:ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀਵਿਚਹਫ਼ਤੇ ਦੇ ਸੱਤਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰ੍ਹਾਂਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕਤੋਂ ਸੌ ਤੱਕਗਿਣਤੀਸ਼ਬਦਾਂਵਿਚਸਿਖਾਉਣਾ ਹੈ।

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SEMESTER–I

BASIC PUNJABI

In lieu of Punjabi (Compulsory)

COURSE CODE -BARL/BSML/BSNL/BCSL/BECL/BCRL/BBRL/BJML/BFDL/ BHSL/BCAL/BITL/BBTL/BOEL/BOML/ BACL/BCOL/BOPL-1031

ਸਮਾਂ : 3 ਘੰਟੇ **Maximum Marks: 50**

Theory : 40

CA : 10 **ਪਾਠਕ੍ਰਮ**

ਯੂਨਿਟ-I

ਪੈਂਤੀਅੱਖਰੀ, ਅੱਖਰਕ੍ਰਮ, ਪੈਰਬਿੰਦੀਵਾਲੇ ਵਰਣ ਅਤੇ ਪੈਰਵਿਚਪੈਣਵਾਲੇ ਵਰਣ ਅਤੇ ਮਾਤ੍ਰਵਾਂ (ਮੁੱਢਲੀਜਾਣਪਛਾਣ)

ਲਗਾਖਰ (ਬਿੰਦੀ, ਟਿੱਪੀ, ਅੱਧਕ) : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ ।

08ਅੰਕ

ਯੂਨਿਟ-II

ਪੰਜਾਬੀਸ਼ਬਦਬਣਤਰ : ਮੁੱਢਲੀਜਾਣਪਛਾਣ (ਸਾਧਾਰਨਸ਼ਬਦ, ਸੰਯੁਕਤ ਸ਼ਬਦ, ਮਿਸ਼ਰਤਸ਼ਬਦ, ਮੂਲ ਸ਼ਬਦ, ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ) **08ਅੰਕ**

ਯੂਨਿਟ-III ਨਿੱਤਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀਸ਼ਬਦਾਵਲੀ : ਬਾਜ਼ਾਰ, ਵਪਾਰ, ਰਿਸ਼ਤੇਨਾਤੇ, ਖੇਤੀ ਅਤੇ ਹੋਰਧੰਦਿਆਂਆਦਿਨਾਲ ਸੰਬੰਧਤ। **08 ਅੰਕ**

ਯੂਨਿਟ-IV ਹਫ਼ਤੇ ਦੇ ਸੱਤਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰ੍ਹਾਂਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕਤੋਂ ਸੌ ਤਕ ਗਿਣਤੀਸ਼ਬਦਾਂਵਿਚ ।
ਅੰਕਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕਲਈਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨਹੋਣਗੇ।ਸੈਕਸ਼ਨA-Dਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟI-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।

2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜਪ੍ਰਸ਼ਨਕਰਨੇ ਹਨ।ਹਰ ਸੈਕਸ਼ਨਵਿਚੋਂਇਕਪ੍ਰਸ਼ਨਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂਪ੍ਰਸ਼ਨਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨਵਿਚੋਂਕੀਤਾਜਾ ਸਕਦਾ ਹੈ।

3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕਹਨ।

4. ਪੇਪਰ ਸੈੱਟਕਰਨਵਾਲਾਜੇਕਰਚਾਹੇ ਤਾਂਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡਅੱਗੋਂਵੱਧਤੋਂਵੱਧਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂਵਿਚਕਰ ਸਕਦਾ ਹੈ।

(Semester-I)

Session 2020-21

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: BARL-1431/ BSML-1431/ BSNL-1431/ BOML-1431/ BOPL-1431/ BCSL-1431/ BECL-1431/ BCRL-1431/ BBRL-1431/ BJML-1431/ BFDL-1431/ BHSL-1431/ BCAL-1431/ BITL- 1431 / BBTL-1431/BOEL-1431/ BCFL-1431 / BIDL-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 describe the emergence of earliest civilizations in: Indus Valley Civilization and Aryan Societies.

CO2: Identify and analyses the Buddhist, Jain and Hindu faith in the Punjab

CO3: Analyses the emergence of Early Aryans and Later Vedic Period, their Society, Culture, Polity and Economy

CO4: To make students understand the concepts of two faiths Jainism and Buddhism, its principles and their application and relevance in present times

(Semester-I) Session 2020-21

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: BARL-1431/ BSML-1431/ BSNL-1431/ BOML-1431/ BOPL-1431/ BCSL-1431/ BECL-1431/ BCRL-1431/ BBRL-1431/ BJML-1431/ BFDL-1431/ BHSL-1431/ BCAL-1431/ BITL-1431 / BBTL-1431/BOEL-1431/ BCFL-1431 / BIDL-1431

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

Theory: 40

C A: 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

1. Social, Religious and Economic life during Early Vedic Age.
2. Social, Religious and Economic life during Later Vedic Age.

UNIT-IV

3. Teachings of Buddhism
4. Teachings of Jainism

Suggested Readings

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

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL)/ BACHELOR OF SCIENCE (NON MEDICAL)/ BACHELOR OF SCIENCE (COMPUTER SCIENCE)/ BACHELOR OF SCIENCE (ECONOMICS)/ BACHELOR OF COMMERCE/ BACHELOR OF BUSINESS ADMINISTRATION Semester I

Course Code: BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-1212

Session 2020-21 ENGLISH (COMPULSORY)

COURSE OUTCOMES

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

CO 1: appreciate the writings of various Indian and foreign story and prose writers and relate them to their socio-cultural milieu

CO 2: comprehend the meaning of texts and answer questions related to situations, episodes, themes and characters depicted in them

CO 3: understand fundamental grammatical rules governing tenses, the use of modal verbs and make correct usage in their language

CO 4: develop an understanding of translation of written text from Hindi/Punjabi to English

CO 5: independently write paragraphs on any given topic

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL)/ BACHELOR OF SCIENCE (NON MEDICAL)/ BACHELOR OF SCIENCE (COMPUTER SCIENCE)/ BACHELOR OF SCIENCE (ECONOMICS)/ BACHELOR OF COMMERCE/ BACHELOR OF BUSINESS ADMINISTRATION Semester I

Course Code: BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-1212

Session 2020-21 ENGLISH (COMPULSORY)

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+2x2=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+2x2=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)

Prose for Young Learners (Guru Nanak Dev University, Amritsar

Bachelor of Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)
Semester–I
Session: 2020-21
Course Title: Mathematics (Algebra)
Course Code: BARM/ BECM/ BCSM/BSNM-1333(I)

Course Outcomes

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

CO 1: Distinguish between solution of cubic equations and Bi-quadratic equations.

CO 2: Classify real quadratic form in variables, definite, semi- definite and indefinite real quadratic form.

CO 3: Understand the concept of matrix congruence of skew symmetric matrices and its reduction in real field.

CO 4: Solve system of linear equations and obtain Eigen values, Eigen vectors, minimal and characteristic equation of a matrix and to apply it in advanced dynamics and electric current.

CO 5: To find the relations between the roots and coefficients of general polynomial equation in one variable.

Bachelor of Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)
Semester–I
Session: 2020-21
Course Title: Mathematics (Algebra)
Course Code: BARM/ BECM/ BCSM/BSNM-1333(I)

Examination 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.

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Unit–I

Linear independence of row and column vectors. Row rank, Column rank of a matrix, Equivalence of column and row ranks, Nullity of matrix, Applications of matrices to a system of linear (both homogeneous and non–homogeneous) equations. Theorems on consistency of a system of linear equations.

Unit-II

Eigen values, Eigen vectors, minimal and the characteristic equation of a matrix. Cayley Hamilton theorem and its use in finding inverse of a matrix. Quadratic Forms, quadratic form as a product of matrices. The set of quadratic forms over a field.

Unit–III

Congruence of quadratic forms and matrices. Congruent transformations of matrices. Elementary congruent transformations. Congruent reduction of a symmetric matrix. Matrix Congruence of skew–symmetric matrices. Reduction in the real field. Classification of real quadratic forms in variables. Definite, semi–definite and indefinite real quadratic forms. Characteristic properties of definite, semi–definite and indefinite forms.

Unit-IV

Relations between the roots and coefficients of general polynomial equation in one variable. Transformation of equations and symmetric function of roots, Descarte's rule of signs, Newton's Method of divisors, Solution of cubic equations by Cardon method, Solution of biquadratic equations by Descarte's and Ferrari's Methods.

Text Book:

Chandrika Parsad: Text book on Algebra and Theory of Equations, PothishalaPvt. Ltd., Allahabad.

Reference Books:

1.K.B. Dutta: Matrix and Linear Algebra, Prentice Hall of India Pvt. Ltd., New Delhi (2002).

2.Shanti Narayan and P.K. Mittal : Text Book of Matrices.

3.S. Hall and S.R. Knight: Higher Algebra, H.M. Publications, 1994.

Bachelor of Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)
Semester–I
Session: 2020-21

Course Title: Mathematics (Calculus and Trigonometry) Course
Code: BARM/ BECM/ BCSM/ BSNM-1333(II)

Course Outcomes

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

CO 1: Understand real number system, lub& glb of set of real numbers, limit of a function, basic properties of limit & to apply it in real world problem.

CO 2: Analyse continuous and discontinuous function, Apply concept of continuity in uniform continuity.

CO 3: Manage to solve problems related to successive differentiation, Leibnitz theorem, Taylor's & Maclaurin's theorem with various forms of remainders and to use these expansion to compute values of Sine, Cosine, tangent or log function.

CO 4: Understand the concept of De Moivre's theorem & its applications. Identify circular, hyperbolic function and their inverses and use these function to describe the shape of the curve formed by high voltage line suspended between two towers.

CO 5: Demonstrate exponential and logarithmic function of complex numbers, and to solve Gregory's series and summation of series.

Bachelor of Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)
Semester–I
Session: 2020-21

Course Title: Mathematics (Calculus and Trigonometry) Course
Code: BARM/ BECM/ BCSM/BSNM-1333(II)

Examination 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

Real number system and its properties, lub, glb of sets of real numbers, limit of a function, Basic properties of limits, Continuous functions and classification of discontinuities, Uniform continuities.

Unit-II

Differentiation of hyperbolic functions, Successive differentiation, Leibnitz theorem, Taylor's and Maclaurin's theorem with various forms of remainders, Indeterminate forms.

Unit-III

De–Moivre's Theorem and its applications, circular and hyperbolic functions and their inverses.

Unit-IV

Exponential and Logarithmic function of a complex numbers, Expansion of trigonometric functions, Gregory's series, Summation of series.

Text Books:

1.George B.Thomas and Ross L.Finney: Calculus and Analytic Geometry, 9thedition, Addison Wesley,1998(Relevant portions related to Unit-I &II)

2..S.L.Loney: Plane trigonometry part -II(relevant portions related to Unit-III & IV) Cambridge university press.

Reference Books

1.Erwin Kreyszig: Advanced Engineering Mathematics, John Wiley and Sons, 1999.

2.N. Piskunov: Differential and Integral Calculus, Peace Publishers, Moscow.

3.Gorakh Prasad: Differential Calculus, PothishalaPvt. Ltd., Allahabad.

Bachelor of Science (Med & Non-Medical)

SEMESTER–I SESSION: 2020-21

COURSE CODE: BSMM/BSNM-1084(I)
INORGANIC CHEMISTRY–I (THEORY)

Course outcomes:

Students will be able to:

CO1: predict electronic properties of atoms using current models and theories in chemistry.

CO2: explains de-Broglie's dual behaviour of matter and Heisenberg's uncertainty principle and solve numerical problems

CO3: explain the significance of quantum numbers

CO4: sketch the probability density curves, boundary surface diagrams and shapes of s, p ,d and f orbitals and write the electronic configuration of atoms.

CO5: identify the periodic trends in physical and chemical properties of elements.

CO6: describe VSEPR theory and predicts the geometry of simple molecules.

CO7: explain the valence bond approach for the formation of covalent bonds and the different types of hybridization involving s, p and d orbitals of simple covalent molecules.

CO8: describe the molecular orbital theory of homonuclear diatomic molecules.

CO9: explain the structures simple compounds.

CO10: differentiate the types of van der Waals forces and dipole - induced dipole interactions and explain the concept of hydrogen bonding.such as London forces, dipole – dipole interactions.

COURSE CODE: BSMM/BSNM-1084(I)
INORGANIC CHEMISTRY–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. Atomic Structure

Idea of de Broglie matter waves, Heisenberg uncertainty principle, atomic orbitals, Schrodinger wave equation, significance of $\psi^1$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 hybridization and 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, $SnCl_6$. Valence shell electron 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, (NaCl 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 (Med & Non-Medical) SEMESTER–I
SESSION: 2020-21

COURSE CODE: BSMM/BSNM-1084(II)
ORGANIC CHEMISTRY–II

Course outcomes

Students will be able to:

CO1: explain the bonding between different organic compounds

CO2: explain the various reaction mechanisms and different electron displacement effects

CO3: explain the various methods of formation and chemical reactions of alkanes, alkenes and alkynes

CO4: compare the reactivities of various alkyl and aryl halide

CO5: differentiate between aromatic, anti aromatic and non-aromatic compounds

CO6: compare the stability of various cycloalkanes

CO7: explain the effect of various substituents on the reactivity of aromatic compounds

Bachelor of Science (Med & Non-Medical) SEMESTER–I
SESSION: 2020-21

COURSE CODE: BSMM/BSNM-1084(II)
ORGANIC CHEMISTRY–II

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

Instructions for the Paper Setter:

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

I. Structure and Bonding

Hybridization, bond lengths and bond angles, bond energy, localized and delocalized chemical bond, Vander Waals interactions, resonance, hyperconjugation, aromaticity 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 KMnO4. 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 (Med & Non-Medical) SEMESTER–I
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-1084(P)
CHEMISTRY 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 and boiling point of organic compounds

Bachelor of Science (Med & Non-Medical) SEMESTER–I
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-1084(P)
CHEMISTRY 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℃	Cinnamic acid 132.5–133℃
Benzoic acid 121.5–122℃	Salicylic acid 157.5–158℃
Urea 132.5–133℃	Acetanilide 113.5–114℃
Succinic Acid 184.5–185℃	m–dinitro benzene 90℃
P–dichlorobenzene 52℃	Aspirin 135℃

Determination of Boiling Point

Ethanol 78℃	Cyclohexane 81.4℃
Benzene–80℃	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.

SEMESTER–I PHYSICS

MECHANICS (THEORY)

Course code: BSNM-1395 (I) for B.Sc. (Non Medical) BCSM-1395 (I) for B.Sc. (Computer Science)

Course Outcomes: Mechanics -Paper (A)

After passing this course, students will be able to:

CO1: Understand the various coordinate systems and its applications. Students will be able to know the conservations laws and the symmetries of space & time.

CO2: Know the fundamental forces of nature, concept of centre mass, central forces and the motion of particle under central force and to determine the turning points of orbit.

CO3: Understand the frames of reference, coriolis force forces and its applications and effect of rotation of earth on g.

CO4: understand the elastic collision in different systems, cross section of elastic scattering as well as Rutherford scattering and know the motion of rigid body.

SEMESTER–I PHYSICS

MECHANICS (THEORY)

Course code: BSNM-1395 (I) for B.Sc. (Non Medical) BCSM-1395 (I) for B.Sc. (Computer Science)

Time: 3 Hours **Marks: 30**

Pass Marks: 11

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.

Note: Students can use Non-Scientific calculators or logarithmic tables.

UNIT–I

Cartesian and spherical polar co–ordinate systems, area, volume, velocity and acceleration in these systems, Solid angle, Relationship of conservation laws and symmetries of space and time.

UNIT–II

Various forces in Nature (Brief introduction) centre of mass, equivalent one body problem, central forces, equation of motion under central force, equation of orbit and turning points. Kepler Laws. Concept of Ether and Michelson–Morley experiment.

UNIT–III

Inertial frame of reference. Galilean transformation and Invariance. Non Inertial frames, Coriolis force and its applications. Variation of acceleration due to gravity with latitude. Foucault pendulum.

UNIT–IV

Elastic collision in Lab and C.M. system, velocities, angles and energies, cross section of elastic scattering, Rutherford scattering. Rigid Body motion; Rotational motion, principal moments and Axes. Euler's equations, precession and elementary gyroscope.

Books Suggested:

1. Mechanics-Berkeley Physics Course, by C. Kittel, W. D. Knight, M. A. Ruderman, C. A. Helmholtz and R. J. Moyer-Tata Mc Graw Hill Publishing Company Ltd.,New Delhi. Vol-I (second edition)

2. Fundamentals of Physics by D. Halliday, R. Resnick and J. Walker (sixth edition)-Wiley India Pvt. Ltd., New Delhi, 2004.

3. Analytical Mechanics by S. K. Gupta, Modern Publishers.

SEMESTER–I

PHYSICS

ELECTRICITY AND MAGNETISM
(THEORY)

Course Outcomes: Electricity and magnetism

After passing this course the students will be able to:

CO1: understand the vector calculus and vector algebra and its applications in electricity and magnetism. The students will be able to solve the electrostatic problems with the help of Gauss law and Coulomb's law.

CO2: understand the applications of scalar potential for the calculation of electric field and electric potential due to an arbitrary charge distribution.

CO3: solve the problems with the help of method of images and understand the conduction of electric current and fundamental laws of electricity.

CO4: relate the electric and magnetic fields in two inertial frames of reference.

SEMESTER–I

PHYSICS

ELECTRICITY AND MAGNETISM
(THEORY)

Time: 3 Hours **Marks: 30**

Pass Marks: 11

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.

Note: Students can use Non-Scientific calculators or logarithmic tables.

UNIT–I

Basic ideas of Vector Calculus Gradient, Divergence, curl and their physical significance. Laplacian in rectangular, cylindrical and spherical coordinates. Coulomb's Law for point charges

And continuous distribution of charges. Electric field due to dipole, line charge and sheet of charge. Electric flux, Gauss's Law and its applications. Gauss's divergence theorem and differential form of Gauss's Law. Green's theorem.

UNIT–II

Work and potential difference. Potential difference as line integral of field. Electric potential due

to a point charge a group of point charges, dipole and quadruple moments, long uniformly charged wire, charged disc. Stoke's theorem and its applications in Electrostatic field, curl E=0.Electric fields as gradient of scalar potential. Calculation of E due to a point charge and dipole from potential. Potential due to arbitrary charge distribution and multipole moments.

UNIT–III

Poisson and Laplace's equation and their solutions in Cartesian and spherical coordinates. Concept of electrical images. Calculation of electric potential and field due to a point charge placed near an infinitely conducting sheet. Current and current density, equation of continuity. Microscopic form of Ohm's Law ($J=\sigma E$) and conductivity, Failure of Ohm's Law. Invariance of charge.

UNIT–IV

E in different frames of reference. Field of a point charge moving with constant velocity. Interaction between moving charges and force between parallel currents. Behaviour of various substances in magnetic field. Definition of M and H and their relation to free and bound currents.

Permeability and susceptibility and their interrelationship. Orbital motion of electrons and Diamagnetism.

SEMESTER–I

PHYSICS

ELECTRICITY AND MAGNETISM
(THEORY)

Books Suggested:

1. Fundamentals of Electricity and Magnetism by Arthur F. Kipp.
2. Electricity and Magnetism, Berkeley Physics Course, Vol. II by E.M. Purcell.
3. Introduction to Classical Electrodynamics by David Griffith.
4. EM Waves and Radiating System by Edward C. Jordan and K.G. Balmain.
5. Fields and Waves Electromagnetic by David K. Cheng.

SEMESTER–I

PHYSICS

PHYSICS PRACTICAL

BCSM-1395 (P) for B.Sc. (Computer Science)

Course Outcomes : Physics Lab Sem I

CO1: Students will be able to find the value of acceleration due to gravity using pendulums.

CO2 : It will give understanding of collisions In 1-Dimension.

CO3: It helps to study the moment of inertia of a body & on what factors its depends.

SEMESTER–I PHYSICS
PRACTICAL

Course code: BSNM-1395 (P) for B.Sc. (Non Medical)
BCSM-1395 (P) for B.Sc. (Computer Science)

Instructions to Practical Examiner

Question paper is to be set on the spot jointly by the external and internal examiners. Two copies of the same to be submitted for the record to COE office, Kanya Maha Vidyalaya, Jalandhar

General Guidelines for Practical Examination

I. The distribution of marks is as follows: **Marks: 20**
i) One experiment **7 Marks**
ii) Brief Theory **3 Marks**
iii) Viva–Voce **5 Marks**
iv) Record (Practical file) **5 Marks**
II. There will be one sessions of 3 hours duration. The paper will have one session.
Paper will consist of 8 experiments out of which an examinee will mark 6 experiments and one of these is to be allotted by the external examiner.

III. Number of candidates in a group for practical examination should not exceed 12.
IV. In a single group no experiment is to be allotted to more than three examinees in any group.

LIST OF EXPERIMENTS

1. To study the dependence of moment of inertia on distribution of mass (by noting time periods of oscillations using objects of various geometrical shapes but of same mass).
2. To establish relationship between torque and angular acceleration using fly wheel.
3. To find the moment of inertia of a flywheel.
4. Study of bending of beams and determination of Young's modulus.
5. Determination of Poisson's ratio for rubber.
6. To determine energy transfer, coefficient of restitution and verify laws of conservation of linear momentum and kinetic energy in elastic collisions using one dimensional collisions of hanging spheres.
7. To verify the laws of vibrating string by Melde's experiment.
8. Measure time period as a function of distance of centre of suspension (oscillation) from centre of mass, plot relevant graphs, determine radius of gyration and acceleration due to gravity.
9. Find the value of 'g' by Kater's pendulum.
10. Measure time period of oscillation of a Maxwell needle and determine modulus of rigidity of the material of a given wire.
11. To measure logarithmic decrement, coefficient of damping, relaxation time, and quality factor of a damped simple pendulum.

B.A/B.Sc(Medical)/ B.Sc(Non-Medical)/ B.Sc(Computer Science)/ B.Sc(Economics)/B.Com/BBA/B.A(JMC) B.Sc(FD)/ B.Sc(Home Science)/BCA/ B.Sc(IT) B.Sc(BT)/B.A(Hons.)English/B.Com(hons.)

Semester-I

(Under Continuous Evaluation System) (SESSION 2019-20)

DRUG ABUSE: Problem, Management and Prevention (COMPULSARY PAPER)
PROBLEM OF DRUG ABUSE

Course code:AECD-1161 (Theory)

Course Outcomes:

- **CO1**. This information can include factual data about what substance abuse is: warning signs of addiction;information about how alcohol and specific drugs affect the mind and body.

- **CO2.** How to be supportive during the detoxification and rehabilitation process.

- **CO3.** Main focus of substance abuse education is teaching individuals about drugand alcohal abuse and how to avoid,stop and get help for substance use disorder.

- **CO4.** Substance abuse education is important for students alike;there are many misconceptions about commonly used legal and illegal substance,such as alcohal,marijuana etc.

B.A/B.Sc/BCA/B.Com/BBA Semester – I (Session 2019-20) DRUG ABUSE
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 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) **Meaning of Drug Abuse:** Concept and Overview, Historical Perspective of Drug Abuse,

Drug Dependence, Drug Addiction, Physical and Psychological Dependence: Drug Tolerance and withdrawal symptoms.

UNIT-II

2) Types of Abused Drugs and their Effects -I

1) Stimulants: Amphetamines – Benzedrine, Dexedrine, Cocaine.
2) Depressants: Alcohol Barbiturates: Nembutal, Seconal, Phenobarbital and Rohypnol.
3) Narcotics: Heroin, Morphine, Oxycodone.

UNIT-III

3) Types of abused drugs and their effects - II

1) Hallucinogens: Cannabis, Marijuana, Hashish, Hash Oil, MDMA, LSD.
2) Steroids.

UNIT-IV

4) Nature and Extent of the Problem: Magnitude or prevalence of the menace of Drug Abuse in India and Punjab, Vulnerable groups by age, gender and economic status, Signs and Symptoms of Drug Abuse: Physical, Academic, Behavioural and Psychological Indicators.

References:

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.

Course Title: Foundation Programme
Course Duration: 30 hours
Course intended for: Semester I students of undergraduate degree programmes of all streams.

Course Credits: 1
Course Code: SECF-I

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 benchmarks and inventors & discoverers who have impacted human life. For a student, the process of transformation from school to college is full of apprehension and intimidation of the 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

Course title: Foundation Programme Course
duration: 30 hours
Course intended for: Sem. I students of all streams (UG Only)
Course credits: 1

Course code: SECF-I

Course Code: V1 **Course Credits: 1** **Total Contact Hours: 20**

MODULE	TITLE	HOURS
I	Introduction & Initial Assessment	2
II	The Human Story	3
III	*The Vedas*, *The Gita* & Eastern Philosophy	2.5
IV	*The Holy Bible* & Genesis	2.5
V	Woman: A Journey through the Ages	2.5
VI	Changing Paradigms in Society, Religion & Literature	2.5
VII	Makers of Modern India	2.5
VIII	Racism & Martin Luther King Jr.	2.5
IX	Modern India at a Glance: Political & Economic Perspective	2.5
X	Technology & Human Life	2.5
XI	The KMV Experience	2.5
XII	Final Assessment, Feedback & 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*, *The Gita* & 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 *The Holy Bible* & Genesis

- Book of Genesis: Creation and Fall
- Noah's Ark
- Moses & The Ten Commandments
- Christ and His teachings
- Christianity and the world

Module 5 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 6 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 7 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 8 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 9 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 10 Technology and 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
- Harmonising technology with ethics and humaneness

Module 11 The KMV Experience

- Historical 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

Semester II

SESSION 2020-21

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) / BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION

(Semester II)

PUNJABI (COMPULSORY)

COURSE CODE-BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-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।

SESSION 2020-21

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) / BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION

(Semester II)

PUNJABI (COMPULSORY)

COURSE CODE-BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-2421

ਸਮਾਂ: 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਪਾਠ ਕ੍ਰਮ 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 ਅੰਕਅੰਕ 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।

SESSION 2020-21

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) / BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION/BACHELOR OF ARTS (JOURNALISM & MASS COMMUNICATION) / BACHELOR OF SCIENCE (FASHION DESIGNING) / BACHELOR OF SCIENCE. (HOME SCIENCE) / BACHELOR OF COMPUTER APPLICATIONS/BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)/ BACHELOR OF SCIENCE (BIO-TECHNOLOGY)/ BACHELOR OF SCIENCE (HONOURS)AGRICULTURE/ BACHELOR OF SCIENCE (HONOURS)MATHEMATICS/ BACHELOR OF ARTS (HONOURS) ENGLISH/ BACHELOR OF COMMERCE (HONOURS) BACHELOR OF SCIENCE (HONOURS) PHYSICS SEMESTER–II

BASIC PUNJABI

In lieu of Punjabi (Compulsory)

COURSE CODE -BARL/BSML/BSNL/BCSL/BECL/BCRL/BBRL/BJML/BFDL/ BHSL/BCAL/BITL/BBTL/BOEL/BOML/ BACL/BCOL/BOPL-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: ਸੰਖੇਪ ਰਚਨਾ ਕਰਨ ਨਾਲ ਵਿਦਿਆਰਥੀ ਆਪਣੀ ਗੱਲ ਨੂੰ ਸੰਖੇਪ ਵਿਚ ਕਹਿਣ ਦੀ ਜਾਚ ਸਿੱਖਣਗੇ ਅਤੇ ਇਹ ਦਿਮਾਗੀ ਕਸਰਤ ਵਿਚ ਸਹਾਈ ਹੋਵੇਗੀ।

CO9:ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ ਲਿਖਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇਸ ਕਲਾ ਵਿਚ ਨਿਪੁੰਨ ਕਰਨਾ ਹੈ।

CO10: ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂ ਨਾਲ ਗੱਲਬਾਤ ਵਿਚ ਪਰਪੱਕਤਾ ਆਉਂਦੀ ਹੈ।ਇਹ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤ ਵਿਚ ਨਿਖਾਰ ਲਿਆਉਣ ਦਾ ਕੰਮ ਕਰਨਗੇ।

SESSION 2020-21

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) / BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION/BACHELOR OF ARTS (JOURNALISM & MASS COMMUNICATION) / BACHELOR OF SCIENCE (FASHION DESIGNING) / BACHELOR OF SCIENCE. (HOME SCIENCE) / BACHELOR OF COMPUTER APPLICATIONS/BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)/ BACHELOR OF SCIENCE (BIO-TECHNOLOGY)/ BACHELOR OF SCIENCE (HONOURS)AGRICULTURE/ BACHELOR OF SCIENCE (HONOURS)MATHEMATICS/ BACHELOR OF ARTS (HONOURS) ENGLISH/ BACHELOR OF COMMERCE (HONOURS) BACHELOR OF SCIENCE (HONOURS) PHYSICS SEMESTER–II

BASIC PUNJABI

In lieu of Punjabi (Compulsory)

COURSE CODE -BARL/BSML/BSNL/BCSL/BECL/BCRL/BBRL/BJML/BFDL/ BHSL/BCAL/BITL/BBTL/BOEL/BOML/ BACL/BCOL/BOPL-2031

ਸਮਾਂ: 3 ਘੰਟੇ **Maximum Marks: 50**

Theory : 40

CA : 10

ਪਾਠ ਕ੍ਰਮ

ਯੂਨਿਟ-I

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

08 ਅੰਕ

ਯੂਨਿਟ-II

ਪੰਜਾਬੀ ਵਾਕ ਬਣਤਰ : ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ

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

(ਅ) ਬਿਆਨੀਆ ਵਾਕ, ਪ੍ਰਸ਼ਨਵਾਚਕ ਵਾਕ ਅਤੇ ਹੁਕਮੀ ਵਾਕ (ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ)

08 ਅੰਕ

ਯੂਨਿਟ-III

ਪੈਰ੍ਹਾ ਰਚਨਾ

ਸੰਖੇਪ ਰਚਨਾ **08 ਅੰਕ**

ਯੂਨਿਟ-IV

ਚਿੱਠੀ ਪੱਤਰ (ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀ)

ਮੁਹਾਵਰੇ **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 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 Arts/ Bachelor of Science (Medical) / Bachelor of Science (Non Medical) / Bachelor of Science(Honours) Maths/ Bachelor of Science (Honours) Physics/Bachelor of Science (Computer Science) / Bachelor of Science (Economics) / Bachelor of Commerce / Bachelor of Business Administration/ Bachelor of Arts (Journalism & Mass Communication) / Bachelor of .Science (Fashion Design) / Bachelor of Science (Home Science) / /Bachelor of Computer Application /Bachelor of Science(Information Technology)/ Bachelor of Science (Bio Technology) / Bachelor of Arts (Honours.)English / Bachelor of Commerce (Financial Services) Three year degree course/ Bachelor of Science Information Technology (with Specialization in Data Science)

(Semester-II)
Session 2020-21
Course Title: Punjab History and Culture (C. 320 to 1000 B.C.)
(Special paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)

Course Code: BARL-2431/ BSML-2431/ BSNL-2431/ BOML-2431/ BOPL-2431/ BCSL-2431/ BECL-2431/ BCRL-2431/ BBRL-2431/ BJML-2431/ BFDL-2431/ BHSL-2431/ BCAL-2431/ BITL-2431 / BBTL-2431/BOEL-2431/ BCFL-2431 / BIDL-2431

COURSE OUTCOMES

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

CO 1: Analyse the emergence of Mauryan, Gupta empires during the classical age in India

CO 2: To understand the various factors leading to rise and fall of empires and emergence of new dynasties and their Culture, society, administration , polity and religion specifically of Kushans and Vardhanas in the Punjab

CO 3: Students will be adept in constructing original historical argument based on primary source material research

CO 4: To have an insight on the existing Literature of this period and understand the past developments in the light of present scenario.

CO 5: To enable students to have thorough insight into the various forms/styles of Architecture and synthesis of Indo - Muslim Art and Architecture in Punjab

Bachelor of Arts/ Bachelor of Science (Medical) / Bachelor of Science (Non-SMedical) / Bachelor of Science(Honours) Maths/ Bachelor of Science (Honours) Physics/Bachelor of Science (Computer Science) / Bachelor of Science (Economics) / Bachelor of Commerce / Bachelor of Business Administration/ Bachelor of Arts (Journalism & Mass Communication) / Bachelor of .Science (Fashion Design) / Bachelor of Science (Home Science) / /Bachelor of Computer Application /Bachelor of Science(Information Technology)/ Bachelor of Science (Bio Technology) / Bachelor of Arts (Honours.) English / Bachelor of Commerce (Financial Services) Three year degree course/ Bachelor of Science Information Technology (with Specialization in Data Science)

(Semester-II)
Session 2020-21
Course Title: Punjab History and Culture (C. 320 to 1000 B.C.)
(Special paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)

Course Code: BARL-2431/ BSML-2431/ BSNL-2431/ BOML-2431/ BOPL-2431/ BCSL-2431/

BECL-2431/ BCRL-2431/ BBRL-2431/ BJML-2431/ BFDL-2431/ BHSL-2431/ BCAL-2431/ BITL-2431 /

BBTL-2431/BOEL-2431/ BCFL-2431 / BIDL-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 and Ashoka.

Unit-II

3. The Kushans: Gandhar School of Art .
4. Gupta Empire: Golden period (Science , Art and Literature)

Unit-III

5. The Punjab under the 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

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

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL)/ BACHELOR OF SCIENCE (NON MEDICAL)/ BACHELOR OF SCIENCE (COMPUTER SCIENCE)/ BACHELOR OF SCIENCE (ECONOMICS)/ BACHELOR OF COMMERCE/ BACHELOR OF BUSINESS ADMINISTRATIONSemester II

Session 2020-21

ENGLISH (COMPULSORY)

Course Code: BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-2212

COURSE OUTCOMES

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

CO1: appreciate the writings of various Indian and foreign story and prose writers and relate them to their socio-cultural milieu

CO2:comprehend the meaning of texts and answer questions related to situations, episodes, themes and characters depicted in them

CO3: change the narration and voice of sentences after understanding fundamental grammatical rules governing them

CO4: enrich their vocabulary and use new words in their spoken and written language

CO5:independently write personal letters to their family and friends on various issues

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL)/ BACHELOR OF SCIENCE (NON MEDICAL)/ BACHELOR OF SCIENCE (COMPUTER SCIENCE)/ BACHELOR OF SCIENCE (ECONOMICS)/ BACHELOR OF COMMERCE/ BACHELOR OF BUSINESS ADMINISTRATIONSemester II

Session2020-21

ENGLISH (COMPULSORY)

Course Code: BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-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+2x2=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+2x2=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 Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)
Semester–II
Session: 2020-21
Course Title: Mathematics (Calculus and Differential Equations)
Course Code: BARM/BECM/ BCSM/BSNM-2333(I)

Course Outcomes

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

CO 1: Demonstrate Asymptotes, points of inflexion, multiple points on a curve & also to differentiate between concavity and convexity & hence tracing of curve.

CO 2: Understand the concept of linear differential equation with constant and variable coefficients & also the exact differential equations & to apply in a wide variety of disciplines like Bio, Eco, Physics & Engineering.

CO 3: Demonstrate the geometrical meaning of a differential equation & the orthogonal trajectories.

CO 4: Manage to solve the problem related to series solution of differential equations like Bessel and Legendre equation by Power series method.

CO 5: Apply reduction formula on different functions & to develop the concept of variation of parameter.

Bachelor of Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)
Semester–II
Session: 2020-21
Course Title: Mathematics (Calculus and Differential Equations)
Course Code: BARM/BECM/ BCSM/BSNM-2333(I)

Examination Time: 3 Hours

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

Asymptotes, Tests for concavity and convexity, Points of inflexion, Multiple Points, Curvature, Tracing of Curves (Cartesian and Parametric coordinates only).

Unit-II

Integration of hyperbolic functions. Reduction formulae. Definite integrals. Fundamental theorem of integral calculus. Quadrature, rectification.

Unit– III

Exact differential equations. First order and higher degree equations solvable for x,y,p. Clairaut's form and singular solutions. Geometrical meaning of a differential equation. Orthogonal trajectories.

Unit-IV

Linear differential equations with constant and variable coefficients. Variation of Parameters method, reduction method, series solutions of differential equations. Power series method, Bessel and Legendre equations (only series solution).

Text Books:

1.Om P.Chug, Parmanand Gupta, R.S.Dahiya: Topics in Mathematics: Calculus and Differential Equations, Laxmi Publications Private Ltd.

Reference Books:

1. D.A. Murray: Introductory Course in Differential Equations. Orient Longman (India), 1967.
2. G.F. Simmons: Differential Equations, Tata McGraw Hill, 1972.
3. Gorakh Prasad: Integral Calculus, PothishalaPvt. Ltd., Allahabad.
4. Erwin Kreyszig: Advanced Engineering Mathematics, John Wiley and Sons, 1999. 52

Bachelor of Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)
Semester–II
Session: 2020-21
Course Title: Calculus
Course Code: BARM/BECM/ BCSM/BSNM-2333(II)

Course Outcomes

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

CO 1: Understand the concept of Double and Triple integrals, & application to evaluation of areas, volumes, surfaces of solid of revolution and to apply to find out area and volume of plane and solid figure.

CO 2: Differentiate between limit and continuity of function of two variables and apply this concept in partial derivatives & differentiability of real valued function of two variables.

CO 3: Manage to solve problems related to Maxima, Minima & Saddle points of functions of two variables.

CO 4: Classify Envelopes & Evolutes, Application of inverse & implicit function theorems.

Bachelor of Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)
Semester–II
Session: 2020-21
Course Title : Calculus
Course Code: BARM/BECM/BCSM/BSNM-2333(II)

Examination Time: 3 Hours

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

Limit and Continuity of functions of two variables, Partial differentiation, Change of variables, Partial derivatives and differentiability of real–valued functions of two variables, Schwartz's and Young's Theorem, Statements of Inverse and implicit function theorems and applications.

Unit-II

Euler's theorem on homogeneous functions, Taylor's theorem for functions of two variables, Jacobians, Envelopes. Evolutes, Maxima, Minima and saddle points of functions of two variables.

Unit-III

Lagrange's undetermined multiplier method, Double and Triple Integrals, Change of variables, Change of order of integration in double integrals.

Unit-IV

Application to evaluation of area, volume, surface of solids of revolutions.

Text Book:

1.George B. Thomas and Ross L. Finney: Calculus and Analytic Geometry, 9th Edition, Addison Wesley, 1998

Reference Books:

1. Narayan, S. and P.K. Mittal: Integral Calculus. Sultan Chand & Sons.
2. Kreyszig, E.: Advanced Engineering Mathematics.
3. Narayan S. and P.K. Mittal : Differential Calculus, Sultan Chand & Sons.

Bachelor of Science (Medical and Non Medical) SEMESTER–II

SESSION: 2020-21

COURSE CODE: BSMM/BSNM-2084(I)

COURSE TITLE: INORGANIC CHEMISTRY (I) (THEORY)

Course outcomes:

Students will be able to

CO1: explain the atomic, physical and chemical properties of alkali metals and alkaline earth metals

CO2:recognise the anomalous properties of Li and compares the properties Li with those other alkali metals

CO3: recognises the anomalous properties of Be and compares the properties of Be with those other alkaline earth metals

CO4: explains the trends in atomic and physical properties of group 13 ,14,15,16,17 elements

explains chemical properties of above group elements

CO5: describe allotropic forms of elements

CO6: Exhaustive understanding of d–block elements belonging to 4^{th},5^{th} and 6^{th} period.

CO7: Understand the simple concepts of pH and complete and balance simple acid-base reactions.

Bachelor of Science (Medical and Non Medical) SEMESTER–II

SESSION: 2020-21

COURSE CODE: BSMM/BSNM-2084(I)

COURSE TITLE: INORGANIC CHEMISTRY (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 & 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 and Non Medical) SEMESTER–II

SESSION: 2020-21

COURSE CODE: BSMM/BSNM-2084(II)

COURSE TITLE: PHYSICAL CHEMISTRY(II) (THEORY)

Course outcomes:

Students will be able to

CO1: acquire the knowledge of structure and intermolecular forces present between solids, liquids and gases.

CO2: demonstrate an understanding of basic principles of colligative properties

CO3: understand the basic concepts of colloidal state of matter and applications of colloids.

CO4: explain various gaseous laws and their applications.

Bachelor of Science (Medical and Non Medical) SEMESTER–II

SESSION: 2020-21

COURSE CODE: BSMM/BSNM-2084(II)

COURSE TITLE: PHYSICAL CHEMISTRY (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 **(11Hrs)**

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 **(11Hrs)**

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 (11Hrs)

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 & 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 and Non Medical) SEMESTER–II

SESSION: 2020-21

COURSE CODE: BSMM/BSNM-2084(P)

COURSE TITLE: CHEMISTRY PRACTICAL

Course outcomes:

Students will be able to

CO1: understand the technique of crystallisation

CO2: compare the viscosity and surface tension of different liquids and solutions

CO3: determine the rate of the reactions

CO4: efficiently use of calorimeter in various experiments

Bachelor of Science (Medical and Non Medical) SEMESTER–II
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-2084(P)
COURSE TITLE: CHEMISTRY 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 & 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 & 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 & Co.**
8. **Selected Experiments in Physical Chemistry, N.G. Mukherjee, J.N. Ghosh & Sons.**
9. **Experiments Physical Chemistry, J.C. Ghosh, Bharati Bhavan.**

BACHELOR OF SCIENCE (Non-Medical)

SEMESTER–II
PHYSICS
RELATIVITY AND ELECTROMAGNETISM
(THEORY)
Course code: BSNM-2395 (I) for B.Sc. (Non Medical)
BCSM-2395 (I) for B.Sc. (Computer Science)

Course Outcomes: Relativity & Electromagnetism -Paper (A)

After passing this course, students will be able to:

CO1: understand special theory of relativity and related basic concepts and applications.

CO2: derive Maxwell equations and their applications in propagation of e.m. waves in conductors and insulators.

CO3: apply the BiotSavart's Law and Ampere's circuital law in different situations and frames.

CO4: understandthe Faraday's Law of electromagnetic induction and LCR circuits.

BACHELOR OF SCIENCE (Non-Medical)

SEMESTER–II
PHYSICS
RELATIVITY AND ELECTROMAGNETISM
(THEORY)

Course code: BSNM-2395 (I) for B.Sc. (Non Medical)
BCSM-2395 (I) for B.Sc. (Computer Science)

Time: 3 Hours Marks: 30 **Pass Marks: 11**

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.

Note: Students can use Non-Scientific calculators or logarithmic tables.

UNIT–I
Postulates of special theory of relatively. Lorentz transformations, observer and viewer in relativity. Relativity of simultaneity, Length, Time, velocities. Relativistic Dopper effect. Variation of mass with velocity, mass–energy equivalence, rest mass in an inelastic collision, relativistic momentum & energy, their transformation, concepts of Murkowski space, four vector
formulation.

UNIT–II
Lorentz's force, Definition of B. Biot Savart's Law and its application to long straight wire, circular current loop and solenoid. Ampere's Circuital law and its application. Divergence and curl of B. Hall effect, expression and co–efficient. Vector potential, Definition and derivation, current–density–definition, its use in calculation of charge in magnetic field at a current sheet. Transformation equation of E and B from one frame to another.

UNIT–III
Faraday's Law of EM induction, Displacement current, Mutual inductance and reciprocity theorem. Self inductance, L for solenoid, Coupling of Electrical circuits. Analysis of LCR series and parallel resonant, circuits Q–factor, Power consumed, power factor.

UNIT–IV
Maxwell's equations their derivation and characterizations, E.M. waves and wave equation in a medium having finite permeability and permittivity but with conductivity $\sigma = 0$). Poynting vector,impedance of a dielectric to EM waves. EM waves in a conducting medium and Skin depth. EM wave velocity in a conductor and anomalous dispersion. Response of a conducting medium to EM waves. Reflection and transmission of EM waves at a boundary of two dielectric media for normal and oblique incidence.

Recommended Books:
1. Introduction to Electrodynamics by D.J. Griffiths-Pearson Education Ltd., New Delhi, 1991
2. Physics of Vibrations and Waves by H.J. Pain.
3. EM Waves and Radiating Systems by Edward C. Jordan and K.G. Balmain.
4. Fields and Waves Electromagnetic by David K. Cheng.

BACHELOR OF SCIENCE (Non-Medical)

SEMESTER–II
PHYSICS
VIBRATION AND WAVES
(THEORY)
Course code: BSNM-2395 (II) for B.Sc. (Non Medical)
BCSM-2395 (II) for B.Sc. (Computer Science)

After passing this course the student will be able to:

CO1: demonstrate Lissajous figures by mechanical and analytical method with different cases.

CO2: understand Free, damped and resonance oscillations, both mechanical and electric using differential equations.

CO3: solve differential equation of forced oscillations &to obtain related quantities.

CO4: understand concept of coupled oscillators and wavemotion. Student will also be able to apply the concept of waves and oscillations to any type of waves like e. m. waves, mechanical waves.

BACHELOR OF SCIENCE (Non-Medical)

SEMESTER–II

PHYSICS
VIBRATION AND WAVES
(THEORY)

Course code: BSNM-2395 (II) for B.Sc. (Non Medical)
BCSM-2395 (II) for B.Sc. (Computer Science)

Time: 3 Hours **Marks: 30**

Pass Marks: 11

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.

Note: Students can use Non-Scientific calculators or logarithmic tables.

UNIT–I
Simply harmonic motion, energy of a SHO. Compound pendulum. Torsional pendulum Electrical Oscillations Transverse Vibrations of a mass on string, composition of two Perpendicular SHM of same period and of period in ratio 1:2.

UNIT–II
Decay of free Vibrations due to damping. Differential equation of motion, types of motion, types of damping. Determination of damping co–efficient– Logarithmic decrement, relaxation time and Q–Factor. Electromagnetic damping (Electrical oscillator).

UNIT–III
Differential equation for forced mechanical and electrical oscillators. Transient and steady state behaviour. Displacement and velocity variation with driving force frequency, variation of phase with frequency, resonance. Power supplied to an oscillator and its variation with frequency. Q–value and band width. Q–value as an amplification factor. Stiffness coupled oscillators, Normal co–ordinates and normal modes of vibration. Inductance coupling of electrical oscillators.

UNIT–IV
Types of waves, wave equation (transverse) and its solution characteristic impedance of a string. Impedance matching. Reflection and Transmission of waves at boundary. Reflection and transmission of energy. Reflected and transmitted energy coefficients. Standing waves on a string of fixed length. Energy of vibration string. Wave and group velocity.

Recommended Books:
1. Fundamentals of Vibrations and Waves by S.P. Puri.
2. Physics of Vibrations and Waves by H.J. Pain.

BACHELOR OF SCIENCE (Non-Medical)

SEMESTER–II
PHYSICS PRACTICAL

Course code: BSNM-2395 (P) for B.Sc. (Non Medical)
BCSM-2395 (P) for B.Sc. (Computer Science)

COURSE OUTCOMES

CO1: Students will be able to study resonance in series & parallel LCR circuit.

CO2: At the end of this course, students will be able to find the value of capacitor, coefficient of self inductance, permeability & permittivity of air.

CO3: Students will be able to study the variation of magnetic field on the axis of coil & can find the value of horizontal component of magnetic field.

BACHELOR OF SCIENCE (Non-Medical)

SEMESTER–II
PHYSICS PRACTICAL

Course code: BSNM-2395 (P) for B.Sc. (Non Medical)
BCSM-2395 (P) for B.Sc. (Computer Science)

Instructions to Practical Examiner
Question paper is to be set on the spot jointly by the external and internal examiners. Two copies of the same to be submitted for the record to COE office, KanyaMahaVidyalaya, Jalandhar

General Guidelines for Practical Examination: (4.5h/week)
I. The distribution of marks is as follows: **Marks: 20**
i) One experiment **7 Marks**
ii) Brief Theory **3 Marks**
iii) Viva–Voce **5 Marks**
iv) Record (Practical file) **5 Marks**
II. There will be one sessions of 3 hours duration. The paper will have one session.
Paper will consist of 8 experiments out of which an examinee will mark 6 experiments and one of these is to be allotted by the external examiner.
III. Number of candidates in a group for practical examination should not exceed 12.
IV. In a single group no experiment is to be allotted to more than three examinees in any group.

LIST OF EXPERIMENTS
1. To determine low resistance with Carey-Foster's Bridge.
2. To study the magnetic field produced by a current carrying solenoid using a search coil and calculate permeability of air.
3. To study the induced e.m.f. as a function of the velocity of the magnet.
4. Study of phase relationships using impedance triangle for LCR circuit and calculate impedance.
5. Resonance in a series and parallel LCR circuits for different R–value and calculate Q–value.
6. Capacitance by flashing and quenching of a neon lamp.
7. Measurement of capacitance, determination of permittivity of a medium air and relative permittivity by de–Sauty'sbridge.
8. To determined L using Anderson Bridge.
9. To find the value of BH the horizontal component of earth's magnetic field in the lab using a deflection & vibration magnetometer.
10. To study the variation of magnetic field with distance along the axis of coil carrying current by plotting a graph.

BACHELOR OF SCIENCE (Non-Medical)

Semester II
DRUG ABUSE
Course Code: AECD-2161
(Theory)

Course Outcomes:

CO 1. This information can 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. How to be supportive during the detoxification and rehabilitation process.
CO 3. Main focus of 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. 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 (Non-Medical)

Semester II

DRUG ABUSE

Course Code: AECD-2161

(Theory)

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

Theory: 40 **CA: 10**

Instructions for the Paper Setter

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

1)Meaning of Drug Abuse: Concept and Overview, Historical Perspective of Drug Abuse, Drug Dependence, Drug Addiction, Physical and Psychological Dependence: Drug Tolerance and withdrawal symptoms.

UNIT-II

2) Types of Abused Drugs and their Effects -I

1) Stimulants: Amphetamines – Benzedrine, Dexedrine, Cocaine.
2) Depressants: Alcohol Barbiturates: Nembutal, Seconal, Phenobarbital and Rohypnol.
3) Narcotics: Heroin, Morphine, Oxycodone.

UNIT-III

3) Types of abused drugs and their effects - II

1) Hallucinogens: Cannabis, Marijuana, Hashish, Hash Oil, MDMA, LSD.
2) Steroids.

UNIT-IV

4) Nature and Extent of the Problem: Magnitude or prevalence of the menace of Drug Abuse in India and Punjab, Vulnerable groups by age, gender and economic status, Signs and Symptoms of Drug Abuse: Physical, Academic, Behavioural and Psychological Indicators.

References:

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 (Non-Medical)

SEMESTER-II

Course title: Moral Education Programme

Course duration: 30 hours

Course code: SECM-2502

Course Objectives:

- To sensitize students about the role and importance of human values and ethics in personal, social and professional life.
- To enable students to understand and appreciate ethical concerns relevant to modern lives.
- To prepare a foundation for appearing in various competitive examinations.
- To sensitize the students about the current issues and events of national and international importance.
- To highlight plausible implications of ethical human conduct, trustful and mutually fulfilling human behaviour and mutually enriching interaction with nature.

Course Contents:

- Introduction to Moral Education
- Need , content and purpose
- Vedic values
- Character building

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
- Physical and mental health

The Family and You

- Importance of family- the basic unit of human interaction.
- Generation gap
- Relationship with siblings and elders

The Society and You

- Social responsibility
- Our rights and duties
- Civic sense
- Opposite sex relations
- Globalization and IT boom – cellphone menace
- Peer pressure
- Gender issues

The Nation and You

- International peace and brotherhood
- Saving the environment
- Communal harmony, Tolerance, Understanding of Cultures
- Respect for Martyrs
- National Pride

Semester III

SESSION 2020-21

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) / BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION

Semester III

PUNJABI (COMPULSORY)

COURSE CODE- BARL/BSML/BSNL/BCSL/BECL/BCRL /BBRL-3421

COURSE OUTCOMES

CO1:ਚੋਣਵੇ ਪੰਜਾਬੀਨਿਬੰਧਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਵਾਰਤਕ ਪ੍ਰਤੀਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ।

CO2: 'ਸਮਾਂਮੰਗਕਰਦਾ ਹੈ' ਇਕਾਂਗੀ ਸੰਗ੍ਰਹਿਨੂੰ ਸਿਲੇਬਸ ਵਿਚਸ਼ਾਮਿਲਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂਅੰਦਰਇਕਾਂਗੀਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ ਅਤੇ ਇਸ ਸਾਹਿਤ ਰੂਪ ਨਾਲਨਾਲਜੋੜਣਾ ਹੈ।

CO3: ਸੰਖੇਪ ਰਚਨਾਕਰਨਨਾਲਵਿਦਿਆਰਥੀਆਪਣੀਗੱਲ ਨੂੰ ਸੰਖੇਪ ਵਿਚਕਹਿਣ ਦੀ ਜਾਚਸਿੱਖਣਗੇ ਅਤੇ ਇਹਦਿਮਾਗੀਕਸਰਤਵਿਚ ਸਹਾਈਹੋਵੇਗੀ।

CO4: ਲੇਖ ਰਚਨਾ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰਕਰਨਾ ਹੈ।

CO5:ਮੂਲ ਵਿਆਕਰਣਕਇਕਾਈਆਂ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵੰਨਗੀਆਂ (ਭਾਵੰਸ਼, ਸ਼ਬਦ, ਵਾਕੰਸ਼, ਉਪਵਾਕ ਅਤੇ ਵਾਕ)ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਅਤੇ ਬਾਰੀਕੀਆਂਨੂੰ ਸਮਝਣਲਈਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

SESSION 2020-21

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) / BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION

Semester III

PUNJABI (COMPULSORY)

COURSE CODE- BARL/BSML/BSNL/BCSL/BECL/BCRL /BBRL-3421

ਸਮਾਂ : 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਪਾਠਕ੍ਰਮ ਅਤੇ ਪਾਠਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਚੋਣਵੇ ਪੰਜਾਬੀਨਿਬੰਧ(ਜੋਗਿੰਦਰਸਿੰਘ ਪੁਆਰ,ਪਰਮਜੀਤਸਿੰਘਸਿੱਧੂ), ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ।ਘਰ ਦਾ ਪਿਆਰ, ਉਮਰ ਲੰਮੀ ਹੋ ਸਕਦੀ ਹੈ,ਅੱਥਰੂ, ਪੁਰਾਣਾਪੰਜਾਬ, ਇੰਗਲੈਂਡ ਦਾ ਸੋਗੀ ਸੋਮਵਾਰ,ਖਿਡਾਰੀਆਂ ਦੇ ਵਹਿਮ।

(ਪਾਠਕ੍ਰਮ ਦਾ ਹਿੱਸਾਹਨ)

(ਵਿਸ਼ਾਵਸਤੂ/ਸਾਰ) ੪ ਅੰਕ

ਯੂਨਿਟ-II

ਸਮਾਂਮੰਗਕਰਦਾ ਹੈ (ਇਕਾਂਗੀ ਸੰਗ੍ਰਹਿ) (ਸੰਪਾ . ਕੇਵਲਧਾਲੀਵਾਲ) ਚੇਤਨਾਪ੍ਰਕਾਸ਼ਨ,ਲੁਧਿਆਣਾ।

(ਵਿਸ਼ਾਵਸਤੂ /ਸਾਰ)੪ ਅੰਕ

ਯੂਨਿਟ-III

(ੳ) ਸੰਖੇਪ ਰਚਨਾ (ਪ੍ਰੈਸੀ)

(ਅ) ਲੇਖ ਰਚਨਾ 8 ਅੰਕ

ਯੂਨਿਟ-IV

ਮੂਲ ਵਿਆਕਰਣਕਇਕਾਈਆਂ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵੰਨਗੀਆਂ (ਭਾਵੰਸ਼, ਸ਼ਬਦ, ਵਾਕੰਸ਼, ਉਪਵਾਕ ਅਤੇ ਵਾਕ)

8 ਅੰਕ

ਅੰਕਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕਲਈਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨਹੋਣਗੇ।ਸੈਕਸ਼ਨA-Dਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟI-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।

2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁਲ ਪੰਜਪ੍ਰਸ਼ਨਕਰਨੇ ਹਨ।ਹਰ ਸੈਕਸ਼ਨਵਿਚੋਂਇਕਪ੍ਰਸ਼ਨਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂਪ੍ਰਸ਼ਨਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨਵਿਚੋਂਕੀਤਾਜਾ ਸਕਦਾ ਹੈ।

3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕਹਨ।

4. ਪੇਪਰ ਸੈੱਟਕਰਨਵਾਲਾਜੇਕਰਚਾਹੇ ਤਾਂਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡਅੱਗੋਂਵੱਧਤੋਂਵੱਧਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂਵਿਚਕਰ ਸਕਦਾ ਹੈ।

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE

(NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) / BACHELOR OF

SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION

SEMESTER–III

Basic Punjabi (In lieu of Punjabi Compulsory)

COURSE CODE- BARL/BSML/BSNL/BCSL /BECL/BCRL /BBRL-3031

Course outcomes

CO1:ਵਿਆਕਰਣਕਇਕਾਈਆਂ**ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਪੰਜਾਬੀਭਾਸ਼ਾਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂਨੂੰ ਸਮਝਣਲਈਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਅਤੇ ਪੰਜਾਬੀਭਾਸ਼ਾ ਨੂੰ ਸਿਖਾਉਣ ਦੀ ਪ੍ਰਕਿਰਿਆਵਿਚਪਾ ਕੇ ਇਕਹੋਰਭਾਸ਼ਾਸਿੱਖਣ ਦੇ ਮਕੌ ਪ੍ਰਦਾਨਕਰਨਾ ਹੈ।**

CO2:ਪੈਰ੍ਹਾ ਰਚਨਾ ਦੇਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣਕਰਦਿਆਂ ਉਨ੍ਹਾਂ ਦੀ ਲਿਖਣਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰਕਰਨਾ ਹੈ।

CO3:ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀਚਿੱਠੀਪੱਤਰਲਿਖਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇਸ ਕਲਾਵਿਚਨਿਪੁੰਨਕਰਨਾ ਹੈ।

CO4:ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂਨਾਲਗੱਲਬਾਤਵਿਚਪਰਪੱਕਤਾਆਉਂਦੀ ਹੈ।ਇਹਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤਵਿਚਨਿਖਾਰਲਿਆਉਣ ਦਾ ਕੰਮਕਰਨਗੇ।

CO5:ਪੈਰ੍ਹਾਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉੱਤਰ ਦੇਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰਕਰਨਾ ਹੈ।

CO6:ਸੰਖੇਪ ਰਚਨਾਕਰਨਨਾਲਵਿਦਿਆਰਥੀਆਪਣੀਗੱਲ ਨੂੰ ਸੰਖੇਪ ਵਿਚਕਹਿਣ ਦੀ ਜਾਚਸਿੱਖਣਗੇ ਅਤੇ ਇਹਦਿਮਾਗੀਕਸਰਤਵਿਚ ਸਹਾਈਹੋਵੇਗੀ।

SESSION 2020-21

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE

(NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) / BACHELOR OF

SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION

SEMESTER–III

Basic Punjabi (In lieu of Punjabi Compulsory)

COURSE CODE- BARL/BSML/BSNL/BCSL /BECL/BCRL /BBRL-3031

ਸਮਾਂ: 3 ਘੰਟੇ **Maximum Marks : 50**

Theory : 40

CA : 10

ਪਾਠਕ੍ਰਮ

ਯੂਨਿਟ-I

ਵਿਆਕਰਣਕਇਕਾਈਆਂਦੀਪਛਾਣਅਤੇਵਰਤੋਂ; ਵਾਕੰਸ਼, ਉਪਵਾਕਅਤੇ ਵਾਕ

ਯੂਨਿਟ-II

ਪ੍ਰਕਾਰਜੀਪੰਜਾਬੀ : ਪੈਰ੍ਹਾਰਚਨਾ,ਚਿੱਠੀਪੱਤਰ

ਯੂਨਿਟ-III

I.ਅਖਾਣ

II.ਮੁਹਾਵਰੇ

ਯੂਨਿਟ-IV

I.ਪੈਰ੍ਹਾਅਧਾਰਿਤਪ੍ਰਸ਼ਨ

II.ਸੰਖੇਪਰਚਨਾ

ਅੰਕਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕਲਈਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨਹੋਣਗੇ। ।ਸੈਕਸ਼ਨA-Dਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟI-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਯੂਨਿਟਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।

2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲਪੰਜਪ੍ਰਸ਼ਨਕਰਨੇ ਹਨ। ਹਰ ਭਾਗਵਿਚੋਂਇਕਪ੍ਰਸ਼ਨਲਾਜ਼ਮੀਹੈ।ਪੰਜਵਾਂਪ੍ਰਸ਼ਨਕਿਸੇ ਵੀਭਾਗਵਿਚੋਂਕੀਤਾਜਾ ਸਕਦਾ ਹੈ।

3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਅੱਠਅੰਕਹਨ।

4. ਪੇਪਰ ਸੈੱਟਕਰਨਵਾਲਾਜੇਕਰਚਾਹੇ ਤਾਂਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡਅੱਗੋਂਵੱਧਤੋਂਵੱਧਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂਵਿਚਕਰ ਸਕਦਾ ਹੈ।

Bachelor of Arts / Bachelor of Science (Medical) / Bachelor of Science (Non-Medical) / Bachelor of Science (Computer Science) / Bachelor of Science (Economics) / Bachelor

(Semester III)

Session 2020-21

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: BARL-3431/BSML-3431/BSNL-3431/BCSL-3431/BECL-3431BCRL-3431/BBRL-3431

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: To able to construct original historical arguments using a blend of primary and secondary source material

CO 2: To be able to demonstrate the significance of historical topics with reference to broader historical context and their contemporary relevance

CO 3: Students will develop an ability to convey verbally their historical knowledge

CO 4: Students will develop skills in critical thinking and reading

CO 5: To discuss understand and evaluate causes and results of the conflict with Mughals

(Semester III)

Session 2020-21

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: BARL-3431/BSML-3431/BSNL-3431/BCSL-3431/BECL-3431/BCRL-3431/BBRL-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 ARTS / BACHELOR OF SCIENCE (MEDICAL)/ BACHELOR OF SCIENCE (NON MEDICAL)/ BACHELOR OF SCIENCE (COMPUTER SCIENCE)/ BACHELOR OF SCIENCE (ECONOMICS)/ BACHELOR OF COMMERCE/ BACHELOR OF BUSINESS ADMINISTRATION Semester III

Session 2020-21

ENGLISH (COMPULSORY)

Course Code: BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-3212

COURSE OUTCOMES

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

CO 1: 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

CO 2: comprehend the basics of grammatical rules governing relative clauses, adjectives, adverbs, conjunctions and prepositions

CO 3: enhance their reading and analysing power of texts through guided reading

CO 4: enrich their vocabulary and use new words in their spoken and written language

CO 5: develop skills to write an essay on a given topic

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL)/ BACHELOR OF SCIENCE (NON MEDICAL)/ BACHELOR OF SCIENCE (COMPUTER SCIENCE)/ BACHELOR OF SCIENCE (ECONOMICS)/ BACHELOR OF COMMERCE/ BACHELOR OF BUSINESS ADMINISTRATION Semester III

Session 2020-21

ENGLISH (COMPULSORY)

Course Code: BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-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 Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science) Semester–III

Session: 2020-21

Course Title: Mathematics (Analysis)

Course Outcomes

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

CO 1: Demonstrate an understanding of limits and how they are used in sequences and series.

CO 2: To understand the concepts of Riemann sum, partitions, upper and lower sums, Riemann integrability of continuous functions and of monotone functions.

CO 3: To know and describe the converging behavior of improper integrals and Beta , Gamma functions.

CO 4: Distinguish between the absolute convergence and conditional convergence.

CO 5: To find the relation between Beta and Gamma functions.

Bachelor of Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science) Semester–III

Session: 2020-21

Course Title: Mathematics (Analysis)

Examination 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.

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Unit-I

Definition of a sequence. Theorems on limits of sequences. Bounded and monotonic sequences. Cauchy's convergence criterion.

Unit-II

Series of non-negative terms. Comparison tests. Cauchy's integral tests. Ratio tests. Cauchy's root test. Raabe's test, logarithmic test. Demorgan's and Bertrand's tests. Kummer's test, Cauchy Condensation test, Gauss test, Alternating series. Leibnitz's test, absolute and conditional convergence.

Unit-III

Partitions, Upper and lower sums. Upper and lower integrals, Riemann integrability. Conditions of existence of Riemann integrability of continuous functions and of monotone functions. Algebra of integrable functions.

Unit-IV

Improper integrals and statements of their conditions of existence. Test of the convergence of improper integral, beta and gamma functions.

Text Book:

Ajit Kumar and S. Kumaresan : A Basic Course in Real Analysis, CRC Press

Reference Books:

1. Malik, S.C.: Mathematical Analysis, Wiley Eastern Ltd. (1991).
2. Apostal, T.M.: Mathematical Analysis, Addison Wesley Series in Mathematics (1974).

Bachelor of Arts/ Bachelor of Science
(Economics, Non-Medical, Computer Science)
Semester–III

Session: 2020-21

Course Title: Mathematics (Analytical Geometry)
Course Code: BARM/ BECM/ BCSM/ BSNM-3333(II)

Course Outcomes

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

CO 1: Understand the concept of the geometry of lines and conics in the Euclidian plane.

CO 2: Develop geometry with a degree of confidence and will gain fluency in the basics of Euclidian geometry.

CO 3: Sketch conic sections; identify conic sections, their focal properties and classifications.

CO 4: Demonstrate the concept of parabola, ellipse, hyperbola, sphere and the general quadratic equation.

CO 5: Understand the concept of coordinate geometry on a wider scale with the help of shifting of origin and rotation of axis.

Bachelor of Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)

Semester–III

Session: 2020-21

Course Title: Mathematics (Analytical Geometry)

Course Code: BARM/ BECM/ BCSM/ BSNM-3333(II)

Examination 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

Transformation of axes, shifting of origin, Rotation of axes in two dimension and three dimension, the invariants, Joint equation of pair of straight lines, equations of bisectors

Unit-II

Parabola and its properties. Tangents and normal, Pole and polar, pair of tangents at a point, Chord of contact, equation of the chord in terms of mid point and diameter of conic.

Unit-III

Ellipse and hyperbola with their properties. Tangents and normal, Pole and polar. pair of tangents at a point, Chord of contact, Identifications of curves represented by second degree equation (including pair of lines).

Unit-IV

Intersection of three planes, condition for three planes to intersect in a point or along a line or to form a prism. Sphere: Section of a sphere by a plane, spheres of a given circle. Intersection of a line and a sphere. Tangent line, tangent plane, power of a point with respect to a sphere, radical planes.

Text Book:

S.L. Loney: The Elements of Coordinate Geometry, Macmillan and Company, London.

Reference Books:

1. Gorakh Prasad and H.C. Gupta: Text Book on Coordinate Geometry.
2. Narayan, S and P.K.Mittal.: Analytical Solid Geometry, Sultan Chand & Sons (2005).
3. Kreyszig, E.: Advanced Engineering Mathematics.
4. Thomos, G.B. and Finney, R.L.: Calculus and Analytic Geometry.

Bachelor of Science (Med & Non-Medical) SEMESTER–III
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-3084
ORGANIC CHEMISTRY–I (THEORY)

Course outcomes:

Students will be able to

CO1: to resolve the different enantiomers and differentiate between dextrorotatory and leavorotatory compounds

CO2: understand the concept of isomerism

CO3: differentiate between chiral and achiral compounds, configuration and conformation

CO4: understand the concept of axial and equatorial bonds and draw the various projection formulae

CO5: understand the methods of formation, chemical reactions, acidic character of alcohols

CO6: understand structure and bonding, preparation of phenols, acidic character of phenols

CO7: understand structure and bonding in phenols and carbonyl compounds

CO8: compare reactivity of aliphatic and aromatic aldehydes and ketones

CO9: understand the various reactions given by carbonyl compounds

Bachelor of Science (Med & Non-Medical) SEMESTER–III
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-3084
ORGANIC CHEMISTRY–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 & L and R & S systems of nomenclature. Geometric isomerism–determination of configuration of geometric isomers. E & 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 ammoniaand 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 (Med & Non-Medical) SEMESTER–III
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-3084
PHYSICAL CHEMISTRY–II (THEORY)

Course outcomes:

Students will be able to

CO1: understand and evaluate thermodynamic property of any system and its applications to various systems.

CO2: acquire the knowledge of phase equilibria of various systems.

CO3: understand completely miscible, partially miscible and immiscible liquids.

CO4: understand concept of spontaneity of a reaction in terms of free energy change.

CO5: demonstrate Vant' Hoff equation and relationship between equilibrium constants.

CO6: demonstrate Clausius-Clapeyron equation.

Bachelor of Science (Med & Non-Medical) SEMESTER–III
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-3084
PHYSICAL CHEMISTRY–II (THEORY)

(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, dU & dH 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 & T, entropy as a function of P & 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 & 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 & 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 (Med & Non-Medical) SEMESTER–III
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-3084(P)
CHEMISTRY PRACTICAL

Course outcomes:

Students will be able to

CO1: understand and master the technique of volumetric analysis

CO1: to understand and analyze an acidic & alkali content in different samples.

CO2: to understand and analyze the calcium content in various samples permanganometrically

CO4: to understand the concept of hardness of water and its analysis by EDTA method

CO5: understand and master the technique of gravimetric analysis

CO6: to understand the concept of TLC and its applications.

Bachelor of Science (Med & Non-Medical) SEMESTER–III
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-3084(P)
CHEMISTRY 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 HCl.

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 & II, P.R. Singh, D.S. Gupta and K.S. Bajpai, Tata McGraw Hill

PHY-Statistical Physics and Thermodynamics

Course code: BCSM-3395 (I)

Course Outcomes:

After passing this programme the students will be able to:

CO1: Understand the basic ideas and scope of probability as well as distribution of n particles in different compartments.

CO2: Concept of different types of Statistics and the need for Quantum Statistics.

CO3: Understand the concept of entropy, Laws of Thermodynamics and applications to thermoelectric effect.

CO4: Understand the Maxwell Thermodynamics relations, Change of state and Claypron equation.

SEMESTER-III PHYSICS

Course code: BCSM-3395 (I)

PAPER-A

STATISTICAL PHYSICS & THERMODYNAMICS (THEORY)

Time: 3 Hours **Marks: 30**

Pass Marks: 11

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.

Note: Students can use Non-Scientific calculators or logarithmic tables.

UNIT–I

Basic ideas of Statistical Physics, Scope of Statistical Physics, Basic ideas about probability, Distribution of four distinguishable particles into compartments of equal size. Concept of macro states, microstates, Thermodynamic Probability, Effects of constraints on the system. Distribution of n particles in two compartments, Deviation from the state of maximum probability. Equilibrium state of dynamic system, Distribution of distinguishable n particles in k compartments of unequal sizes.

UNIT–II

Phase space and division into elementary cells. Three kinds of statistics. The basic approach in three statistics. Maxwell Boltzmann (MB) statistics applied to an ideal gas in equilibrium. Experimental verification of law of distribution of molecular speeds. Need for Quantum Statistics – B.E. Statement of Planck's law of Radiation Wien's Displacement and Stefan's law. Fermi Dirac (FD) statistics. Comparison of M.B, B.E and F.D statistics.

UNIT–III

Statistical definition of entropy, Change of entropy of system, additive nature of entropy, Law of increase of entropy, Reversible and irreversible processes, and their examples, work done in reversible process, examples of increase in entropy in natural processes, entropy and disorder, Brief review of Terms, Laws of Thermodynamics, Carnot Cycle, Entropy changes in Carnot cycle, Absolute thermodynamics or Kelvin Scale of Temperature, Applications of thermodynamics to thermoelectric effect, Peltier Effect, Thomson Effect, change of entropy along reversible path in P-V diagram. Heat death of universe.

UNIT–IV

Derivation of Maxwell Thermodynamics relations, Cooling produced by adiabatic stretching, A diabetic Compression, change of internal energy with volume, Specific heat and constant pressure and constant volume. Expression for C_P-C_V, Change of state and Claypron equation, Joule-Thomson effect.

Text Reference Books:

1. Statistical Physics and Thermodynamics by V.S. Bhatia (Sohan Lal Nagin Chand), Jalandhar.
2. A Treatise on Heat by M.N. Saha & B.N. Srivastava (The Indian Press Pvt. Ltd., Allahabad), 1965.
3. Statistical Mechanics: An Introductory Text by Bhattacharjee, J.K. (Allied Pub., Delhi), 2000.
4. Statistical Physics by Bhattacharjee, J.K. (Allied Pub., Delhi) 2000.
5. Statistical Mechanics by B.B. Laud, (Macmillan India Ltd.) 1981.

SEMESTER-III PHYSICS

Course Outcomes: PHY-OPTICS

Course code: BCSM-3395 (II)

After passing this programme the students will be able to:

CO1: understand the concept of interference of waves by division of wave front and its different methods and concept of coherence.

CO2: understand the interference of waves by division of Amplitude and its methods and will have knowledge of interferometers

CO3: understand the Huygen's Fresnel theory and diffraction, Fraunhoffer diffraction due to single slit, double slit and n slits, the concept of resolving power.

CO4: understand the concept the polarization of light and types of polarisers.

SEMESTER–III

PHYSICS

Course Code: BCSM-3395 (II)

PAPER–B: OPTICS (THEORY)

Time: 3 Hours **Marks: 30**

Pass Marks: 11

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.

Note: Students can use Non-Scientific calculators or logarithmic tables.

UNIT–I

Interference of Light:

Superposition of light waves and interference, Young's double slit experiment, Distribution of intensity in Young's double slit experiment, Conditions for sustained interference pattern,
Coherent sources of light, Temporal and spatial coherence, Mathematical analysis of temporal coherence, Interference pattern by division of wave front, Fresnel Biprism, Fresnel double mirror, Llyod's single mirror, Achromatic fringes. Displacement of fringes,

UNIT–II

Interference by Division of Amplitude:

Change of phase on reflection, Interference in thin films due to reflected and transmitted light, Interference in parallel and wedge shaped films, Colour of thin films. Need for extended source for interference by division of amplitude, non-reflecting films, Newton's Rings. Michelson Interferometer, Fabry Perot interferometer and etalon. Distribution of intensity in Fabry Perot fringes.

UNIT–III

Diffraction:

Huygens's fresnel theory, half-period zones, Zone plate, Distinction between Fresnel and
Fraunhoffer diffraction. Fraunhoffer diffraction due to single slit, rectangular and circular aperture, double slits and plane transmission grating, Effect of diffraction in optical imaging, its use as a spectroscopic element and its resolving power, Resolving power of telescope, of diffraction grating, of microscope and of Fabry-Perot interferometer.

UNIT–IV

Polarization:

Plane Polarized light, Elliptically polarized light, wire grid polarizer, Sheet polarizer, Maul's Law, Brewster Law, Polarization by reflection and scattering, Double refraction, Nicol prism, Retardation plates, Production and Analysis of plane, circularly and elliptically polarized light, Quarter and half wave plates, Optical activity

Text Reference Books:

1. Fundamentals of Optics by F.A. Jenkins and Harvey E White, (Mcgraw Hill) 4th Edition, 2001.
2. Optics, Ajoy Ghatak by (McMillan Indian) 2nd Edition, 7th Reprint, 1997.
3. Optics by Born and Wolf, (Pergamon Press) 3rd Edition, 1965.
4. Physical Optics by B. K. Mathur and T. P. Pandya.
5. A textbook of Optic by N. Subrahmanyam, Brijlal and M. N. Avadhanulu.
6. Geometrical and Physical Optics by Longhurst.
7. Introduction to Modern Optics by G. R. Fowels.
8. Optics by P. K. Srivastav.

Course Outcomes: SEMESTER–III PHYSICS (PRACTICAL)

Course code: BCSM-3395 (P)

After passing this programme the students will be able to:

CO1: use spectrometer to determine the refractive index of different transparent materials wills dispersive power and resolving power of different transparent prisms and liquids using spectrometer.

CO2: use diffraction grating and apply it to determine dispersive power, resolving power, the wavelengths of Hg source and the Cauchy's constants.

CO3: to measure an accessible (Horizontal and vertical) and inaccessible heights using sextant.

CO4: set up of Newton's rings to determine wavelength of sodium light.

CO5: demonstrate the verification of laws of probability distribution.

SEMESTER–III

PHYSICS

Course Code: BCSM-3395 (P)
(PRACTICAL)

Instructions to Practical Examiner

Question paper is to be set on the spot jointly by the external and internal examiners. Two copies of the same to be submitted for the record to COE office, Kanya Maha Vidyalaya, Jalandhar

General Guidelines for Practical ExaminationI. The distribution of marks is as follows: **Marks: 20**
i) One experiment **7 Marks**ii) Brief Theory **3 Marks**iii) Viva–Voce **5 Marks**iv) Record (Practical file) **5 Marks**

II. There will be one sessions of 3 hours duration. The paper will have one session.

Paper will consist of 8 experiments out of which an examinee will mark 6 experiments and one of these is to be allotted by the external examiner.

III. Number of candidates in a group for practical examination should not exceed 12.

IV. In a single group no experiment is to be allotted to more than three examinees in any group.

List of Experiments

1. To determine refractive index of glass and liquid using spectrometer.
2. To determine the Cauchy's constants.
3. To study the refractive index of a doubly refracting prism.
4. To set up Newton's rings to determine wavelength of sodium light.
5. To determine the wavelength by using plane diffraction grating (Use Hg source)
6. To determine dispersive power of plane diffraction grating.
7. To determine resolving power of a telescope.
8. To measure an accessible (Horizontal and vertical) height using sextant.
9. To measure inaccessible height by using sextant.
10. Verify laws of probability distribution by throwing of similar coins.
11. To determine the wavelength of given laser source using Young's double slit experiment

Semester-III

B.Sc. (Medical, Non Medical, Computer Science, HomeScience, IT, BioTechnology) /B.Sc (Hons.)Agriculture) / B.Com. / BBA/BCA/B.Com (Hons.)/B.Sc. (Hons.) Mathematics

(Session 2020-21)

Environmental studies (COMPULSORY PAPER)

COURSE OUTCOMES

After passing this course the student will be able to:

- CO1 Demonstrate and Understand the ecological relationships between organisms and their environment.
- CO2 Present an overview of diversity of life forms in an ecosystem.
- CO3 Explain and identify the role of the organism in energy transfers.
- CO5 Understand the Environmental Pollution and their management.
- CO6Understanding and awareness for wildlife conservation.
- CO7Knowledge of conservation of threatened animal species

Semester-III

B.Sc. (Medical, Non Medical, Computer Science, HomeScience, IT, BioTechnology) /B.Sc (Hons.)Agriculture) / B.Com. / BBA/BCA/B.Com (Hons.)/B.Sc. (Hons.) Mathematics

(Session 2020-21)

Environmental studies (COMPULSORY PAPER)

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

Theory: 60

Field 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 awarenes

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 landslide.

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

PERSONALITY DEVELOPMENT PROGRAMME

Course Title: Personality Development
Programme Nature of course: Audit Course (Skill Based)

Course duration: 30 hours

Course intended for: Sem. III students of all streams (UG Only) Course credits: 2 Course Code: SECP-3512

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.

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**

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 Résumés for Different Posts

(v) Group Discussion

- Differences 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

MODULE 9: 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. Everyday Etiquette: How to navigate 101 common and uncommon social situations by Patrica Rossi.
2. Building career success skills by Theodore Pietrzak, Mike Fraum.
3. Creative problem solving: An Introduction by Donald J Treffinger, Scott G.Isaksen, K. Brian.
4. Positive Psychology: The science of happiness and human strengths by Alan Carr
5. Speech craft: An Introduction to public speaking by Brent C Oberg.

6. Effective communication skills: The foundations for change by John Nielsen.
7. Conflict Resolution smarts: How to communicate, negotiate promise and more by Matt Doeden.
8. What you wear can change your life by Trinnywoodall, Susannah Constantine.
9. World Famous Personalities by Dr. B.R. Kishore.
10. Personality Development by John Aurther.
11. World Famous Leaders who reshaped the World! by Dr. Gagan Jain, D.Litt.
12. Personality Development by Elizabeth B. Hurlock
13. Personality Plus by Divya Chopra

Examination

1. Total marks of the course will be 25 (Final Examination: 20 Marks; Internal Assessment: 5Marks)
2. The pattern of the final examination will be multiple choice questions. 20 multiple choice type questions will be set. Each question will carry 1 mark (20 X 1 = 20). The student will have to attempt all the questions. Total time allotted will be 1 hour.
3. Internal Assessment will consist of Attendance: 2 Marks, Viva: 3 Marks.(Total:5 Marks)
4. Internal Assessment will be based on the student's level of participation, interaction and communication during the classes.
5. Viva will be conducted by the resource persons of the programme.
6. The syllabus of the programme will be duly signed and provided to the COE office by the co- ordinator.
7. The co-ordinator will convey about the completion of the programme to the COE office to facilitate conduct of examination.
8. The list of paper setters will be provided to the COE office out of which any one can be appointed by it.
9. Final examination will be conducted by COE office as per norms of the college.

Marks secured by the student will not be added in total marks and only grades will be provided. Letter grade would be awarded on a 10 point scale as per university/UGC rgulations.

GENDER SENSITIZATION PROGRAMME

Course Title: GENDER SENSITIZATION PROGRAMME

Course Duration: 30 hours

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

Course Credits: 2

Course Code: SECG 3531

The program has been designed to inculcate value of gender equality among students so that they can identify the areas of gender discrimination and raise their voice against gender discrimination and work towards making the society gender neutral.

INSTRUCTIONAL OBJECTIVES:

1. To sensitize students about gender rights, gender roles and relations.
2. To make students aware and capable of realizing their true potential.
3. To ensure equal participation of men and women in all economic, social and political processes.
4. To develop gender prospective to transform the mind set of society.

CURRICULUM

Course Code: SECG3531 **Course Credits: 2** **Total contact hours: 30**

MODULE	TITLE	HOURS
1	**Introduction and Initial Assessment**	**2 Hrs**
2	**Workshop in Self Defense Techniques**	**10 Hrs**
3	**Open House (An Inter-active Session)**	**2 Hrs**
4 I	**Cultural Roles and Gender Sensitivity**	**2 Hrs**

4II	**Gender Concerns in Leadership and Political Participation**	**2 Hrs**
4 III	**Gender Dimensions in Economic Participation and wage Gap**	**2 Hrs**
4 IV	**Gender Rights: Constitutional Rights & Legal Rights**	**2 Hrs**
4 V	**Social problems and Ethos : Gender Prospective with focus on Indian Society**	**2 Hrs**
4VI	**Gender Issues and Health care system**	**2 Hrs**
4VII	**Champions of Gender Equality from Punjab** **Or Voices On Gender Equality From Punjab**	**2 Hrs**
5	**Final Assessment Feedback and Closure**	**2 Hrs**

EXAMINATION

- **Total Marks: 25 (Workshop in Self Defense Techniques :10 marks ; Multiple Choice Quiz. / Project – 10 marks ; Internal Assessment: 5)**
- **Internal Assessment: 5 Marks (Assessment Feedback : 3 marks; Attendance : 2 marks)**
- **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)

Semester IV

SESSION 2020-21

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) / BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION

(Semester IV)

Punjabi (Compulsory)

COURSE CODE- BARL/BSML/BSNL/BCSL/BECL/BCRL /BBRL-4421

COURSE OUTCOMES

CO1: ‘ਪਗਡੰਡੀਆਂ’ (ਸਵੈਜੀਵਨੀ) ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਸਵੈਜੀਵਨੀ 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 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ 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।

SESSION 2020-21

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) / BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION

(Semester IV)

Punjabi (Compulsory)

COURSE CODE- BARL/BSML/BSNL/BCSL/BECL/BCRL /BBRL-4421

ਸਮਾਂ : 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਪਾਠ ਕ੍ਰਮ 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।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।

SESSION 2020-21

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) / BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION

SEMESTER–IV

Basic Punjabi (In lieu of Punjabi Compulsory)

COURSE CODE- BARL/BSML/BSNL/BCSL/BECL/BCRL/BBRL-4031

Course outcomes

CO1: ‘ਮੰਚ ਘਰ’ ਇਕਾਂਗੀ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਇਕਾਗੀ ਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਇਕਾਂਗੀ ਜਗਤ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO2: ਨੈਤਿਕ ਸਿੱਖਿਆ ਨਾਲ ਸੰਬੰਧਤ ਕਹਾਣੀਆਂ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨ੍ਹਾਂ ਵਿੱਚ ਸਮਾਜਕ ਸਮਝ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO3: ਇਸ਼ਤਿਹਾਰ ਲਿਖਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇਸ ਕਲਾ ਵਿੱਚ ਨਿਪੁੰਨ ਕਰਨਾ ਹੈ।

CO4: ਵਿਆਕਰਨ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ–ਵੱਖਰੇ ਸਿਧਾਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਅਤੇ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਨੂੰ ਸਿਖਾਉਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਵਿੱਚ ਪਾ ਕੇ ਇੱਕ ਹੋਰ ਭਾਸ਼ਾ ਸਿੱਖਣ ਦੇ ਮੌਕੇ ਪ੍ਰਦਾਨ ਕਰਨਾ ਹੈ।

SESSION 2020-21

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) / BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION

SEMESTER–IV

Basic Punjabi (In lieu of Punjabi Compulsory)

COURSE CODE- BARL/BSML/BSNL/BCSL /BECL/BCRL /BBRL-4031

ਸਮਾਂ: 3 ਘੰਟੇ **Maximum Marks : 50**

Theory : 40

CA : 10

ਪਾਠ ਕ੍ਰਮ

ਯੂਨਿਟ-I

ਮੰਚ ਘਰ (ਇਕਾਂਗੀ ਸੰਗ੍ਰਿਹ)(ਸੰਪਾ. ਕੁਲਦੀਪ ਸਿੰਘ ਧੀਰ ਅਤੇ ਹਿਰਦੇਜੀਤ ਸਿੰਘ ਭੋਗਲ), ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

ਦੂਜਾ ਵਿਆਹ,ਮਨ ਦੀਆਂ ਮਨ ਵਿਚ,ਬ੍ਰਹਮ ਭੋਜ(ਇਕਾਂਗੀਆਂ ਸਿਲੇਬਸ ਦਾ ਹਿੱਸਾ ਹਨ)

(ਸਾਰ)

08ਅੰਕ

ਯੂਨਿਟ-II

ਨੈਤਿਕ ਸਿੱਖਿਆ ਨਾਲ ਸੰਬੰਧਤ ਕਹਾਣੀਆਂ:

1. ਅੰਗੂਰ ਖੱਟੇ ਹਨ
2. ਲਾਲਚ ਬੁਰੀ ਬਲਾ ਹੈ
3. ਏਕਤਾ ਵਿੱਚ ਬਲ ਹੈ
4. ਜਿੱਥੇ ਚਾਹ, ਉੱਥੇ ਰਾਹ
5. ਅੰਤ ਭਲੇ ਦਾ ਭਲਾ

08ਅੰਕ

ਯੂਨਿਟ-III

ਇਸ਼ਤਿਹਾਰ

1.ਵਪਾਰ ਸੰਬੰਧੀ

2.ਵਿਆਹ ਸੰਬੰਧੀ

3.ਵਸਤੂਆਂ ਦੀ ਖ਼ਰੀਦ–ਵੇਚ ਸੰਬੰਧੀ

4.ਅਸਾਮੀਆਂ ਦਾ ਇਸ਼ਤਿਹਾਰ

5.ਸਿੱਖਿਆ ਪ੍ਰਾਪਤੀ ਸੰਬੰਧੀ

08ਅੰਕ

ਯੂਨਿਟ-IV

ਸਵਰ: ਸਵਰਾਂ ਦੀ ਪਰਿਭਾਸ਼ਾ,ਸਵਰਾਂ ਦਾ ਵਰਗੀਕਰਨ

ਵਿਅੰਜਨ: ਵਿਅੰਜਨਾਂ ਦੀ ਪਰਿਭਾਸ਼ਾ,ਵਿਅੰਜਨਾਂ ਦਾ ਵਰਗੀਕਰਨ

08ਅੰਕ

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 ਕੱਲ 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।

B.A. / B.Sc. (Medical) / B.Sc. (Non-Medical) / B.Sc. (Computer Science) / B.Sc. (Economics) / B.Com. / BBA
Session 2020-21
Semester IV
PUNJAB HISTORY & CULTURE (From 1605 to 1849 A.D.)

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: To able to construct original historical arguments using a blend of primary and secondary source material

CO 2: To be able to demonstrate the significance of historical topics with reference to broader historical context and their contemporary relevance

CO 3: Students will develop an ability to convey verbally their historical knowledge

CO 4: students will *develop skills in critical thinking and reading*

CO 5: *To discuss understand and evaluate causes and results of the conflict with Mughals*

Session 2020-21

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: BARL-4431/BSML-4431/BSNL-4431/BCSL-4431/BECL-4431/BCRL-4431/BBRL-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

1. Chopra P.N., Puri, B.N., & Das, M.N.(1974), *A Social, Cultural & Economic History of India.* Vol.II, Macmillan India Limited, New Delhi.
2. Grewal, J.S. (1994). *The Sikhs of the Punjab*, Cambridge University Press, New Delhi.
3. Singh, Fauja (1972). *A History of the Sikhs*, Vol. III, Patiala: Punjabi University.
4. Singh, Kushwant (2011). *A History of the Sikhs*- Vol. I (1469-1839). New Delhi: Oxford University Press.
5. Singh,Kirpal (1990). *History and Culture of the Punjab*-Part II (Medieval Period). Patiala: Publication Bureau, Punjabi University.

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL)/ BACHELOR OF SCIENCE (NON MEDICAL)/ BACHELOR OF SCIENCE (COMPUTER SCIENCE)/ BACHELOR OF SCIENCE (ECONOMICS)/ BACHELOR OF COMMERCE/ BACHELOR OF BUSINESS ADMINISTRATIONSemester IV

Session 2020-21

ENGLISH (COMPULSORY)

Course Code: BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-4212

COURSE OUTCOMES

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

CO 1: develop an understanding of the poems taughtand be able to answer questions regarding situations, themes and characters depicted in them

CO 2: comprehend the basics of grammatical rules governing prepositions and phrasal verbs

CO 3: enhance their reading and analysing power of texts through guided reading

CO 4: enrich their vocabulary and use newly learnt words in both spoken and written language

CO 5: develop skills to write an essay on a given topic

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL)/ BACHELOR OF SCIENCE (NON MEDICAL)/ BACHELOR OF SCIENCE (COMPUTER SCIENCE)/ BACHELOR OF SCIENCE (ECONOMICS)/ BACHELOR OF COMMERCE/ BACHELOR OF BUSINESS ADMINISTRATION

Semester IV

Session2020-21

ENGLISH (COMPULSORY)

Course Code: BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-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)**

SectionC: Thestudents would be required to attempttwo 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

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL)/ BACHELOR OF SCIENCE (NON MEDICAL)/ BACHELOR OF SCIENCE (COMPUTER SCIENCE)/ BACHELOR OF SCIENCE (ECONOMICS)/ BACHELOR OF COMMERCE/ BACHELOR OF BUSINESS ADMINISTRATIONSemester IV

Session2020-21

ENGLISH (COMPULSORY)

Course Code: BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-4212

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 Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)
Semester–IV
Session: 2020-21
Course Title: Mathematics (Statics and Vector Calculus)
Course Code: BARM/BECM/ BCSM/BSNM-4333(I)

Course Outcomes

After passing this course, the students will be able :

CO 1: To apply parallelogram law of forces, triangle law of forces, Lami's theorem to real life problems.

CO 2: To understand that how one can resolve number of coplanar forces, parallel forces and concurrent forces acting at a body.

CO 3: To find the moments of number of coplanar forces acting at a particle

CO 4: To find the resultant of a force and couple acting on a body.

CO 5: To find the applications of CG of a rod, triangular lamina, solid hemisphere, hollow hemisphere, solid cone and hollow cone.

CO 6: To find the values of gradient, divergence and curl operator of given vectors.

CO7: To find the application of Gauss theorem, Green's theorem and Stokes's theorem in real life problems.

Bachelor of Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)
Semester–IV
Session: 2020-21
Course Title: Mathematics (Statics and Vector Calculus)
Course Code: BARM/BECM/ BCSM/BSNM-4333(I)

Examination Time: 3 Hours

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

Composition and resolution of forces(parallelogram law, triangle law, polygon law,Lami's Theorem,(ג-μ) theorem).Resultant of a number of coplanar forces, parallel forces. Moments ,Varignon's Theorem of moments, Couples , Resultant of two Coplanar Couples, Equilibrium of two coplanar couples, Resultant of a force and a couple, Equilibrium of coplanar forces.

Unit-II

Friction, Laws of friction, Equilibrium of a particle on a rough plane. Centre of Gravity: Centre of gravity of a rod, triangular lamina, solid hemisphere, hollow hemisphere, solid cone and hollow cone.

Unit-III

Vector differentiation, Gradient, divergence and curl operators, line integrals, Vector identity, and Vector integration.

Unit-IV

Theorems of Gauss, Green, Stokes and problems based on these.

Text Books:
1. N.P.Bali: Statics, Laxmi Publications (P) Ltd.
2. Spiegal,M.R.: Vector Analysis, Schaum's outline Series, McGraw Hill.

Reference Books:
1. S.L. Loney: Statics, Macmillan and Company, London.
2. R.S. Verma: A Text Book on Statics, Optical Pvt. Ltd., Allahabad.

Bachelor of Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)
Semester–IV
Session: 2020-21
Course Title: Mathematics (Solid Geometry)
Course Code: BARM/BECM/ BCSM/BSNM-4333(II)

Course Outcomes

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

CO 1: Demonstrate the concept of cone, classification of cone, intersection of line and cone, reciprocal cone.

CO 2: Understand the concept of cylinder, enveloping cylinder and its limiting form.

CO 3: Describe the concept of conicoids or quadratic surface, its classification, trace different types of conicoids.

CO 4: Manage to find surface of revolution and concept of tangent and normal to the conicoid

CO 5: Identify the conicoids and representing it in the form of hyperboloid, ellipsoid, paraboloid.

Bachelor of Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)
Semester–IV
Session: 2020-21
Course Title: Mathematics (Solid Geometry)
Course Code: BARM/BECM/ BCSM/BSNM-4333(II)

Examination Time: 3 Hours

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

Cylinder as surface generated by a line moving parallel to a fixed line and through fixed curve.
Different kinds of cylinders such as right circular, elliptic, hyperbolic and parabolic in standard forms

Unit-II

Cone with a vertex at the origin as the graph of homogeneous equation of second degree in x, y, z . Cone as a surface generated by a line passing through a fixed curve and fixed point outside the plane of the curve. Right circular and elliptic cones.

Unit-III

Equation of surface of revolution obtained by rotating the curve $f(x,y)=0$ about the z-axis in the form of $f(x^2+y^2, z) =0$.Equation of ellipsoid, hyperboloid and Paraboloid in standard forms.

Unit-IV

Surfaces represented by general equation of 2nd degree $S = 0$. Tangent lines, tangent planes and Normal Plane.

Text Books:
1.P.K.Jain& Khalil Ahmed: A text book of Analytical Geometry of three dimensions, Wiley Eastern Ltd. 1999.
Reference Books:
1. Narayan, S &P.K.Mittal : Analytical Solid Geometry, Sultan Chand & Sons(2005)
2. Kreyszig, E : Advanced Engineering Mathematics

Bachelor of Science (Medical and Non- Medical) SEMESTER–IV
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-4084(I)
COURSE TITLE: INORGANIC CHEMISTRY-I (THEORY)

Course outcomes:

Students will be able to

CO1: understand the key features of coordination compoundsviz. variety of structures, oxidation numbers and electronic configurations, coordination numbers and explain the bonding and stability of complexes

CO2: understand the magnetic properties of coordination compounds by using CFT.

CO3: describe the shapes and structures of coordination complexes with coordination numbers ranging from 4 to 12.

CO4: do nomenclature of coordination compounds.

CO5: write both reduction and oxidation half reactions for a simple redox reaction

CO6: identify the oxidation number (charge) on a neutral metal, metal and non-metal ion

CO7:carry out the common applications of the activity series of metals

CO8: understand the Latimer, Frost and Pourbaix diagram.

CO9: understand the positions,electronic configurations,relative stability,preparation, properties, structures and characteristics of the f-block elements in the periodic table;

CO10:understand the role of metal ions and other inorganic elements in biological systems.

CO11:understand theproperties and reactions of non-aqueous solvents.

Bachelor of Science (Medical and Non- Medical) SEMESTER–IV
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-4084(I)
COURSE TITLE: INORGANIC CHEMISTRY-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.
12. University General Chemistry, C.N.R. Rao, Macmillan.

Bachelor of Science (Medical and Non- Medical)SEMESTER–IV
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-4084(II)
COURSE TITLE: ORGANIC CHEMISTRY-II (THEORY)

Course outcomes:

Students will be able to

CO1: understand structure and bonding in carboxylic acids and carboxylic acid derivatives

CO2: Compare the acidity of alcohols,phenols and acids

CO3: understand the effect of various substituents on the acidity of acids

CO4: describe preparations, physical properties,and reactions of carboxylic acids and carboxylic acid derivatives

CO5: understand preparations and reactions of ethers and epoxides

CO6: understand various cleavages in ethers

CO7: understand the ring opening reactions of epoxides

CO8:understand preparation and reactions of nitroalkanes and nitroarenes

CO9: understand nomenclature, structural features, and methods of formation and chemical reactions of Organomagnesium, Organolithium, Organozinc and Organocopper compounds.

CO10: know the various methods of synthesis and compare electrophilic substitution,reactions of pyrrole, furan, thiophene and nucleophilic substitution reactions of pyridine.

CO11: compare the basicity of pyridine, piperidine and pyrrole.

Bachelor of Science (Medical and Non- Medical) SEMESTER–IV
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-4084(II)
COURSE TITLE: ORGANIC CHEMISTRY-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-Zelinsky reaction.Synthesis of acid chlorides, esters and amides.Reduction of carboxylic acids.Mechanism of decarboxylation.

Carboxylic Acids Derivatives (8 Hrs)

Structure and nomenclature of acid chlorides, esters, amides and acid anhydrides, Relative stability & 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's method.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.Physical properties.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 and Non- Medical) SEMESTER–IV
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-4084(P)
COURSE TITLE: CHEMISTRY PRACTICAL

Course outcomes:

Students will be able to analyze the given organic compound through

CO1:detection of elements (N, S and halogens) in organic compounds.

CO2:detection of functional groups (phenolic, carboxylic, carbonyl, esters, carbohydrates, amines,amides, nitro and anilide) in simple organic compounds

CO3: preparation of their derivatives

Bachelor of Science (Medical and Non- Medical) SEMESTER–IV
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-4084(P)
COURSE TITLE: CHEMISTRY 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, KanyaMahaVidyalaya, 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 & 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 (Non-Medical)

Semester IV

PHYSICS

Course Outcomes: Quantum Mechanics (Paper A)

Course code: BCSM-4395 (I)

After completing this course

CO1: Students will be familiar with the main aspects of the historical development of quantum mechanics

CO2: Students will understand the central concepts and principles in quantum mechanics

CO3: Students will be able to find the solution of Schrödinger wave equation for simple systems in one dimension and for Hydrogen atom.

CO4: Students will understand concept of X rays spectra and molecular spectra.

BACHELOR OF SCIENCE (Non-Medical)

Semester IV

PHYSICS
Course code: BCSM-4395 (I)
PAPER–A
QUANTUM MECHANICS
(THEORY)

Time: 3 Hours **Marks: 30**
Pass Marks: 11

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.

Note: Students can use Non-Scientific calculators or logarithmic tables.

UNIT–I

Formalism of Wave Mechanics:
Brief introduction to need and development of quantum mechanics, photoelectric effect, Compton effect, Wave particle duality, De Broglie hypothesis, Wave packet, Group velocity, Uncertainty principle and its applications. Fundamental postulates of wave mechanics, Time dependent and time independent Schrodinger wave equation for a free particle and equation of a particle subject to forces. Stationary states, Superposition principle.

UNIT–II

Normalization and probability interpretation of wave function, Gaussian wave packet. Admissibility conditions of wave function, Eigen function and Eigen value, Expectation value, Operator and commutator formalism, Hermitian operator, orthogonal system, Probability current and conservation of probability, Ehrenfest theorem,.

UNIT–III

Problem in One and Three Dimensions:
Application of Schrodinger Equation for solving one dimensional Particle in a box, one dimensional potential step, Potential Barrier and Linear harmonic oscillator. Schrodinger equation for spherically symmetric potential for hydrogen atom. Spherical harmonics and their solution. Physical significance of quantum number, Degeneracy.

UNIT–IV

Production of X Rays and its properties, X-ray spectra, Moseley law, Absorption of X Rays, Auger effect, Molecular bonding of hydrogen molecule ion and hydrogen molecule, Molecular spectra, selection rules, Raman Effect.

Text Reference Books:

1. A Text book of Quantum Mechanics by P.M. Mathews and K. Venkatesan, (Tata McGraw Hill Pub., Co., Delhi) 2002.
2. Quantum Mechanics by J.L. Powell and B. Craseman (Narosa Pub. House, New Delhi) 1997.
3. Concepts of Modern Physics by Arthur Beiser (McGraw Hill Pub. Co., New Delhi, 9th Ed.)
4. 1995.
5. Elements of Modern Physics by S.H. Patil (McGraw Hill), 1998.
6. Quantum Mechanics by E. Merzbacher (John Wiley, 2nd Edition)
7. Fundamentals of Molecular Spectroscopy by C.N. Banwell (Tata McGraw Hill Pub. Co.,
8. Delhi), 2001.
9. Atomic Spectra by H.G. Kuhn (Longmans), 2nd Ed., 1969.
10. Introduction to Quantum Mechanic by L. Pauling and E.B. Wilson (Tata McGraw Hill Pub. Co., Delhi), 2002.
11. Quantum Mechanics by W. Greiner (Springer Verlag), 1994.
12. Fundamentals of Molecular Spectroscopy by C.B. Banwell-Tata McGraw Hill, 1986.
13. Molecular Spectroscopy: Jeanne L McHale.

BACHELOR OF SCIENCE (Non-Medical)

Semester IV

PHYSICS

Course Outcomes: PHY- ATOMIC SPECTRA & LASERS
Course Code: BCSM-4395 (II)

After passing this programme the students will be able to:

CO1: understand fine and hyperfine spectrum of hydrogen atom and the concept of spin of an electron

CO2: demonstrate understanding of exchange symmetry of wave function, different coupling schemes and spectra of atoms with more than one electron.

CO3: understand the fundamentals of lasers and its processes

CO4: have the knowledge of different components and types of lasers and its applications

BACHELOR OF SCIENCE (Non-Medical)

Semester IV

PHYSICS

Course code: BCSM-4395 (II)

PAPER–B

ATOMIC SPECTRA & LASERS

(THEORY)

Time: 3 Hours **Marks: 30**

Pass Marks: 11

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.

Note: Students can use Non-Scientific calculators or logarithmic tables.

UNIT–I

One Electron Atomic Spectra:

Brief review of Bohr and Rutherford model of atom. Idea of vector model of atom and quantum numbers, Spectrum of Hydrogen atom, Line structure, electron spin, Stern Gerlach experiment, spin orbit coupling, electron magnetic moment, total angular momentum, fine and Hyperfine structure of hydrogen atom, Lande g factor, Normal Zeeman effect, anomalous Zeeman effect.

UNIT–II

Many Electron System Spectra:

Exchange symmetry of wave function, Pauli's Exclusion principle, Electronic configuration and atomic states, shells, subshells in atoms, Two valence electron atoms: LS and JJ coupling schemes and resulting spectral terms, optical spectra for one and many electron system(Helium), spectra of alkaline earth atoms.

UNIT–III

Laser Fundamentals:

Derivation of Einstein relations, Concept of stimulated emission and population inversion, FauchberLedenberg formula, Threshold and Schawlow Tonnes condition, Components of laser devices and its types, three level and fourlevel laser schemes, elementary theory of optical cavity.

UNIT–IV

Laser Systems:

Construction, mode of creating population inversion and output characteristics of Ruby laser, He-Ne laser, CO_2laser and Nd: YAG laser, applications of lasers–a general outline, Q-switching, Basics of holography.

Text Reference Books:

1. Introduction to Atomic Spectr by: H.E. White-Auckland McGraw Hill, 1934.
2. Spectroscopy Vol. I, II & III by Walker &Straughen
3. Introduction to Molecular Spectroscopy by G.M. Barrow-Tokyo McGraw Hill, 1962.
4. Spectra of Diatomic Molecules by Herzberg-New York, 1944
5. Introduction to Atomic Spectra by H.E. White (Mcgraw Hill, Book Co., Inc., New York)
6. Laser Fundamentals by W.T. Silfvast (Foundation Books), New Delhi, 1996
7. Laser and Non-Liner Optics by B.B. Laud (New Age Pub.) 2002
8. Laser, Svelto by (Plenum Pres) 3rd edition, New York

BACHELOR OF SCIENCE (Non-Medical)

Semester IV

PHYSICS

Course Outcomes: PHY Lab Sem IV

Course code: BCSM-4395 (P)

CO1: The exercises included in this laboratory course are aimed at training the students to handle different type of equipment for verification of some of the laws and concepts studied in theory like concepts of thermodynamics, photoelectric effect and for carrying out precise measurements so that they develop confidence to use later the sophisticated instruments in their respective fields.

CO2: After the completion of this course students will be able to use spectrometer and hence will be able to study absorption spectra of iodine.

CO3: At the end of this course students will be able to prepare cane sugar solution and hence will be able to find its specific rotation by using polarimeter.

BACHELOR OF SCIENCE (Non-Medical)

SEMESTER–IV

PHYSICS
(PRACTICAL)
Course code: BCSM-4395 (P)

Instructions to Practical Examiner
Question paper is to be set on the spot jointly by the external and internal examiners. Two copies of the same to be submitted for the record to COE office, Kanya Maha Vidyalaya, Jalandhar

General Guidelines for Practical Examination
I. The distribution of marks is as follows: **Marks: 20**
i) One experiment **7 Marks**
ii) Brief Theory **3 Marks**
iii) Viva–Voce **5 Marks**
iv) Record (Practical file) **5 Marks**
II. There will be one sessions of 3 hours duration. The paper will have one session.
Paper will consist of 8 experiments out of which an examinee will mark 6 experiments and one of these is to be allotted by the external examiner.
III. Number of candidates in a group for practical examination should not exceed 12.
IV. In a single group no experiment is to be allotted to more than three examinees in any group.

List of Experiments
1. To study adiabatic expansion of gas and hence to calculate value of V.
2. To find the coefficient of Thermal Conductivity of a bad conductor by Lee's method.
3. To plot a calibration curve of a given thermocouple (copper constantan).
4. To study the photoelectric effect and determine the value of Planck's constant.
5. To determine the ionization potential of mercury.
6. Study of variation of light intensity with distance using photovoltaic cell
(Inverse Square Law)
7. To determine the heating efficiency of an electric kettle with varying voltage.
8. To study the absorption spectra of iodine vapours.
9. To study the rotation of plane of polarization by using polarimeter.
10. To determine the specific rotation of sugar using Laurent's half shade polarimeter
11. To study the characterizations of Photovoltaic cell.

BACHELOR OF SCIENCE (Non-Medical)

SEMESTER IV

SOCIAL OUTREACH PROGRAMME

AUDIT COURSE (Value Based)

Course Title: Social Outreach Programme

Course Duration: 30 hours

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

Course Credits: 2

Course Code: SECS- 4522

Course Description:-

The Social outreach programme proposes to equip the students for community upliftment work. It will strive to prepare citizens who will make a marked difference in the 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 programme will focus on integrating academic work with community services. It will equip the students to learn to connect knowledge gained in classroom with real life situation by getting hands on experience through community services. It will also foster the development of civic responsibility. The students will get an opportunity to

- Engage in social service.
- Reflect upon larger issues that affect communities through readings and discussions.
- Integrate academic learning and community engagement through practical field work.
- Develop awareness, knowledge and skills for working with diverse groups in the society.

Expectations:-

The students are expected to be actively engaged in working on any of the projects listed below as volunteers. Evaluation will be based on consistency, commitment and results achieved in areas taken up.

List of Projects under Social Outreach Programmes :

- 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 in projects undertaken by Rotary Club of Jalandhar for inducting students in child labour Schools.
- Enroll as NSS Volunteers for various projects (Cleanliness, Women 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 for projects undertaken by JCI Jalandhar City
- Enroll in the Gandhian Studies Centre as 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)
- Old Age Homes/Orphanages
- Operating the Empathy Corner outside the college gate.
- Disaster Management/Relief Work

Evaluation /Assessment:

In 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 getting their hours of service recorded 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 grade on the basis of evaluation of the projects by an evaluation committee, comprising of the Dean of the respective streams, Head and two teachers of the concerned department.

Semester V

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) /

BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE /

BACHELOR OF BUSINESS ADMINISTRATION (Semester V)

SESSION 2020-21

PUNJABI (COMPULSORY)

COURSE CODE- BARL/BSML/BSNL/BCSL/BECL/BCRL /BBRL-5421

COURSE OUTCOMES

CO1: ਚੋਣਵੀਆਂਪੰਜਾਬੀਕਹਾਣੀਆਂਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਕਹਾਣੀਆਂਪ੍ਰਤੀਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ।

CO2: ਨਾਵਲ ਏਹੁਹਮਾਰਾਜੀਵਣਾ (ਦਲੀਪਕੌਰਟਿਵਾਣਾ)ਨੂੰ ਸਿਲੇਬਸ ਵਿਚਸ਼ਾਮਿਲਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂਅੰਦਰਨਾਵਲਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ ਅਤੇ ਇਸ ਸਾਹਿਤ ਰੂਪ ਨਾਲਨਾਲਜੋੜਣਾ ਹੈ।

CO3: ਪੈਰ੍ਹਾਰਚਨਾਕਰਨਨਾਲਵਿਦਿਆਰਥੀਆਪਣੀਗੱਲ ਨੂੰ ਕਹਿਣ ਦੀ ਜਾਚਸਿੱਖਣਗੇ ਅਤੇ ਇਹਦਿਆਗੀਕਸਰਤਵਿਚ ਸਹਾਈਹੋਵੇਗੀ।

CO4: ;ਰਲਅੰਗਰੇਜ਼ੀਪੈਰ੍ਹੇ ਦਾ ਪੰਜਾਬੀਵਿਚਅਨੁਵਾਦ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰਕਰਨਾ ਹੈ।

CO5: ਪੰਜਾਬੀਧੁਨੀਵਿਉਂਤ, ਵਾਕਾਤਮਕਜੁਗਤਾਂ : ਮੇਲ ਤੇ ਅਧਿਕਾਰ,ਕਾਰਕ ਤੇ ਕਾਰਕੀ ਸੰਬੰਧਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਅਤੇ ਬਾਰੀਕੀਆਂਨੂੰ ਸਮਝਣਲਈਵੱਖਰੇ੍ ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) /

BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION (Semester V)

SESSION 2020-21

PUNJABI (COMPULSORY)

COURSE CODE- BARL/BSML/BSNL/BCSL/BECL/BCRL /BBRL-5421

ਸਮਾਂ : 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਪਾਠਕ੍ਰਮ ਅਤੇ ਪਾਠਪੁਸਤਕਾਂ

ਯੂਨਿਟ੍ਜ਼

ਚੋਣਵੀਆਂਪੰਜਾਬੀਕਹਾਣੀਆਂ
(ਸੰਪਾ.ਡਾ.ਰਮਿੰਦਰਕੌਰ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ, 2018)

ਲੇਖਕ ਕਹਾਣੀਕਹਾਣੀ ਸੰਗ੍ਰਹਿਅਜੀਤਕੌਰਨਿਊ ਯੀਅਰਮੌਤਅਲੀਬਾਬੇ ਦੀ ਜਿੰਦਰ
ਸੌਰੀ ਜਖ਼ਮ
ਸੁਖਜੀਤਹਜ਼ਾਰਕਹਾਣੀਆਂ ਦਾ ਬਾਪ ਮੈ ਇੰਜੁਆਏ ਕਰਦੀਹਾਂਜਤਿੰਦਰਹਾਂਸ ਰਾਹੁ
ਕੇਤੂ ਈਸ਼ਵਰ ਦਾ ਜਨਮਪ੍ਰੇਮ ਪ੍ਰਕਾਸ਼ਅਰਜਨ ਛੇੜ ਗਡੀਰਨਾ
ਕੁਝ ਅਣਕਿਹਾਵੀਚੰਦਨ ਨੇਗੀ ਹਰਖ ਸੋਗ ਹਰਖ
ਸੋਗ ਜਸਵਿੰਦਰਸਿੰਘ ਖੂਹ ਖਾਤੇ ਖੂਹ ਖਾਤੇ ਗੁਰਦੇਵ ਸਿੰਘ
ਰੁਪਾਣਾਸ਼ੀਸ਼ਾਸ਼ੀਸ਼ਾ ਅਤੇ ਹੋਰਕਹਾਣੀਆਂ

(ਵਿਸ਼ਾ -ਿਸਤੂ /ਸਾਰ) 8 ਅੰਕ

ਯੂਨਿਟ੍ਜ਼ਜ਼

ਨਾਵਲ : ਏਹੁਹਮਾਰਾਜੀਵਣਾ (ਦਲੀਪਕੌਰਟਿਵਾਣਾ)
(ਵਿਸ਼ਾ -ਿਸਤੂ /ਸਾਰ) 8 ਅੰਕ

ਯੂਨਿਟ੍ਜ਼ਜ਼ਜ਼

ਲਗਪਗ 200 ਸ਼ਬਦਾਂਵਿਚਪੈਰ੍ਹਾਰਚਨਾ

ਸਰਲਅੰਗਰੇਜ਼ੀਪੈਰ੍ਹੇ ਦਾ ਪੰਜਾਬੀਵਿਚਅਨੁਵਾਦ 8 ਅੰਕ
ਯੂਨਿਟ੍ਜ਼ਜ਼

ਵਿਆਕਰਣ
: (ੳ)
ਨਾਂਵਵਾਕੰਸ਼
(ਅ) ਮੇਲ ਤੇ ਅਧਿਕਾਰ 8 ਅੰਕ

ਅੰਕਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕਲਈਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨਹੋਣਗੇ।ਸੈਕਸ਼ਨ ੍ਣ ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ ਜ਼ੁਜ਼ੜ ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।

2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁਲ ਪੰਜਪ੍ਰਸ਼ਨਕਰਨੇ ਹਨ।ਹਰ ਸੈਕਸ਼ਨਵਿਚੋਂਇਕਪ੍ਰਸ਼ਨਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂਪ੍ਰਸ਼ਨਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨਵਿਚੋਂਕੀਤਾਜਾ ਸਕਦਾ ਹੈ।

3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕਹਨ।

4. ਪੇਪਰ ਸੈੱਟਕਰਨਵਾਲਾਜੇਕਰਚਾਹੇ ਤਾਂਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡਅੱਗੋਂਵੱਧਤੋਂਵੱਧਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂਵਿਚਕਰ ਸਕਦਾ ਹੈ।

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) /

BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE /

BACHELOR OF BUSINESS ADMINISTRATION (Semester V)

SESSION 2020-21

Basic Punjabi (In lieu of Punjabi Compulsory)

COURSE CODE- BARL/BSML/BSNL/BCSL /BECL/BCRL /BBRL-5031

COURSE OUTCOMES

CO 1: ਯ'ਸਾਹਿਤ ਦੇ ਰੰਗ' ਪੁਸਤਕ ਦੇ ਕਵਿਤਾਭਾਗਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਕਵਿਤਾਪ੍ਰਤੀਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ ਤਾਂਕਿ ਉਹ ਆਧੁਨਿਕਦੌਰਵਿਚਚਲਰਹੀਆਂਕਾਵਿਧਾਰਾਵਾਂ ਅਤੇ ਕਵੀਆਂਬਾਰੇ ਗਿਆਨਹਾਸਲਕਰ ਸਕਣ।ਇਸ ਦਾ ਹੋਰਮਨੋਰਥਕਵਿਤਾ ਦੀ ਵਿਆਖਿਆ, ਵਿਸ਼ਲੇਸ਼ਣ ਤੇ ਮੁਲੰਕਣ ਦੀ ਪ੍ਰਕਿਰਿਆਤੋਂਜਾਣੂ ਕਰਾਉਣਾ ਵੀ ਹੈ ਤਾਂਕਿ ਉਹ ਸਮਕਾਲੀ ਸਮਾਜਦੀਆਂ ਸਮੱਸਿਆਵਾਂਨੂੰ ਸਮਝ ਸਕਣ ਅਤੇ ਆਲੋਚਨਾਤਮਕਦ੍ਰਿਸ਼ਟੀਬਣਾ ਸਕਣ।

CO 2: ';ਾਹਿਤ ਦੇ ਰੰਗ' ਪੁਸਤਕ ਦੇ ਕਹਾਣੀਭਾਗ ਨੂੰ ਸਿਲਬੇ ਸ ਵਿਚਸ਼ਾਮਿਲਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂਅੰਦਰਕਹਾਣੀਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ ਅਤੇ ਕਹਾਣੀਜਗਤਨਾਲਜੋੜਣਾ ਹੈ।

CO 3: ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਇਕਸ਼ਬਦ ਅਤੇ ਬਹੁਆਰਥਕਸ਼ਬਦਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਵਿਆਕਰਣਪ੍ਰਤੀਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ।

CO4: ਮਾਨਰਥਕਸ਼ਬਦ, ਵਿਰੋਧਾਰਥਕਸ਼ਬਦਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਵਿਆਕਰਣਪ੍ਰਤੀਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ।

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) /

BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE /

BACHELOR OF BUSINESS ADMINISTRATION (Semester V)

SESSION 2020-21

Basic Punjabi (In lieu of Punjabi Compulsory)

COURSE CODE- BARL/BSML/BSNL/BCSL /BECL/BCRL /BBRL-5031

ਸਮਾਂ : 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਪਾਠਕ੍ਰਮ

ਯੂਨਿਟ੍ਜ਼

ਸਾਹਿਤ ਦੇ ਰੰਗ (ਸੰਪਾ.ਡਾਮਹਿਲਸਿੰਘ),ਭਾਗਪਹਿਲਾ(ਕਵਿਤਾ),ਰਵੀ ਸਾਹਿਤਪ੍ਰਕਾਸ਼ਨ,ਅੰਮ੍ਰਿਤਸਰ।
ਭਾਈਵੀਰਸਿੰਘ(ਸਮਾਂ,ਚਸ਼ਮਾ)
ਪ੍ਰੋ.ਪੂਰਨਸਿੰਘ(ਪੰਜਾਬ ਨੂੰ ਕੁਕਾਂਮੈਂ,ਹਲਵਾਹੁਣ ਵਾਲੇ)
ਪ੍ਰੋ.ਮੋਹਨਸਿੰਘ(ਮਾਂ,ਕੋਈਆਇਆ ਸਾਡੇ ਵਿਹੜੇ)
(ਕਵਿਤਾਵਾਂਸਿਲੇਬਸ ਦਾ ਹਿੱਸਾਹਨ)

(ਸਾਰ)
0

8 ਅੰਕ

ਯੂਨਿਟ੍ਜ਼ਜ਼

ਸਾਹਿਤ ਦੇ ਰੰਗ (ਸੰਪਾ.ਡਾਮਹਿਲਸਿੰਘ),ਭਾਗਪਹਿਲਾ(ਕਹਾਣੀ),
ਰਵੀ ਸਾਹਿਤਪ੍ਰਕਾਸ਼ਨ,ਅੰਮ੍ਰਿਤਸਰ। ਪੇਮੀ ਦੇ
ਨਿਆਣੇ,ਕੁਲਫੀ,ਘੋਟਣਾ (ਕਹਾਣੀਆਂਸਿਲੇਬਸ ਦਾ ਹਿੱਸਾਹਨ)

(ਸਾਰ)
0

8 ਅੰਕ

ਯੂਨਿਟ੍ਜ਼ਜ਼ਜ਼

(ੳ) ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਇਕਸ਼ਬਦ
(ਅ) ਬਹੁਆਰਥਕਸ਼ਬਦ 08 ਅੰਕ

ਯੂਨਿਟ੍ਜ਼ੜ

(ੳ) ਸਮਾਨਰਥਕਸ਼ਬਦ
(n) fto'XkoEePpd 08 nze

ਅੰਕਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕਲਈਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨਹੋਣਗੇ।ਸੈਕਸ਼ਨ ਂਣ ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ ਜ਼ੁਜ਼ੜ ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।

2. ਵਿਦਿਆਰਥੀਨੇ ਕੁਲ ਪੰਜਪ੍ਰਸ਼ਨਕਰਨੇ ਹਨ।ਹਰ ਸੈਕਸ਼ਨਵਿਚੋਂਇਕਪ੍ਰਸ਼ਨਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂਪ੍ਰਸ਼ਨਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨਵਿਚੋਂਕੀਤਾਜਾ ਸਕਦਾ ਹੈ।

3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 08 ਅੰਕਹਨ।

4. ਪੇਪਰ ਸੈੱਟਕਰਨਵਾਲਾਜੇਕਰਚਾਹੇ ਤਾਂਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡਅੱਗੋਂਵੱਧਤੋਂਵੱਧਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂਵਿਚਕਰ ਸਕਦਾ ਹੈ।

Bachelor of Arts /Bachelor of Science (Medical) / Bachelor of Science (Non- Medical)/ Bachelor of Science (Computer Science) / Bachelor of Science (Economics) / Bachelor of Commerce / Bachelor of Business Administration

(Semester-V)
Session 2020-21

Course Title: Punjab History and Culture (From 1849-1947 A.D)
(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

COURSE CODE: BARL-5431/ BSML-5431/ BSNL-5431/ BCSL-5431/ BECL-5431/ BCRL-5431/ BBRL-5431

COURSE OUTCOMES:-

After completing the course student have understanding of Punjab in the pre-independence phase

CO 1:- Students will understand major changes in the Punjab during British Rule

CO 2:- They will also know about important agitations and their outcomes on the politics of the Punjab.

CO 3:- They will gain knowledge about the society and economy of Punjab

CO 4:-They will be able to evaluate the socio-religious reforms movements of Punjabi society

CO 5:- They will have insights into the details of the partition of Punjab

Bachelor of Arts /Bachelor of Science (Medical) /Bachelor of Science (Non- Medical) /Bachelor of Science (Computer Science) /Bachelor of Science (Economics) /Bachelor of Commerce /Bachelor of Business Administration

(Semester-V)
Session 2020-21

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: BARL-5431/ BSML-5431/ BSNL-5431/ BCSL-5431/ BECL-5431/ BCRL-5431/ BBRL-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

- Singh, Fauja, *History and Culture of the Punjab*, Part II, Publication Bureau, Punjabi University, Patiala, 1987.
- Singh, Fauja, *Freedom Struggle in the Punjab*, Publication Bureau, Punjabi University, Patiala, 1974.
- Grewal, J.S., *The Sikhs of the Punjab*, New Cambridge House, New Delhi, 2005.
- Singh,Kushwant , *A History of the Sikhs*. Vol. II (1839-1998), Oxford University Press, Delhi, 1991.
- Rai, Satya. M (1978), *Heroic Tradition in the Punjab (1900-1947*). Punjabi University, Patiala, 1978.
- Chopra, P.N.& Das, M.N. (1974), *A Social, Cultural & Economic History of India.* Vol.III, Macmillan India, 1974.
- Saini B. S, *The Social & Economic History of the Punjab 1901-1939,* EssEss Publications, Delhi, 1975.
- Mittal, S.C, *Freedom Movement in the Punjab (1905-29),* Concept Publishing Company Delhi, 1977.

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL)/ BACHELOR OF SCIENCE (NON MEDICAL)/

BACHELOR OF SCIENCE (COMPUTER SCIENCE)/ BACHELOR OF SCIENCE (ECONOMICS)/ BACHELOR OF COMMERCE/ BACHELOR OF BUSINESS ADMINISTRATION

Semester V Session
2020-21

ENGLISH (COMPULSORY)

Course Code: BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-5212

COURSE OUTCOMES

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

CO 1: widen their knowledge about various literary devices used in poetry such as tone, style, imagery, figures of speech, symbolism etc.

CO 2: develop power of imagination and appreciate the beauty, rhyme, and style of a poem

CO 3: analyze and appreciate the dramatic technique, plot development and art of characterisation in the prescribed play

CO 4: develop an understanding of the insights, genres, conventions and experimentations associated with English Drama

CO 5: develop the knowledge, skills and capabilities for effective business writing such as letter writing and resume writing

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL)/ BACHELOR OF SCIENCE (NON MEDICAL)/

BACHELOR OF SCIENCE (COMPUTER SCIENCE)/ BACHELOR OF SCIENCE (ECONOMICS)/ BACHELOR OF COMMERCE/ BACHELOR OF BUSINESS ADMINISTRATION

Semester V

Session 2020-21

ENGLISH (COMPULSORY)

Course Code: BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-5212

Max. Marks: 50

Examination Time: 3 Hrs **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 Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)
Semester–V

Session: 2020-21

Course Title: Mathematics (Dynamics)

Course Code: BARM /BECM / BCSM/ BSNM-5333(I)

Course Outcomes

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

CO 1: Identify the basic relations between distance, time, velocity and acceleration.

CO 2: Explain the relationship between forces and motion. Differentiate between balanced and unbalanced forces and Explain how unbalanced force affect motion.

CO 3: Understand Newton's Laws of Motion and Apply the laws to solve many problems.

CO 4: Discuss the motion of particles connected by a string, motion along a smooth inclined plane.

CO 5: Solve different types of problems with Variable Acceleration.

CO 6: Discuss Simple Harmonic Motion and Illustrate it with a variety of examples.

CO 7: Solve Pendulum, Damped and forced Oscillations oscillating system problems.

CO 8: Define Work, Power and Energy and Explain their relationship. Use measurement tools to apply the concepts of Work and power to solve real life problems.

CO 9: Define Energy and Identify the different types that exist

Bachelor of Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)
Semester–V

Session: 2020-21

Course Title: Mathematics (Dynamics)

Course Code: BARM /BECM / BCSM/ BSNM-5333(I)

Examination Time: 3 Hours **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. 30% of the questions in the question paper must be theoretical (theorem based)

Unit-I

Rectilinear motion in a straight line with uniform acceleration, Newton's laws of motion. Motion of two particles connected by a string.

Unit-II

Motion along a smooth inclined plane. Variable acceleration. Simple Harmonic Motion.

Unit-III

Curvilinear motion of particle in a plane, Definition of velocity and acceleration, projectiles, velocity and direction of motion of a projectile after a given time, projectiles on an inclined plane. Oscillations: Free Vibrations, Simple Pendulum, Conical Pendulum.

Unit-IV

Work, Power and Energy: Kinetic and Potential energy, Conservative forces. Theorem of conservation of energy. Work done against gravity.

Text Book:

S.R.Gupta: A text book of Dynamics

Reference Books:

1. F. Chorlton: Dynamics.

2. S.L. Loney: An Elementary Treatise on the Dynamics of a Practice and of Rigid Bodies, Cambridge University Press, 1956.

Bachelor of Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)
Semester–V

Session: 2020-21

Course Title: Mathematics (Number Theory)
Course Code: BARM/ BECM/ BCSM/ BSNM-5333(II)

Course Outcomes

Successful completion of this course will enable the students to:

CO 1: Prove results involving divisibility and greatest common divisors.

CO 2: Solve system of linear congruences.

CO 3: Find solutions of specified linear Diophantine equation.

CO 4: Apply Fermat's and Euler's theorem to prove relation involving prime numbers.

CO 5: Apply the Wilson's theorem to solve numerical problems.

CO 6: Solve system of equations using congruences.

CO 7: Understand and apply properties of phi functions in real world problems.

CO 8: Understand application of important arithmetic functions.

Bachelor of Arts/ Bachelor of Science (Economics, Non-Medical, Computer Science)
Semester–V

Session: 2020-21

Course Title: Mathematics (Number Theory)
Course Code: BARM/ BECM/ BCSM/ BSNM-5333(II)

Examination 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. 30% of the questions in the question paper must be theoretical (theorem based).

Unit-I

The division algorithm, The greatest common divisor, least common multiple, The Euclidean algorithm.

Unit-II

The Diophantine equation ax + by = c, Prime numbers and their distribution, the fundamental theorem of arithmetic, Basic properties of congruences.

Unit-III

Linear congruences, Special divisibility tests, Chinese remainder theorem, The Fermat's theorem, Wilson's theorem

Unit-IV

Euler's Phi function, Euler's theorem, some properties of the Phi Function, σ and τ functions, Mobius Inversion formula, Greatest integer function

Text Book:

D. Burton: Elementary Number Theory, Sixth Edition, McGraw-Hill. (Scope in Chapters 2-5, 7) 2005.

Reference Book:

Niven and Zuckerman: An Introduction to Number Theory, Wiley 1972.

Bachelor of Science (Medical & Non-Medical) SEMESTER–V
SESSION: 2020-21

COURSE CODE: BSMM/BSNM-5084
INORGANIC CHEMISTRY–I (THEORY)

Course outcomes

Students will be able to:

CO1: understand structure and bonding in molecules / ions and predict the structure of molecules / ions.

CO2: use Crystal Field Theory to understand the structure, hybridisation, geometry and predict the colour of the complexes.

CO3: describe the stability of metal complexes by the use of formation constants and to calculate thermodynamic parameters from them.

CO4: to describe the magnetic properties of coordination compounds.

CO5: familiar with applications of coordination compound.

CO6: to draw Orgel diagrams for d^1 to d^{10} systems and predict the possible transitions.

CO7: to calculate number of microstate and ground state term symbols.

CO8: 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 & Non-Medical) SEMESTER–V
SESSION: 2020-21

COURSE CODE: BSMM/BSNM-5084
INORGANIC CHEMISTRY–I (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 & 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 & Non-Medical) SEMESTER–V
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-5084
PHYSICAL CHEMISTRY–II (THEORY)

Course outcomes:

Students will be able to:

CO1: get knowledge about various electrochemical phenomena.

CO2: get the theoretical knowledge of the various spectroscopic methods on the basis of the examples from the science and industry.

CO3: use spectroscopic equipment such as MS, IR, NMR spectrometers.

CO4: identify organic compounds by analysis and interpretation of spectral data.

CO5: explain common terms in NMR spectroscopy such as chemical shift, coupling constant, and anisotropy and describe how they are affected by molecular structure.

CO6: identify and define various types of nuclear transmutation including fission, fusion and decay reactions.

CO7: define binding energy and mass defect and be able to calculate each for a given nucleus.

CO8: understand and explain the concept of ionizing radiation and distinguish between the three different types of radiation.

CO9: understand the concept of rate of change and half-life in the context of nuclear decay.

CO10: understand the basics of nuclear chemistry applications.

CO11: identify an oxidation – reduction (redox) reaction based on changes in oxidation numbers across the chemical change.

CO12: recognize degrees of reactivity based on an activity series table or a standard reduction potential table.

CO13: describe fully the relationship between the free energy and the cell potential.

CO14: explain thermodynamically the operation of a concentration cell and be able to predict the concentration in the cell based on the cell potential.

Bachelor of Science (Medical & Non-Medical) SEMESTER–V
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-5084 PHYSICALCHEMISTRY–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 & Sons Inc., 1992.
6. Levine, I.N., Physical Chemistry; 5th edition, Pubs: Tata McGraw Hill Publishing Co. Ltd,2002.

Bachelor of Science (Medical & Non-Medical)
SEMESTER–V

COURSE CODE: BSMM/BSNM-5084(P)
CHEMISTRY PRACTICAL

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 & Non-Medical)
SEMESTER–V

SESSION: 2020-21

COURSE CODE: BSMM/BSNM-5084(P)
CHEMISTRY 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) 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 & 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 & Co.

8. Selected Experiments in Physical Chemistry, N.G. Mukherjee, J.N. Ghosh & Sons.

9. Experiments Physical Chemistry, J.C. Ghosh, Bharati Bhavan.

B.Sc. (Non Medical), Semester–V (Session 2020-21)
Electronics
MICROPROCESSOR ARCHITECTURE

Course Code: BSNM-5184 (I) (THEORY)

Course Outcomes:

After passing this course, students will be able to:

CO1: Understand the concept of microprocessor architecture and its operations

CO2: Demonstrate Addressing modes, types of 8085 instructions, instruction format

CO3: Understand the instruction set of 8085

CO4: Understand the concept of Memory interfacing

B.Sc. (Non Medical) Semester–V (Session 2020-2021)
ELECTRONICS MICROPROCESSOR ARCHITECTURE (501)

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

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

Brief history of Microprocessor, microprocessor architecture and its operations, pin configuration of 8085,difference between microprocessor and microcontroller.

UNIT II

Addressing modes, instruction format, difference between assembler, compiler and interpreter, How to write, assemble and execute a simple program,

UNIT – III

Introduction to 8085 instructions, data transfer operations, 8 an 16 bit arithmetic operations and related to memory, logic operations: compare, rotate , branch operations.

UNIT – IV

Memory interfacing, basic interfacing concepts, interfacing I/O devices, memory mapped I/O, comparison of memory mapped I/O and peripheral mapped I/O programming of the 8085.

Suggested Readings:

1. Microprocessor Architecture and Programming by Gaonkar.
2. Fundamentals of Microprocessor & Microcomputers by B.Ram (Dhanpat Rai & Sons), 1990.
3. Microprosessors and Interfacing by DV Hall (TMH), 2nd Edition, 2006.
4. An Introduction to the INTEL, Family of Processor by JL Antonakos, Pearson Edu. Asia.

B.Sc. (Non Medical) Semester–
V (Session 2020-2021)
ELECTRONICS
COMMUNICATION SYSTEM (502) (THEORY)

Course Code: BSNM-5184 (II)

Course Outcomes:

After passing this course the student will be able to:

CO1- To develop an understanding of Amplitude modulation.

CO2- Develop an understanding of Frequency modulation.

CO3- Develop an understanding of Radio receiver and its types.

CO4- Develop and ability to understand IF amplifiers, detection and automatic gain control (AGC)

B.Sc. (Non Medical) Semester–
V (Session 2020-2021)
ELECTRONICS
ELECTRONIC COMMUNICATION SYSTEM (502)

Course Code: BSNM-5184 (II)

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

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
Amplitude modulation Need for modulation, amplitude modulation, frequency spectrum of the AM wave, representation of AM wave, power relations in AM wave, generation of AM, base modulated class C amplifier, single side band techniques, suppression of carrier, suppression of unwanted sideband using the filter system.

UNIT–II
Frequency modulation, theory of frequency and phase modulation, description of systems, mathematical representation of FM frequency spectrum of the FM wave, phase modulation, intersystem comparisons, generation FM, direct method, indirect method.

UNIT–III
Radio receiver, receiver types, tuned radio frequency receiver, super heterodyne receiver, AM receivers, RF section and characteristics, Frequency changing and tracking, intermediate frequencies.

UNIT -IV
IF amplifiers, detection and automatic gain control (AGC), FM receiver, comparison with AM receivers, amplitude limiting, basic FM demodulator, ratio detector, FM demodulator comparison.

Suggested Readings:

1. Communication System by Kennedy (Tata McGraw Hill Publishing Company), 4th Edition, .
2. Taub's Communication System by Taub Schilling (Tata McGraw Hill), 2nd Edition.
3. Communication System by B.P. Lathi (Wiley Eastern Lim) 8th Edition.

B.Sc. (Non Medical), Semester–V (Session 2020-21)

Electronics

Electronic Communication Systems Lab

Course Code: BSNM-5184 (P) (PRACTICAL)

Course Outcomes:

CO1: Students will be able to understand amplitude and frequency modulation and demodulation.

CO2. Students will get familiarize with microprocessor 8085 kit.

CO3: Students will be able to understand the concept of a program for add and subtract 8 bit no using 8085 microprocessor.

CO4: Students will able to understand programming of divide and multiply using 8085 microprocessor.

B.Sc. (Non Medical), Semester–V (Session 2020-21)

Electronics

Electronic Communication Systems Lab

Course Code: BSNM-5184 (P) (PRACTICAL)

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

Instructions 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

General Guidelines for Practical Examination:

I. The distribution of marks is as follows :
i) One experiment 7 Marks
ii) Brief Theory 3 Marks
iii) Viva–Voce 5 Marks
iv) Record (Practical file) 5 Marks
II. There will be one sessions of 3 hours duration. The paper will have one session. Paper will consist of 8 experiments out of which an examinee will mark 6 experiments and one of these is to be allotted by the external examiner.
III. Number of candidates in a group for practical examination should not exceed 12.
IV. In a single group no experiment be allotted to more than three examinee in any group.

EXPERIMENTS

1 To study the amplitude modulation and demodulation experimental boards

2. To study the frequency modulation and demodulation experiment boards.

3. Familrazation with microprocessor 8085 kit and auto step to save and execute the program. 4 Write a program to add and subtract 8 bit number using 8085 microprocessor.
5 Write a program to find 1's and 2's compliment of number using 8085 microprocessor.
6 Write a program to arrange the array of data in ascending order.
7 Write a program to arrange the array of data in descending order.
8 Write a program to find the largest "n" number.

Books Recommended:

1 Basic Electronics and Linear Circuits by N.N. Bhargava, D.C. Kulshreshtha, S.C. Gupta (TMH).

2 Basic Electronics Solid State by B.L. Theraja, (S. Chand & Co.) 3

Digital Design by M. Morris Meno (PHI), (chapters : 4,5,10)

4 Op-Amplifiers & Linear Integrated Circuits by Ramakant & Gayakwars (Prentice Hall India)

Bachelor of Science (Semester System) (12+3 System of Education)
(Semester–V) (Session 2020-21)
PHYSICS (CONDENSED MATTER PHYSICS) (THEORY)

Course code: BSNM-5395 (I) for B.Sc. (Non Medical)

BCSM-5395 (I) for B.Sc. (Computer Science)

Course Outcomes

After passing this course, students will be able to:

CO 1. Understand basics about crystal structures in solids, various types of crystal structure, unit cells and symmetry operations.

CO 2. Understand the experimental methods to determine crystal structures, reciprocal lattice, Brillioun zones and form factor.

CO 3. Understand the concept of lattice vibrations and role of phonons in determining specific heat of solids at low temperatures and models of specific heat.

CO 4. Build concept from free electron model to Kronig Penny model and its application to band theory to differentiate insulators, semiconductors and conductors.

Bachelor of Science (Semester System) (12+3 System of Education)
(Semester–V) (Session 2020-21)
PHYSICS (CONDENSED MATTER PHYSICS) (THEORY)

Course code: BSNM-5395 (I) for B.Sc. (Non Medical)
BCSM-5395 (I) for B.Sc. (Computer Science)

Time: 3 Hours **Max. Marks: 30** **Pass Marks: 11**

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. Each question carries 6 marks.

Note: Students can use Non-Scientific calculators or logarithmic tables.

UNIT–I

Crystal structure, Symmetry operations for a two and three dimensional crystal, Two dimensional Bravais lattices, Three dimensional Bravais lattices, Basic primitive cells, Crystal planes and Miller indices, Diamond and NaCl structure.

UNIT–II

Crystal Diffraction: Bragg's law, Experimental methods for crystal structure studies, Laue equations, Reciprocal lattices of SC, BCC and FCC, Brag's law in reciprocal lattice, Brillioun zones and its construction in two and three dimensions, Structure factor and atomic form factor.

UNIT–III

Lattice vibrations, Concepts of phonons, Scattering of photons by phonons, Vibration and monoatomic, linear chains, Density of modes, Einstein and Debye models of specific heat. Free electron model of metals, Free electron, Fermi gas and Fermi energy.

UNIT–IV

Band Theory: Kronig Penney model, Metals and insulators, Conductivity and its variation with temperature in semiconductors, Fermi levels in intrinsic and extrinsic semiconductors, band gap in semiconductors.

Books Suggested:

1. Introduction to Solid State Physics by C. Kittel (Wiley Eastern)
2. Elements of Modern Physics by S.H. Patil (TMGH, 1985).
3. Solid State Physics by Puri and Babbar.
4. Condensed Matter Physics by T.S. Bhatia (Vishal Publishing Co.)

Bachelor of Science (Semester System) (12+3 System of Education)

(Semester–V) (Session 2020-21)

PHYSICS (NUCLEAR PHYSICS)

(THEORY)

Course code: BSNM-5395 (II) for B.Sc. (Non Medical)
BCSM-5395 (II) for B.Sc. (Computer Science)

Course Outcomes

After passing this course, students will be able to:

CO 1. Understand basic properties of nucleus and nuclear forces.

CO 2. Understand about radioactivity, theories of alpha, beta and gamma decay, neutrino hypothesis.

CO 3.Understand concepts and types about nuclear reactions, reactions cross section and compound nucleus.

CO 4. Understand nuclear models (Liquid drop and Shell model) and their failures and successes.

(Semester–V) (Session 2020-21)

PHYSICS (NUCLEAR PHYSICS)
(THEORY)

Course code: BSNM-5395 (II) for B.Sc. (Non Medical)
BCSM-5395 (II) for B.Sc. (Computer Science)

Time: 3 Hours **Marks: 30** **Pass Marks: 11**

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. Each question carries 6 marks.
Note: Students can use Non-Scientific calculators or logarithmic tables.

UNIT–I
Nuclear Properties: Constituents of nucleus, non-existence of electrons in nucleus, Nuclear mass and binding energy, features of binding energy versus mass number curve, nucleus radius, angular momentum and parity, nuclear moments: magnetic dipole moment and electric quadruple moment, properties of nuclear forces, Yukawa theory.

UNIT–II
Radioactive Decays: Modes of decay of radioactive nuclides and decay Laws, radioactive series and displacement law, radioactive dating, Alpha decay: Gamow's theory of alpha decay, barrier penetration as applied to alpha decay, Geiger Nuttal law, Beta decays: β-, β+ and electron capture decays, Neutrino hypothesis and its detection, parity violation in β decay, Gamma transitions, internal conversion.

UNIT–III
Nuclear Reactions: Types of nuclear reactions, reactions cross section, conservation laws, Kinematics of nuclear reaction, examples of nuclear reactions: proton, deuteron, alpha particle, neutron and photon induced reactions. Q-value and its physical significance, Compound nucleus

UNIT–IV
Nuclear Models: Liquid drop model, semi-empirical mass formula, condition of stability, evidence for nuclear magic numbers, Shell Model, energy level scheme, angular momenta of nuclear ground states, parity and magnetic moment of nuclear ground states.

Reference Books:
1. Basic Ideas and Concepts in Nuclear Physics by K. Hyde
2. Introduction to Nuclear Physics by H.A. Enge
3. Nuclear Physics by I. Kaplan (Addison Wesley)
4. Nuclei and Particles by E. Segre

Bachelor of Science (Semester System) (12+3 System of Education)
(Semester–V) (Session 2020-21)

PHYSICS PRACTICAL

Course Outcomes : Physics Lab Sem V

CO 1. Students will be able to characterize p-n junction, zener diode, LED and LDR.
CO 2. Student will be able to use CRO for AC, DC, voltages and frequencies.
CO 3. Student will be able to understand the use of GM counter.

Bachelor of Science (Semester System) (12+3 System of Education)
(Semester–V) (Session 2020-21)

PHYSICS PRACTICAL

Instructions to Practical Examiner

Question paper is to be set on the spot jointly by the external and internal examiners. Two copies of the same to be submitted for the record to COE office, Kanya MahaVidyalaya, Jalandhar

General Guidelines for Practical Examination

I. The distribution of marks is as follows: **Marks: 20**

i) One experiment **7 Marks**

ii) Brief Theory **3 Marks**

iii) Viva–Voce **5 Marks**

iv) Record (Practical file) **5 Marks**

II. There will be one sessions of 3 hours duration. The paper will have one session.
Paper will consist of 8 experiments out of which an examinee will mark 6 experiments and one of these is to be allotted by the external examiner.

III. Number of candidates in a group for practical examination should not exceed 12.

IV. In a single group no experiment is to be allotted to more than three examinees in any group.

LIST OF EXPERIMENTS-

1. Measurement of reverse saturation current in p-n-junction diode at various temperatures and
to find the approximate value of energy gap.
2. To draw forward and reverse bias characteristics of a p-n junction diode and draw a load line.
3. To trace the B-H curves for different materials using CRO and find the magnetic parameters
from these.
4. To study the characteristics of a thermistor and find its parameters.
5. To study the response of RC circuit to various input voltage (square, sine and triangular)
6. Study the working of CRO and measure voltage and frequency of AC and DC supply.
7. Study the characteristics of a LED.
8. To study characteristics of a LDR.
9. To obtain the wave form of a given oscillator using a cathode ray oscilloscope.
10. To draw the characteristics of a Zener diode.

BACHELOR OF SCIENCE (Semester V)

Session: 2020-2021

Course Title: BIOINFORMATICS (VOCATIONAL) (COMPUTATIONAL METHODS FOR SEQUENCE ANALYSIS)

(Theory)

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

Theory Marks: 60

Practical Marks: 20

CA : 20

Instructions for the Paper Setters and Candidates: -

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

Sequence Alignment: Local and Global alignment concepts, dynamic programming methodology (Needleman and Wunch algorithm, Smith Waterman algorithm),

Statistics of alignment score, Database searches for homologous sequences (Fasta and Blast versions), Multiple Sequence alignment (Progressive alignment).

UNIT–II

Genome mapping, assembly and comparison: Introduction to Genome mapping, Genome sequencing, Genome sequence assembly, Genome Annotation,

Gene finding methods: Concept and signal methods, Background of transform techniques, Fourier Transform and Gene Prediction, Pattern and Motif searching, Analysis and prediction of regulatory regions.

UNIT–III

Profiles and Hidden Markov Models: Position specific scoring matrices, Profiles, Markov Model (Random walk), Hidden Markov Model, Neural Network concepts and secondary structure prediction, Applications of Hidden Markov model.

UNIT–IV

Evolutionary analysis: Basics of evolution: Rooted and unrooted trees, molecular clock theory, molecular markers used in studying evolution. Multiple Substitution and statistical model. Distance based methods and Clustering Methods of evolution, Optimally Based Methods, Bootstrapping strategies.

List of Books:

1. Jin Xiong . Essential Bioinformatics. Cambridge University Press (2006). 2.Arthur

M.Lusk . Introduction to Bioinformatics . Oxford University Press (2014).

3. P. Shanmughavel . Principles of Bioinformatics. Pointer Publishers Jaipur (2005).

4. Vidya Kothekar and Tannistha Mandi .An introduction to Bioinformatics.Duckworth Press (2007)

5.Dan E.Krane,Michael L. Rayner.Fundamentals Of Bioinformatics.Pearson Education Inc (2003).

6. Irfan Ali Khan,Atiya Khanun. Essential Bioinformatics.Ukaaz Publication, Hyderabad.(2003).

ATTWOOD T K. Introduction to Bioinformatics. Pearson India Publishers (2007

Semester VI

SESSION 2020-21

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) / BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION

Semester VI

PUNJABI (COMPULSORY)

COURSE CODE- BARL/BSML/BSNL/BCSL/BECL/BCRL /BBRL-6421

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: ਪੰਜਾਬੀ ਧੁਨੀ ਵਿਉਂਤ, ਵਾਕਾਤਮਕ ਜੁਗਤਾਂ : ਮੇਲ ਤੇ ਅਧਿਕਾਰ,ਕਾਰਕ ਤੇ ਕਾਰਕੀ ਸੰਬੰਧ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ - ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

SESSION 2020-21

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) / BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION

Semester VI

PUNJABI (COMPULSORY)

COURSE CODE- BARL/BSML/BSNL/BCSL/BECL/BCRL /BBRL-6421

ਸਮਾਂ : 3 ਘੰਟੇ **Maximum Marks: 50**

Theory: 40

CA: 10

ਪਾਠ ਕ੍ਰਮ 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) ਸੰਖੇਪ ਰਚਨਾ

੪ ਅੰਕ

ਯੂਨਿਟ-IV

ਵਿਆਕਰਣ :
(ੳ) ਵਿਆਕਰਨਕ ਸ਼੍ਰੇਣੀਆਂ : 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 ਅਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ

   ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

SESSION 2020-21

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) / BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION

SEMESTER–VI

Basic Punjabi (In lieu of Punjabi Compulsory)

COURSE CODE- BARL/BSML/BSNL/BCSL /BECL/BCRL /BBRL-6031

COURSE OUTCOMES

CO1: 'ਸਾਹਿਤ ਦੇ ਰੰਗ' ਪੁਸਤਕ ਦੇ ਵਾਰਤਕ ਭਾਗ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਵਾਰਤਕ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ।

CO2:ਇਸ ਦਾ ਹੋਰ ਮਨੋਰਥ ਭਾਸ਼ਣ ਕਲਾ ਤੇ ਲਿਖਣ ਕਲਾ ਦੀ ਨਿਪੁੰਨਤਾ ਪੈਦਾ ਕਰਨਾ ਹੈ।

CO3:'ਸਾਹਿਤ ਦੇ ਰੰਗ' ਪੁਸਤਕ ਦੇ ਰੇਖਾ ਚਿੱਤਰ ਭਾਗ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਰੇਖਾ ਚਿੱਤਰ ਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਤੇ ਇਹਨਾਂ ਮਹਾਨ ਸ਼ਖ਼ਸੀਅਤਾਂ ਦੀ ਸਫ਼ਲਤਾ ਪਿੱਛੇ ਘਾਲੀਆਂ ਘਾਲਣਾਵਾਂ ਤੋ ਵਾਕਫ਼ ਕਰਵਾਉਂਦਿਆਂ ਜੀਵਨ ਸੇਧ ਪ੍ਰਦਾਨ ਕਰਨਾ ਹੈ।

CO4: ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਵਿਚ ਅਨੁਵਾਦ ਮਨੋਰਥ ਲਿਖਣ ਕਲਾ ਦੀ ਨਿਪੁੰਨਤਾ ਪੈਦਾ ਕਰਨਾ ਹੈ।

CO5: ਭਾਸ਼ਾ ਅਤੇ ਉਪਭਾਸ਼ਾ ਦੀ ਪਰਿਭਾਸ਼ਾ ਤੇ ਪੰਜਾਬੀ ਦੀਆਂ ਉਪਭਾਸ਼ਾਵਾਂ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਭਾਸ਼ਾ ਅਤੇ ਉਪਭਾਸ਼ਾ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ।

SESSION 2020-21

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL) / BACHELOR OF SCIENCE (NON MEDICAL) / BACHELOR OF SCIENCE (COMPUTER SCIENCE) / BACHELOR OF SCIENCE (ECONOMICS) / BACHELOR OF COMMERCE / BACHELOR OF BUSINESS ADMINISTRATION

SEMESTER–VI

Basic Punjabi (In lieu of Punjabi Compulsory)

COURSE CODE- BARL/BSML/BSNL/BCSL /BECL/BCRL /BBRL-6031

ਪਾਠ ਕ੍ਰਮ

ਯੂਨਿਟ-I

ਸਾਹਿਤ ਦੇ ਰੰਗ (ਸੰਪਾ.ਡਾ ਮਹਿਲ ਸਿੰਘ),ਭਾਗ ਦੂਜਾ (ਵਾਰਤਕ),ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ,ਅੰਮ੍ਰਿਤਸਰ।
(ਗੰਗਾਦੀਨ,ਮਾਂ,ਭਾਈ ਮਰਦਾਨਾ ਜੀ ਲੇਖ ਪਾਠਕ੍ਰਮ ਦਾ ਹਿੱਸਾ ਹਨ)
(ਸਾਰ) 08 ਅੰਕ

ਯੂਨਿਟ-II

ਸਾਹਿਤ ਦੇ ਰੰਗ (ਸੰਪਾ.ਡਾ ਮਹਿਲ ਸਿੰਘ), ਭਾਗ ਦੂਜਾ (ਰੇਖਾ ਚਿੱਤਰ),ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ,ਅੰਮ੍ਰਿਤਸਰ।
(ਡਾ.ਗੰਡਾ ਸਿੰਘ ,ਨਿੱਕੀ ਕਹਾਣੀ ਦਾ ਬਾਦਸ਼ਾਹ,ਮਿਲਖਾ ਸਿੰਘ ਰੇਖਾ ਚਿੱਤਰ ਪਾਠਕ੍ਰਮ ਦਾ ਹਿੱਸਾ ਹਨ)
(ਸਾਰ) 08 ਅੰਕ

ਯੂਨਿਟ-III

ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਵਿਚ ਅਨੁਵਾਦ

(ੳ) ਪੈਰ੍ਹੇ ਵਿਚ ਅਨੁਵਾਦ
(ਅ) ਵਾਕਾਂ ਵਿਚ ਅਨੁਵਾਦ 08 ਅੰਕ

ਯੂਨਿਟ-IV

(ੳ) ਭਾਸ਼ਾ ਦੀ ਪਰਿਭਾਸ਼ਾ ਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

(ਅ) ਉਪਭਾਸ਼ਾ: ਪਰਿਭਾਸ਼ਾ ਤੇ ਪੰਜਾਬੀ ਦੀਆਂ ਉਪਭਾਸ਼ਾਵਾਂ 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।

Punjab History & Culture (1947- 2000 A.D.)
(Special paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)

Session 2020-21
SEMESTER-VI

COURSE OUTCOMES:-

After completing this paper the students will be able to

CO 1:-comprehend Punjab's contribution in the freedom struggle, the exodus and Rehabilitation

CO 2:- understand the history of Punjab from independence with special reference to partition and the formation of New Punjab in 1966

CO 3:- understand the objectives, planning and outcomes of Green Revolution in the Punjab

CO 4:- critically analyze the growth of education, Punjabi literature and Drama in the Punjab after Independence

CO 5:-the drug abuse problem, management and prevention in the Punjab

Bachelor of Arts / Bachelor of Science (Medical) / Bachelor of Science (Non- Medical) / Bachelor of Science (Computer Science) / Bachelor of Science (Economics) / Bachelor of Commerce / Bachelor of Business Administration

(Semester VI)

Session 2020-21

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: BARL-6431/BSML-6431/BSNL-6431/BCSL-6431/BECL-6431/BCRL-6431/BBRL-6431

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

Theory: 40

CA: 10

Instructions for the Paper Setters

5. **Question paper shall consist of four Units**
6. **Examiner shall set 8 questions in all by selecting Two Questions of equal marks from each Unit.**
7. **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.**
8. **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.
8. Emerging Concerns: Drug Addiction and Female Foeticide

Suggested Readings

1. Chopra, P.N. & Das, M.N. (1974), *A Social, Cultural & Economic History of India.* Vol.III, Macmillan India, New Delhi, 1974.
2. Grewal, J.S., *Social and Cultural History of Punjab: Prehistoric, Ancient and Early Medieval*. Foundation Books Pvt Ltd Cambridge House, New Delhi, 2004.
3. Grewal, J.S., *The Sikhs of Punjab*. New Cambridge House, New Delhi, 2005
4. Rai Satya M. , *Heroic Tradition in Punjab(1900-1947)*. Publication Bureau, Punjabi University, Patiala, 1978.
5. Singh, Fauja., *Freedom Struggle in Punjab*. Publication Bureau, Punjabi University, Patiala, 1974.
6. Singh, Fauja, *History and Culture of the Punjab*. Part II, Publication Bureau, Punjabi University, Patiala, 1987.
7. Singh, Kushwant, *A History of the Sikhs*. Vol. II (1839-1998), Oxford University Press, Delhi, 1991.
8. Yadav, K.C., *Haryana Aitihasik Simhavalokan* (Hindi). Haryana Sahitya Akademy, Chandigarh, 1991.

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL)/ BACHELOR OF SCIENCE (NON MEDICAL)/ BACHELOR OF SCIENCE (COMPUTER SCIENCE)/ BACHELOR OF SCIENCE (ECONOMICS)/ BACHELOR OF COMMERCE/ BACHELOR OF BUSINESS ADMINISTRATION Semester VI

Session 2020-21

ENGLISH (COMPULSORY)

Course Code: BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-6212

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 plays

CO 2: comprehend, appreciate and critically analyse the novel *Train to Pakistan* by Khushwant Singh

CO 3: enhance their reading and analysing power of texts through guided reading

CO 4: develop skills for report writing and to write an essay on a given topic

BACHELOR OF ARTS / BACHELOR OF SCIENCE (MEDICAL)/ BACHELOR OF SCIENCE (NON MEDICAL)/ BACHELOR OF SCIENCE (COMPUTER SCIENCE)/ BACHELOR OF SCIENCE (ECONOMICS)/ BACHELOR OF COMMERCE/ BACHELOR OF BUSINESS ADMINISTRATION Semester VI

Session 2020-21

ENGLISH (COMPULSORY)

Course Code: BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-6212

Max. Marks: 50

Examination Time: 3 Hrs **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 Arts/Bachelor of Science (Economics/Computer Science/Non-Medical)
Semester–VI
Session- 2020-21
Course Title: Mathematics (Linear Algebra)
Course Code:BARM/BECM/BCSM/BSNM-6333(I)

Course Outcomes

After the completion of this course, students should be able to:

CO 1: Express the algebraic concepts such as binary operation, groups, rings and fields.

CO 2: Define a vector space and subspace of a vector space.

CO 3: Check the linear dependence and linear independence of vectors.

CO 4: Describe the concepts of basis and dimension of vector spaces.

CO 5: Investigate properties of vector spaces and subspaces using linear transformation.

CO 6: Express linear transformations between vector spaces.

CO 7: Perform algebra operations between linear transformations.

CO 8: Find the matrix representing a linear transformation.

Bachelor of Arts/Bachelor of Science (Economics/Computer Science/Non-Medical)
Semester–VI
Session: 2020-21
Course Title: Mathematics (Linear Algebra)
Course Code: BARM/BECM/ BCSM/BSNM-6333(I)

Examination Time: 3 Hours Max. Marks: 50

Theory:40
CA:10

Instructions for the paper setters/examiners:
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

Definition of groups, rings and fields with examples. Definition of a vector space, subspaces with examples. Direct sum of subspaces. Linear span, Linear dependence, Linear independence ofvectors. Linear combination of vectors.

Unit-II

Basis of a vector space, Finitely generated vector spaces. Existence theorem for basis. Invariance ofthe number of elements of the basis set. Dimension of sum of two subspaces. Quotient space and its dimension.

Unit-III

Linear transformation. Algebra of linear transformation. Rank-Nullity theorem, Isomorphism and Isomorphic spaces.

Unit-IV

Matrix of a linear transformation. Changes of basis, Linear operator.

Text Book:
1.Charles W.Curtis : Linear Algebra
Reference Books:
1.Surjit Singh: Linear Algebra, Vikas Publishing ,1997.
2.V. Krishnamurthy, V. P. Mainra andJ.L. Arora:An Introduction to Linear Algebra, East WestPress, 1976.
3.Shanti Narayan & P.K. Mittal: A Text Book of Matrices, 10th Edition (2002), S.Chand& Co.

Bachelor of Arts/Bachelor of Science (Economics/Computer Science/Non-Medical)
Semester–VI
Session: 2020-21
Course Title: Mathematics (Numerical Analysis)
Course Code: BARM/BECM/ BCSM/BSNM-6333(II)

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

CO 1. Perform computation for solving a system of equations.

CO 2. Understand its application in all branches of engineering.

CO 3. Know how to find the roots of transcendental equations.

CO 4. Learn how to interpolate the given set of values.

CO 5. Understand the curve fitting for various polynomials .

CO 6. Learn numerical solution of differential equations.

CO 7. Compute numerical integration and differentiation, numerical solution of ordinary differential equations.

Bachelor of Arts/Bachelor of Science (Economics/Computer Science/Non-Medical)
Semester–VI
Session: 2020-21
Course Title: Mathematics (Numerical Analysis)
Course Code: BARM/BECM/ BCSM/BSNM-6333(II)

Examination Time: 3 Hours Max. Marks: 50

Theory:40
CA:10

Instructions for the Paper Setter: 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

Error generation, propagation, error estimation and error bounds, Solution of non-linear equations, Bisection method, Iteration method, Newton's Method, Generalized Newton's Method, Method of false position, Muller's method, Rate of convergence of these methods.

Unit-II

Solution of linear system of equation; Direct method, Gauss elimination variant (Gauss Jordan and Crout reduction), Triangular Method, Iterative Method, Jacobi's Method, Gauss Seidel Method. Finite Differences: Forward, Backward, Central, Divided differences, shift operator, relationship between the operators and detection of errors by use of difference operator. Interpolation with divided difference, Newton's formula, Lagrangian Method.

Unit-III

Finite difference interpolation, Gauss formula, Stirling formula, Bessel's formula, Error Estimation Extrapolation. Numerical differentiation, Method based on interpolation. Numerical Integration, Trapezoidal rule, Simpson's rule, Weddle rule, Romberg Integration, Gaussian integration method, Gaussian legendre integration. Double numerical integration.

Unit-IV

Numerical solution of ordinary differential equations, Initial value problem, Taylor's method, Euler's methods, Picard's method, Milne's Method, Runge-Kutta Method. Predictor- Corrector's Method.

Text Book:

1. Iyenger, S. R. K., R. K. Jain, and Mahinder Kumar. Numerical Methods for Scientific and Engineering Computation. Delhi: New Age International Publishers, 2012.

Bachelor of Science (Medical and Non- Medical) SEMESTER-VI
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-6084(I)
COURSE TITLE: ORGANIC CHEMISTRY–I (THEORY)

Course outcomes:

Students will be able to

CO1:learn about the Principle and applications of ultraviolet and Woodward Fisher Rule

CO2: understand the infra-red spectroscopy in organic structure determination

CO3:know about the Nuclear magnetic resonance spectroscopy,proton chemical shift, spin-spin coupling, coupling constants and applications to organic structures

CO4: learn about the different mechanisms involved in the polymer preparation

CO5: learn about the different polymerization techniques

CO6:Familiarize with structure, classification and the biological functioning of carbohydrates, amino acids and nucleic acids.

CO7:understand the types and reactions given by organosulphur compounds

Bachelor of Science (Medical and Non- Medical) SEMESTER–VI
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-6084(I)
COURSE TITLE: ORGANIC CHEMISTRY–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

1. Spectroscopy (5 Hrs)

Nuclear Magnetic Resonance (NMR) spectroscopy,Proton Magnetic Resonance (1H NMR) spectroscopy, nuclear shielding and deshielding, chemical shift and molecular structure, spin-spin splitting and coupling constants, areas of signals, interpretation of PMR spectra of simple organic molecules such as ethyl bromide, ethanol, acetaldehyde, 1,1,2-tribromoethane, ethyl acetate, toluene and acetophenone.

2. Electromagnetic Spectrum: Absorption Spectroscopy (5 Hrs)

Ultraviolet (U.V.) absorption spectroscopy introduction- (Beer-Lambert law), molar absorptivity, analysis of UVspectra, types of electronic transitions effect of conjugation.Concept ofchromophores and auxochrome, Bathochrome, hypsochrome, hyperchrome, hypochromic shifts-UVspectra of conjugated compounds

UNIT–II

Electromagnetic Spectrum: Absorption Spectroscopy (3 Hrs)

Infrared (IR) Absorption spectroscopy-introduction, Hooke's law, Selection rules, intensity and IR bands, measurement of IR spectrum time characteristic absorptionof various fundamental band interpretation of IR spectra of simple organic compounds.

3. Problems based on spectroscopy (4 Hrs)

Problems pertaining to the structure elucidation of simple organic compounds using UV, IR and PMR spectroscopic techniques.

4. Organosulphur Compounds **(3 Hrs)**

Nomenclature, structural features, Methods of formation and chemical reactions of thiols, thioethers,sulphonic acids, sulphonamides and sulphaguanidine.

UNIT-III

5. Synthetic Polymers **(6 Hrs)**

Addition or chain-growth polymerization. Free radical vinyl polymerization, ionic vinyl polymerization, Ziegler-Natta polymerization and vinyl polymers.Condensation or step growth polymerization. Polyesters, polyamides, phenol formaldehyde resins, urea formaldehyde resins, epoxy resins and polyurethanes.Natural and synthetic rubbers.

6. Organic Synthesis *via* Enolates **(6 Hrs)**

Acidity of α-hydrogens, alkylation of diethyl malonate and ethyl acetoacetate. Synthesis of ethyl acetoacetate: the Claisen condensation. Keto-enol tautomerism of ethyl acetoacetate.Alkylation of 1,3-dithianes. Alkylation and acylation of enamines.

UNIT–IV

7. Carbohydrates **(7 Hrs)**

Classification and nomenclature. Monosaccharides, mechanism of osazone formation, interconversion of glucose and fructose, chain lengthening and chain shortening of aldoses. Configuration of monosaccharides.Erythro and threo diastereomers.Conversion of glucose into mannose.Formation of glycosides, ethers and esters. Determination of ring size of monosaccharides.Cyclic structure of D(+)-glucose. Mechanism of mutarotation.

Structures of ribose and deoxyribose

An introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination.

8. Amino Acids, Peptides, Proteins and Nucleic Acids **(6 Hrs)**

Classification, structure and stereochemistry of amino acids.Acid-base behaviour, isoelectric pointand electrophoresis.Preparation and reactions of α-amino acids.Structure and nomenclature of peptides and proteins.Classification of proteins. Peptide structure determination, end group analysis, selective hydrolysis of peptides. Classical peptide synthesis, solid-phase peptide synthesis.Structures of peptides and proteins.Levels of protein structure.Proteindenaturation/renaturation.Nucleic acids : Introduction. Constituents of nucleic acids.Ribonucleosides and ribonucleotides.Thedouble helical structure of DNA.

Books Suggested :

1. Spectrometric Identification of Organic Compoundsby Robert M. Silverstein, Francis X. Webster , David J. Kiemle, David L. Bryce ; Publisher: Wiley, 1981

2. Morrison, R.T., Boyd, R.N., Organic Chemistry; 6th edition, Pubs: Prentice-Hall, 1992.

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, Vols.I, II, III.

5. Carey, F.A., Organic Chemistry; 4th edition, Pubs: McGraw-Hill, 2000.

6. Solomons, T.W., Fundamentals of Organic Chemistry; 5th edition, Pubs: John Wiley & Sons, 1997.

7. Streitwieser, A., Clayton, Jr., Heathcock, H., Introduction to Organic Chemistry; 3rd edition, Pubs: Macmillan Publishing Company, 1989.

Bachelor of Science (Medical and Non- Medical) SEMESTER–VI
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-6084(II)
COURSE TITLE: PHYSICAL CHEMISTRY–II (THEORY)

Course outcomes:

Students will be able to

CO1: understand wave mechanics in three dimensions;

CO2: describe the structure of the hydrogen atom and show an understanding of quantisation of angular momentum.

CO3: understand and explain the differences between classical and quantum mechanics

CO4: understand the idea of wave function

CO5: understand the uncertainty relations

CO6: solve Schroedinger equation for simple potentials

CO7: spot, identify and relate the eigen value problems for energy, momentum, angular momentum and central potentials explain the idea of spin

CO8: apply the knowledge about photochemical and photophysical processes

CO9: acquire knowledge about the unit cell, space lattice, miller indices, symmetry operations , Bragg equation etc.

Bachelor of Science (Medical and Non- Medical) SEMESTER–VI
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-6084(II)
COURSE TITLE: PHYSICAL CHEMISTRY–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 & 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 and Non- Medical) SEMESTER–VI
SESSION: 2020-21
COURSE CODE: BSMM/BSNM-6084(P)
COURSE TITLE: CHEMISTRY 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 and Non- Medical) SEMESTER–VI
SESSION 2020-21
COURSE CODE: BSMM/BSNM-6084(P)
COURSE TITLE: CHEMISTRY 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, KanyaMahaVidyalaya, Jalandhar.

(I) Organic Chemistry Laboratory Techniques

(a) Column Chromatography

Separation of o & p nitrophenol

Separation of Leaf pigments from Spinnach leaves

Separation of o & 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 & 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.

B.Sc. (Non Medical), Semester–VI (Session 2020-21)
Electronics
MICROPROCESSOR PROGRAMMING
Course Code: BSNM-6184 (I)
(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1 - To understand the concept of Programming techniques

CO2- To develop an understanding of advanced subroutine concepts.

CO3- To understand the concept of Interrupts of 8085and interrupt driven data transfer schemes.

CO4- To develop an understanding of Introduction to 16 bits, 32 bits & 64 bits microprocessor.

B.Sc. (Non Medical), Semester–VI (Session 2020-21)
Electronics
MICROPROCESSOR PROGRAMMING (601)
Course Code: BSNM-6184 (I)
(THEORY)

Time: 3 Hrs. **Marks: 30**
Passing Marks :11

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. Each question carries 6 marks.

UNIT–I
Programming techniques: looping, counting and indexing, BCD to binary conversion, binary to BCD conversion, BCD addition

UNIT–II
Stack: push and pop Instruction, subroutine:conditional call and return instructions, advanced subroutine concepts,

UNIT–III
Interrupts of 8085, 8085 vectored interrupts, programmable data transfer, DMA data transfer and interrupt driven data transfer schemes.

UNIT -IV
Block diagram,control word and status word of 8251 USART, 8255 Programmable Peripheral Interface, 8259- PIC Programmable interrupt controller. Comparison of basic features of 16 bits, 32 bits & 64 bits microprocessor .

Suggested Readings:
1. Microprocessor Architecture and Programming by Gaonkar.
2. Fundamentals of Microprocessor & Microcomputers by B.Ram (Dhanpat Rai & Sons).
3. Microprosessors and interfacing by DV Hall (TMH), 2nd Edition.
4. An introduction to the INTEL, Family of Processor by JL Antonakos, Pearson Edu. Asia.

B.Sc. (Non Medical), Semester–VI (Session 2020-21)
Electronics
Optical Fiber Communication
Course Code: BSNM-6184 (II)
(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1 - To understand the concept of overview of optical fiber communication

CO2- To develop an understanding of transmission characteristics of optical fibers

CO3- To understand the concept of optical sources and detectors

CO4- To develop an understanding of fiber couplers and connectors.

B.Sc. (Non Medical), Semester–VI (Session 2020-21)
Electronics
Optical Fiber Communication
Course Code: BSNM-6184 (II)
(THEORY)

Time: 3Hrs. **Marks: 30**
Passing Marks;11

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.Each question carries 6 marks.

UNIT - 1
OVERVIEW OF OPTICAL FIBER COMMUNICATION:
Introduction, Historicaldevelopment, general system, advantages, disadvantages, and applications of optical fibercommunication, structure of optical fiber, Ray theory, types of optical fiber.

UNIT - 2
TRANSMISSION CHARACTERISTICS OF OPTICAL FIBERS:
Introduction,Attenuation, absorption, scattering losses, bending loss, dispersion, Intra modal dispersion, Intermodal dispersion.

UNIT - 3
OPTICAL SOURCES AND DETECTORS:
Introduction, homostructure junction and hetrostructure junction LED's, LASER diodes, Photo detectors, Photo detector noise, Response time, Photodiodes,comparison of photo detectors.

UNIT - 4
OPTICAL FIBER SENSORS
Physical phenomena of optical Fiber sensor, temperature sensor, pressure sensor liquid level sensor.

Suggested Readings:

1. Optical Fiber Communication by Gerd Keiser, Mc Graw -Hill International, 4th Edition., 2010.
2. Optical Fiber Communication by John M. Senior , Second Edition, Pearson Education, 2007.
3. Optical Fiber Communication by Joseph C Palais, 4th Edition, Pearson Education
4. Optical Electronics by Ajoy K. Ghatak , Cambridge University Press,1989

(Session 2020-21)
Electronics
Microprocessor Lab
Course Code: BSNM-6184 (P)
(PRACTICAL)

Course Outcomes:

After passing this course the student will be able to:

CO1: This course gives an overview ofmicroprocessor.

CO2: At the end of this course student will be able to perform programs on microprocessor,

CO3: At the end of this course, the students will be able to understand conversion of programs.

CO4: Students will understand the applications of microprocessor.

B.Sc. (Non Medical), Semester–VI (Session 2020-2021)
Electronics
Microprocessor Lab
Course Code: BSNM-6184 (P)
(PRACTICAL)

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

Instructions 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.

General Guidelines for Practical Examination:
I. The distribution of marks is as follows :
i) One experiment 7 Marks
ii) Brief Theory 3 Marks
iii) Viva–Voce 5 Marks
iv) Record (Practical file) 5 Marks
II. There will be one sessions of 3 hours duration. The paper will have one session.
Paper will consist of 8 experiments out of which an examinee will mark 6 experiments and one of these is to be allotted by the external examiner.
III. Number of candidates in a group for practical examination should not exceed 12.
IV. In a single group no experiment be allotted to more than three examinee in any group.

EXPERIMENTS

1 To study the 8085 microprocessor kit.
2 Write the program for multiply two 8 bit number.
3.Write the program for divide two 8 bit number.
4 Write a program to find the largest ‘n’ number in data array
5 Write a program to find the smallest ‘n’ number in data array
6 Write a program to convert the given binary no. to equivalent decimal no.
7 Write a program to convert the given decimal no. to equivalent binary no.
8.Write a program to add two sixteen bit number and store the result in 3001H.
9. Write a program to subtract two sixteen bit number and store the result in 3001H.

Books Recommended:
1. Fundamentals of Digital Circuits by A. Anand Kumar (PHI).
2. Modern Digitial Electronics by R.P. Jain (Tata McGrew Hill).
3. Principals of Electronics by S.K. Bhattacharya & Dr. Renu Vij (S.K. Kataria & Sons).
4. Digital Electronics (DCLD) by Neeraj Anand.

Bachelor of Science (Semester System) (12+3 System of Education)

(Semester–VI) (Session 2020-21)
PHYSICS (RADIATION AND PARTICLE PHYSICS)
Course code:BSNM-6395 (I) for B.Sc. (Non Medical)
BCSM-6395 (I) for B.Sc. (Computer Science)

Course Outcome:

After successfully completing this course a student will be able to:

CO1: understand interaction of radiation and charged particles with matter.

CO2: understand theory and working of various types of nuclear detectors like gas filled, semiconductor, solid state track detectors and nucleus emulsions.

CO3: understand theory and working of various particle accelerators, linear and cyclic and phase stability conditions.

CO4: understand about elementary particles, different types of interactions and quark mode.

Bachelor of Science (Semester System) (12+3 System of Education)

(Semester–VI) (Session 2020-21)

PHYSICS (RADIATION AND PARTICLE PHYSICS)

Course code:BSNM-6395 (I) for B.Sc. (Non Medical)

BCSM-6395 (I) for B.Sc. (Computer Science)

(THEORY)

Time: 3 Hours **Marks: 30** **Pass Marks: 11**

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. **Each question carries 6 marks.**

Note: Students can use Non-Scientific calculators or logarithmic tables.

UNIT–I

Interaction of Radiation and Charged Particles with Matter: Derivation of Bethe-Bloch formula,Stopping power and range of heavy charged particles, Energy loss of electrons andpositrons, Positrons annihilation, interaction of gamma rays with matter.

UNIT–II

Nuclear Radiation Detection: Gas-filled detectors, Proportional and Geiger-Muellercounters, Scintillation detectors, Semiconductor detectors,Cherenkov effect,Solid state nucleartrack detectors. Bubble chamber.

UNIT–III

Accelerators: Linear accelerators, Cyclic accelerators: Cyclotron, Synchrocyclotron, Betatron, Electron and proton synchrotron, Colliding beam machines: introduction to Large Hadron Collider

UNIT–IV

Elementary Particles: Historical introduction,high energyphysics units, fermions and bosons, particles andantiparticles, Classification of particles, types of interactions, electromagnetic, weak, stronginteractions, gravitational interactions, Quantum numbers and conservation laws: Charge, Baryon number, lepton number, parity, isospin, chargeconjugation, strangeness. Introduction to quarks and qualitative discussion of the quark model,

Reference Books:

1. Basic Ideas and Concepts in Nuclear Physics by K. Hyde
2. Introduction to Nuclear Physics by H.A. Enge
3. Nuclear Physics by I. Kaplan (Addison Wesley)
4. Nuclei and Particles by E. Segre
5. Introduction to High Energy Physics by D.H. Perkins
6. Elementary Particles by I.S. Hughes

Bachelor of Science (Semester System) (12+3 System of Education)
(Semester–VI) (Session 2020-21)
PHYSICS (ELECTRONICS)
Course code:BSNM-6395 (II) for B.Sc. (Non Medical)
BCSM-6395 (II) for B.Sc. (Computer Science)

Course Outcomes-After completing this course a student will be able to

CO1: understand, concept of voltage and current sources, working of a p-n junction diode and zener diode in rectification and voltage regulation.

CO2: understand the characteristics, biasing and working of BJT and FETs.

CO3: able to understand h-parameters, amplifiers using BJT & FETs and types of feedbacks and practical example of negative feedback (emitter follower).

CO4: understand LC and RC oscillators and their comparison.

Bachelor of Science (Semester System) (12+3 System of Education)
(Semester–VI) (Session 2020-21)
PHYSICS (ELECTRONICS)
Course code:BSNM-6395 (II) for B.Sc. (Non Medical)
BCSM-6395 (II) for B.Sc. (Computer Science)
(THEORY)

Time: 3 Hours **Marks: 30** **Pass Marks: 11**

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. **Each question carries 6 marks.**

Note: Students can use Non-Scientific calculators or logarithmic tables.

UNIT–I

Concepts of current and voltage sources, p-n junction, Biasing of diode, V-I characteristics,Rectification: half wave, full wave rectifiers and bridge rectifiers, Efficiency, Ripple factor,Qualitative ideas of filter circuits(Shunt capacitor, L section and π filters), Introduction to Zener diode and voltage regulation, Photonic devices (construction and working of solar cell, photodiodeand LED).

UNIT–II

Junction transistor : Structure and working relation between different currents in transistors, Sign conventions, Amplifying action, Different configurations of a transistor and their comparison, CB and CE characteristics, Structure and characteristics of JEFT, Transistor biasing and stabilization of operating point, Voltage divider biasing circuit.

UNIT–III

Working of CE amplifier, Amplifier analysis using h-parameters, Equivalent circuits, Determination of current gain, Power gain, Input impedance, FET amplifier and its voltage gain,Feed back in amplifiers, Different types, Voltage gain, Advantage of negative feed back, Emitterfollower as negative feedback circuit.

UNIT–IV

Barkausen criterion of sustained oscillations, LC oscillator (tuned collector, tuned base Hartley),RC oscillators, Phase shift Oscillator and Wein bridge Oscillator

Books Suggested:

1. Basic Electronics and Linear Circuits by N.N. Bhargave, D.C. Kulshreshtha and S.C. Gupta.

2. Foundations of Electronics by D. Chatophadhyay, P.C. Rakshit, B. Saha and N.N. Purkit.

3. Basic Electronics by D.C. Tayal (Himalaya Pub.)

Bachelor of Science (Semester System) (12+3 System of Education)
(Semester–VI) (Session 2020-21)
PHYSICS PRACTICAL
Course code: BSNM-6395 (P) for B.Sc. (Non Medical)
BCSM-6395 (P) for B.Sc. (Computer Science)

Course Outcome: After successfully completing this course a student will be able to:

CO1: understand application of p-n junction diode and zener diode as rectifiers and voltage regulators respectively.
CO2: plot characteristics of BJT and FET and be able to understand h-parameters and application of BJT as amplifier and oscillator.
CO3: useof GM counter to concepts of end point energy and absorption coefficient.

Bachelor of Science (Semester System) (12+3 System of Education)
(Semester–VI) (Session 2020-21)
PHYSICS PRACTICAL
Course code: BSNM-6395 (P) for B.Sc. (Non Medical)
BCSM-6395 (P) for B.Sc. (Computer Science)

Instructions to Practical Examiner
Question paper is to be set on the spot jointly by the external and internal examiners. Two copies of the same to be submitted for the record to COE office, KanyaMahaVidyalaya, Jalandhar

General Guidelines for Practical Examination
I. The distribution of marks is as follows: **Marks: 20**
i) One experiment **7 Marks**
ii) Brief Theory **3 Marks**
iii) Viva–Voce **5 Marks**
iv) Record (Practical file) **5 Marks**
II. There will be one sessions of 3 hours duration. The paper will have one session.
Paper will consist of 8 experiments out of which an examinee will mark 6 experiments andone of these is to be allotted by the external examiner.
III. Number of candidates in a group for practical examination should not exceed 12.
IV. In a single group no experiment isto be allotted to more than three examinees in any group.

LIST OF EXPERIMENTS-

1. To study the stabilization of output voltage of a power supply with Zener diode as function of input voltage and variable load resistance.
2. Study of a diode as a clipping element.
3. To measure the efficiency and ripple factors for (a) halfwave (b) full wave and (c) bridge rectifier circuits.
4. To study the reduction in the ripple in the rectified output with RC, LC and л filters.
5. To study characteristics of Common Base transistor (pnp/npn) and find h-parameters of a given transistor.
6. To study characteristics of Common Emitter transistor (pnp/npn) and determine h-parameters of a given transistor.
7. To draw output and mutual characteristics of an FET and determine its parameters.
8. To set up an Hartley oscillator and to study its output on CRO for different C values.
9. To study the gain of an amplifier at different frequencies and to find Band width.
10. To draw the plateau of a GM counter and find its dead time.
11. To study the absorption of beta particles in aluminum using GM counter and determine the absorption coefficient of beta particles from it.

B.Sc. (Medical/ Non-Medical) Semester–VI
Session: 2020-21
BIOINFORMATICS (VOCATIONAL)
Course Title: Structural Biology and Molecular Modelling
Course Code: BSMM/ BSNM- 6046
(Theory)

Course Outcomes:

On completion of this course students will be able to
CO1: understand the concept of protein sequencing.
CO2: use different protein structure prediction tools
CO3: understand the concept of drug designing.
CO4: use different simulation techniques.

B.Sc. (Medical/ Non-Medical) Semester–VI
Session: 2020-21
BIOINFORMATICS (VOCATIONAL)
Course Title: Structural Biology and Molecular Modelling
Course Code: BSMM/ BSNM- 6046
(Theory)

Time: 3 Hrs. **Max. Marks: 100**
Theory Marks: 60
Practical Marks: 20
CA:20

Instructions for the Paper Setters and Candidates:
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

Isolation and purification of proteins, Protein sequence determination: Edman degradation, Mass Spectroscopy, Determination of protein structure: X-ray diffraction, NMR spectroscopy, Electron Microscopy.

UNIT–II

Protein Architecture: Motifs, Domains, classification of three dimensional structures in Brook haven protein databank (Pfam, SCOP, CATH). Secondary structure prediction: Chou Fasman, GOR. Protein Motifs and Domain Prediction (using Multiple sequence alignment, Regular expressions and statistical modelling), Prediction of three dimensional structure of proteins (Homology Modelling).

UNIT–III

Drug Design process, Computer aided drug design (Structure based drug design, Ligand based drug design), Quantitative structure activity relationship: QSAR Descriptors, Development of Hansch Equation, ADMET Prediction.

UNIT–IV

Empirical force fields for trimolecular simulations, Molecular Dynamics simulations techniques, Simulated Annealing, Conformational Analysis, Calculation of relative free energy using simulation techniques.

Recommended Books:

1. Broune P.E. and Weissig H. (Eds) Structural Biology. John Willey and Sons. N.J. USA (2002).
2. Creighton T.E. Protein Structure and Molecular Properties. W.H. Freeman and Company. (2001).
3. Martin R.B. Introduction to Biophysical Chemistry. McGraw Hill New York.

B.Sc. (Medical/ Non- Medical) Semester–VI
Session: 2020-21
BIOINFORMATICS (VOCATIONAL)
Course Title: Lab in Structural Biology and Molecular Modelling
Course Code: BSMM/ BSNM- 6046(P)
(Practical)

Course Outcomes:

On completion of this course students will be able to

CO1: use different softwares for DNA and protein sequencing.

CO2: use GOR, CHOUFASMAN for protein structure prediction

CO3: use Autodock and Hex for drug designing.

B.Sc. (Medical/ Non- Medical) Semester–VI
Session: 2020-21
BIOINFORMATICS (VOCATIONAL)
Course Title: Lab in Structural Biology and Molecular Modelling
Course Code: BSMM/ BSNM- 6046(P)
(Practical)

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

- Discovering motifs from DNA or Protein Sequences using MEME.
- Homology Modelling using SWISS-MODEL
- To analyze protein sequence using Secondary Structure prediction methods: GOR, CHOUFASMAN
- To retrieve various structures of proteins from RCSB, their classification system using CATH/ SCOP.
- To carry out molecular dynamics simulation on a protein using GROMACS.
- To carry out rigid body docking between a protein and ligand Using Autodock and Hex.