

FACULTY OF SCIENCES

SYLLABUS

For

B.Sc. Non Medical

(Semester I-IV)

(Under Continuous Evaluation System)

Session: 2019-20



The Heritage Institution

**KANYA MAHA VIDYALAYA
JALANDHAR
(AUTONOMOUS)**

Kanya Maha Vidyalaya, Jalandhar (Autonomous)
CURRICULUM AND SCHEME OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAM

B. Sc. (Non-Medical)

Session-2018-2019

B.Sc. (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
BSNI-1212	English (Compulsory)	C	50	40	-	10	3
BSNM-1333	(I) Maths (Algebra)	E	100	80	-	20	3+3
	(II) Maths (Calculus and Trigonometry)			(40+40)			
BSNM-1084	(I) Chemistry (Inorganic Chemistry)	E	100	60 (30+30)	20	20	3+3+3
	(II) Chemistry (Organic Chemistry)						
	(P) Chemistry (Practical)						
BSNM-1184	(I) Electronics (Principle Of Electronics)	E	100	60 (30+30)	20	20	3+3+3
	(II) Electronics (Digital Electronics)						
	(P) Basic Electronics Lab-I						
BSNM-1395	(I) Physics (Mechanics)	E	100	60 (30+30)	20	20	3+3+3
	(II) Physics (Electricity And Magnetism)						
	(P) Physics (Practical)						
BSNM-1046	Bioinformatics (Fundamentals Of Computers, Molecular Biology & rDNA Technology)	E	100	60	20	20	3+3
	(P) (Lab in Computer Fundamentals) (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			

B.Sc. (Non-Medical) Semester II

Course Code	Course Name	Course Type	Total	Ext.		CA	Examination 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
BSNI-2212	English (Compulsory)	C	50	40	-	10	3
BSNM-2333	(I) Maths (Calculus and Differential equations)	E	100	80	-	20	3+3
	(II) Maths (Calculus)			(40+40)			
BSNM-2084	(I) Chemistry (Inorganic Chemistry)	E	100	60 (30+30)	20	20	3+3+3
	(II) Chemistry (Physical Chemistry)						
	(P) Chemistry (Practical)						
BSNM-2184	(I) Electronics (Principle Of Electronics-II)	E	100	60 (30+30)	20	20	3+3+3
	(II) Electronics (Digital Electronics-II)						
	(P) Basic Electronics Lab-II						
BSNM-2395	(I) Physics (Relativity And Electromagnetism)	E	100	60 (30+30)	20	20	3+3+3
	(II) Physics (Vibration And Waves)						
	(P) Physics (Practical)						
BSNM-2046	Bioinformatics (Basic Mathematics, Biostatistics & Database Management Systems)	E	100	60	20	20	3+3
	(P) (Lab In Database Management Systems) (Practical)						
AECD-2161	*Drug Abuse: Problem Management and Prevention (Compulsory)	AC	50	40	-	10	3
SECM-2502	*Moral Education Programme	AC	25	-	-	-	2
Total				400			

B.Sc. (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
BSNI-3212	English (Compulsory)	C	50	40	-	10	3
BSNM-3333	(I) Maths (Analysis)	E	100	80	-	20	3+3
	(II) Maths (Analytical Geometry)			(40+40)			
BSNM-3084	(I) Chemistry (organic Chemistry)	E	100	60 (30+30)	20	20	3+3+3
	(II) Chemistry (Physical Chemistry)						
	(P) Chemistry (Practical)						
BSNM-3184	(I) Electronics (Analog Integrated Circuits-I)	E	100	60 (30+30)	20	20	3+3+3
	(II) Electronics (Electronics and Instrumentation - I)						
	(P) Analog Integrated Circuit Lab						
BSNM-3395	(I) Physics (Statistical Physics & Thermodynamics)	E	100	60 (30+30)	20	20	3+3+3
	(II) Physics (Optics)						
	(P) Physics (Practical)						
BSNM-3046	Bioinformatics (Introduction to Bioinformatics and Biological Databases)	E	100	60	20	20	3+3
	(P) (Lab In Introduction To Bioinformatics And Biological Databases) (Practical)						
AECE-3221	*EVS (Compulsory)	AC	50	40	-	10	3
SECP-3512	* Personality Development Programme	AC	25	Grade only			1
Total			400				

B.Sc. (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
BSNI-4212		English (Compulsory)	C	50	40	-	10	3
BSNM-4333	(I)	Maths (Statics and Vector Calculus)	E	100	80 (40+40)	-	20	3+3
	(II)	Maths (Solid Geometry)						
BSNM-4084	(I)	Chemistry (Inorganic Chemistry)						
	(II)	Chemistry (Organic Chemistry)						
	(P)	Chemistry (Practical)						
BSNM-4184	(I)	Electronics (Application of Digital Electronics)	E	100	60 (30+30)	20	20	3+3+3
	(II)	Electronics (Electronics and Instrumentation - II)						
	(P)	Digital Electronics and Electronics Instrument Lab						
BSNM-4395	(I)	Physics (Quantum Mechanics)	E	100	60 (30+30)	20	20	3+3+3
	(II)	Physics (Atomic Spectra & Lasers)						
	(P)	Physics (Practical)						
BSNM-4046		Bioinformatics (Computer Programming in C++ and PERL)	E	100	60	20	20	3+3
	(P)	(Lab In Computer Programming In C++ And Perl) (Practical)						
SECP-4512		* Social Work	AC	Grade only			10 hours per sem	
Total								

C-Compulsory

E-Elective

AC- Audit Course

¹ Special paper in lieu of Punjabi (Compulsory).

² Special paper in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab.

*Marks of these papers will not be added in total marks and only grades will be provided.

Programme Specific Outcomes – B. Sc. 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 their 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 to analyse 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

Session 2019-20
B.A/B.Sc/B.Com/BBA
Semester I
PUNJABI COMPULSORY
COURSE CODE-BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-1421

COURSE OUTCOMES

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

CO2: ਇਸ ਦਾ ਹੋਰ ਮਨੋਰਥ ਕਵਿਤਾ ਦੀ ਵਿਆਖਿਆ, ਵਿਸ਼ਲੇਸ਼ਣ ਤੇ ਮੁਲੰਕਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ ਵੀ ਹੈ ਤਾਂ ਕਿ ਉਹ ਸਮਕਾਲੀ ਸਮਾਜ ਦੀਆਂ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਸਮਝ ਸਕਣ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਵਿਸ਼ਲੇਸ਼ਣੀ 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: ਪੈਰਾ ਰਚਨਾ ਅਤੇ ਪੈਰਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ ਦੇਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨ੍ਹਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO6: ਭਾਸ਼ਾ ਵੰਨਗੀਆਂ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ - ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

Session 2019-20
B.A/B.Sc/B.Com/BBA
Semester I
PUNJABI COMPULSORY
COURSE CODE-BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-1421

ਸਮਾਂ : 3 ਘੰਟੇ

Maximum Marks: 50

Theory: 40, CA: 10

ਪਾਠ ਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਦੇ ਰੰਗ (ਕਵਿਤਾ ਭਾਗ) (ਸੰਪਾ. ਹਰਜਿੰਦਰ ਸਿੰਘ ਢਿਲੋਂ ਅਤੇ ਪ੍ਰੀਤਮ ਸਿੰਘ ਸਰਗੋਧੀਆ),
ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।
(ਲੇਖਕ ਦਾ ਜੀਵਨ ਤੇ ਰਚਨਾ /ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ/ਕਵਿਤਾ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ) 8 ਅੰਕ

ਯੂਨਿਟ-II

ਸੰਸਾਰ ਦੀਆਂ ਪ੍ਰਸਿਧ ਹਸਤੀਆਂ (ਜੀਵਨੀ ਨੰ: 1 ਤੋਂ 9 ਤਕ)
(ਸੰਪਾ. ਪ੍ਰਿੰ. ਤੇਜਾ ਸਿੰਘ, ਹਰਨਾਮ ਸਿੰਘ ਸ਼ਾਮ), ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।
(ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ/ਨਾਇਕ ਬੰਬ) 8 ਅੰਕ

ਯੂਨਿਟ-III

(ੳ) ਪੈਰਾ ਰਚਨਾ (ਤਿੰਨ ਵਿਚੋਂ ਇਕ)
(ਅ) ਪੈਰਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ। 8 ਅੰਕ

ਯੂਨਿਟ-IV

(ੳ) ਭਾਸ਼ਾ ਵੰਨਗੀਆਂ : ਭਾਸ਼ਾ ਦਾ ਟਕਸਾਲੀ ਰੂਪ, ਭਾਸ਼ਾ ਅਤੇ ਉਪਭਾਸ਼ਾ ਵਿਚ ਅੰਤਰ, ਪੰਜਾਬੀ ਉਪਭਾਸ਼ਾਵਾਂ ਦੇ ਪਛਾਣ ਚਿੰਨ੍ਹ।
(ਅ) ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ 8 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

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

SESSION 2019-20

**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.Sc(Hons.)Agriculture/B.A(Hons.)In English SEMESTER-I**

ਮੁੱਢਲੀ ਪੰਜਾਬੀ

(In lieu of Compulsory Punjabi)

COURSE CODE- BARL/BSML/BSNL/BCSL/BECL/BCRL/BBRL/BJML/BFDL/BHSL

/BCAL/BITL/BBTL/BOEL/BACL-1031

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

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

CO6:ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਿਚ ਹਫ਼ਤੇ ਦੇ ਸਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕ ਤੋਂ ਸੌ ਤਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂ ਵਿਚ ਸਿਖਾਉਣਾ ਹੈ।

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.Sc(Hons.)Agriculture/B.A(Hons.)In English
SEMESTER-I

ਮੁੱਢਲੀ ਪੰਜਾਬੀ

(In lieu of Compulsory Punjabi)

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

ਸਮਾਂ : 3 ਘੰਟੇ

Maximum Marks: 50

Theory: 40, CA: 10

ਪਾਠ ਕ੍ਰਮ

ਯੂਨਿਟ-I

ਪੈਂਤੀ ਅਖਰੀ, ਅਖਰ ਕ੍ਰਮ, ਪੈਰ ਬਿੰਦੀ ਵਾਲੇ ਵਰਣ ਅਤੇ ਪੈਰ ਵਿਚ ਪੈਣ ਵਾਲੇ ਵਰਣ ਅਤੇ ਮਾਤ੍ਰਵਾਂ (ਮੁਢਲੀ ਜਾਣ ਪਛਾਣ) ਲਗਾਖਰ (ਬਿੰਦੀ, ਟਿਪੀ, ਅਧਕ) : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ। 08ਅੰਕ

ਯੂਨਿਟ-II

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

ਯੂਨਿਟ-III

ਨਿਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ : ਬਾਜ਼ਾਰ, ਵਪਾਰ, ਰਿਸ਼ਤੇਨਾਤੇ, ਖੇਤੀ ਅਤੇ ਹੋਰ ਧੰਦਿਆਂ ਆਦਿ ਨਾਲ ਸੰਬੰਧਤ। 08ਅੰਕ

ਯੂਨਿਟ-IV

ਹਫ਼ਤੇ ਦੇ ਸਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁਤਾਂ ਦੇ ਨਾਂ, ਇਕ ਤੋਂ ਸੌ ਤਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂ ਵਿਚ ।

08ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

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

Punjab History & Culture (From Earliest Times to C. 320)
(Special Paper in lieu of Punjabi compulsory)

Session 2019-20

SEMESTER-I

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.

CO 1: Identify and describe the emergence of earliest civilizations in: Indus Valley Civilization and Aryan Societies.

CO 2: Identify and analyses the Buddhist, Jain and Hindu faith in the Punjab

CO 3: Analyses the emergence of Early Aryans and Later Vedic Period, their Society, Culture, Polity and Economy

CO 4: To make students understand the concepts of two faiths Jainism and Buddhism, its principles and their application and relevance in present times

SEMESTER-I

Punjab History & Culture (From Earliest Times to C. 320)
(Special Paper in lieu of Punjabi compulsory)
Course Code: BSNL -1431

Time: 3 Hours

Max. Marks: 50

Theory: 40

CA: 10

Instructions for the Paper Setters

The question paper will have 4 units, namely unit I, II, III and IV.

Question paper shall consist of four Units. Candidates shall attempt 5 questions in all, by at least selecting one question from each section and the 5th question may be attempted from any of the four units. Each question will carry 8 marks.

Unit -I

1. Physical features of the Punjab and impact on history.
2. Sources of the ancient history of Punjab

Unit- II

3. Harappan Civilization: Town planning; social, economic and religious life of the India Valley People.
4. The Indo-Aryans: Original home and settlement in Punjab.

Unit -III

5. Social, Religious and Economic life during later *Rig* Vedic Age.
6. Social, Religious and Economic life during later Vedic Age.

Unit -IV

7. Teaching and impact of Buddhism
8. Jainism in the Punjab

Suggested Readings

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

SEMESTER-I
ENGLISH (COMPULSORY)
Course Code: BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-1212

COURSE OUTCOMES

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

- CO 1:** Appreciate the writings of various Indian and foreign poets 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, subject-verb agreement, the use of modal verbs and make correct usage in their language.
- CO 4:** Enrich their vocabulary and use new words in their spoken and written language.
- CO 5:** Independently write paragraphs on any given topic.

SEMESTER-I
ENGLISH (COMPULSORY)
Course Code: BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-1212

Time: 3 Hours

Max. Marks: 50
Theory: 40 CA: 10

Instructions for the Paper-Setter and Distribution of Marks:

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. Fourteen sentences would be set and the students would be required to attempt any ten. Each sentence would 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. It would carry five marks. The second question will be based on grammar. The students will be required to attempt any five sentences out of eight and each sentence will carry one mark.

(2x5=10)

Section-C: Two questions will be set from Unit III of the syllabus. One essay type question with internal choice would be set, which carries six marks. The students would be required to attempt any one. The second question would carry three questions. The students would be required to attempt any two. Each question would carry two marks.

(6+2x2=10)

Section-D: Two questions will be set from Unit IV of the syllabus. One essay type question with internal choice would be set, which carries six marks. The students would be required to attempt any one. The second question would carry three questions. The students would be required to attempt any two. Each question would carry two marks.

(6+2x2=10)

Texts Prescribed:

1. *Tales of Life* (Guru Nanak Dev University, Amritsar) Stories at Sr.No.1, 2, 3, 5 and 6
2. *Prose for Young Learners* (Guru Nanak Dev University, Amritsar) Essays at Sr. No. 1, 2, 3, 5, and 6
3. *English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP

The syllabus is divided in four units as mentioned below.

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

Unit II: Paragraph Writing and English Grammar in Use (Units: 38-48)

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

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

B.A./B.Sc. Semester-I
Session: 2019-20
Course Title: 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.

B.A./B.Sc. Semester-I
Session 2019-20
Course Name: Algebra
Course Code: BARM/BECM/ BCSM/BSNM-1333

Time: 3 hrs.

Max.Marks:40

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

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.

Books Recommended:

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

2. H.S. Hall and S.R. Knight: Higher Algebra, H.M. Publications, 1994.
3. Chandrika Parsad: Text book on Algebra and Theory of Equations, Pothishala Pvt. Ltd., Allahabad.
4. S.L. Loney: Plane Trigonometry Part–II, Macmillan and Company, London.
5. Shanti Narayan and P.K. Mittal: Text Book of Matrices.

B.A./B.Sc. Semester-I
Session: 2019-20
Course Title: Calculus and Trigonometry
Course Code: BARM/BECEM/ 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: Analyses 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.

B.A./B.Sc. Semester-I
Session 2019-20
Course Name: Calculus and Trigonometry
Course Code: BARM/BECM/ BCSM/BSNM-1333

Time : 3 hrs.

Max.Marks:40

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

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.

Books Recommended:

1. N. Piskunov: Differential and Integral Calculus, Peace Publishers, Moscow.
2. Gorakh Prasad: Differential Calculus, Pothishala Pvt. Ltd., Allahabad.
3. Erwin Kreyszig: Advanced Engineering Mathematics, John Wiley and Sons, 1999.

B.Sc. (Med and Non.Medical)
SEMESTER-I
COURSE CODE: BSMM/BSNM-1084
CHEMISTRY (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 such as London forces, dipole - dipole interactions and dipole - induced dipole interactions and explain the concept of hydrogen bonding.

(Session-2019-20)
B.Sc (Med and Non-Medical) SEMESTER-I
COURSE CODE: BSMM/BSNM-1084(I)
INORGANIC CHEMISTRY
(THEORY)

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. Atomic Structure

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

UNIT-II

II. Periodic Properties

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

UNIT-III

III. Chemical Bonding

Covalent Bond –Valence bond theory and its limitations, directional characteristics of covalent bond, various types of hybridization and shapes of simple inorganic molecules and ions. BeF_2 , BF_3 , CH_4 , PF_5 , SF_6 , IF_7 , SnCl_2 , XeF_4 , BF_4 , SnCl_6 . Valence shell electron pair repulsion (VSEPR) theory to NH_3 , H_3O^+ , SF_4 , ClF_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, CaF₂ and antiferite, 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. McDaniell, 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.**

(Session-2019-20)
B.Sc (Med and Non.Medical) SEMESTER-I
COURSE CODE: BSMM/BSNM-1084(II)
ORGANIC CHEMISTRY
(THEORY)

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

(Session-2019-20)
B.Sc (Med and Non.Medical) SEMESTER-I
COURSE CODE: BSMM/BSNM-1084(II)
ORGANIC CHEMISTRY
(THEORY)

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 KMnO_4 . Substitution at the allylic and vinylic positions of alkenes.

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

UNIT-III

V. Alkyl and Aryl Halides

Nomenclature and classes of alkyl halides, chemical reactions. Mechanisms of nucleophilic substitution reaction of alkyl halides, $\text{S}_{\text{N}}2$ and $\text{S}_{\text{N}}1$ 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.**

(Session-2019-20)
B.Sc. (Med and Non-Medical) SEMESTER-I
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

(Session-2019-20)
B.Sc. (Med and Non-Medical) SEMESTER-I
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°C	Cinnamic acid 132.5–133°C
Benzoic acid 121.5–122°C	Salicylic acid 157.5–158°C
Urea 132.5–133°C	Acetanilide 113.5–114°C
Succinic Acid 184.5–185°C	m–dinitro benzene 90°C
P–dichlorobenzene 52°C	Aspirin 135°C

Determination of Boiling Point

Ethanol 78°C	Cyclo Hexane 81.4°C,
Benzene–80°C	Toluene 110°C

Practical Examination

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

Books suggested:

1. Vogel's Qualitative Inorganic Analysis revised, Svehla, Orient Longman.
2. Experimental Inorganic Chemistry, W.G. Palmer, Cambridge. Standard Methods of Chemical. Analysis, W.W. Scott: The Technical Press.
3. Laboratory Manual in Organic Chemistry, R.K. Bansal, Wiley Eastern.

4. **Vogel's Textbook of Practical Organic Chemistry, B.S. Furniss, A.J. Hannaford, V. Rogers, P.W.G. Smith and A.R. Tatchell, ELBS.**
5. **Experiments in General Chemistry, C.N.R. Rao and U.C. Aggarwal, East-West Press.**

B.Sc. (Non Medical), Semester-I (Session 2018-19)
Electronics
PRINCIPLE OF ELECTRONICS-I
Course Code: BSNM-1184 (I)
(THEORY)

Course Outcomes:

After passing this course, students will be able to:

CO1: Apply Kirchhoff's voltage, current laws and Ohm's law to linear circuits, Perform node and loop analysis.

CO2: Understand basic concepts of DC and AC circuit behaviour. Develop and solve mathematical representations for simple RLC circuits.

CO3: Understand the use of circuit analysis theorems and methods.

CO4: Understand the concepts of semiconductor devices (Diodes, Transistors) and their operation as well as their applications (Rectifiers, Voltage regulators etc).

B.Sc. (Non Medical), Semester–I (Session 2018-19)
Electronics
PRINCIPLE OF ELECTRONICS-I
Course Code: BSNM-1184 (I)
(THEORY)

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 -1

(i). Circuit Concepts: Circuit elements, independent and dependent sources, signals and wave forms, periodic and singularity functions

(ii). Mesh & Nodal Analysis: Loop currents and loop equations, node voltages and node equations, mesh and supermesh analysis, nodal and supernodal analysis, duality, graphical method of determining the dual of N/Ws.

UNIT-II

(i). Network Theorems: Superposition, Thevenin, Norton, Maximum power Transfer, Tellegen, Reciprocity theorem, Millman theorem for DC and AC sources.

(ii). Basic Components and Source Transformation: R, L and C component, Ohm's Law, Kirchhoff's Voltage Law, Kirchhoff's Current Law, Source Transformation, Simple RC, RL and RLC dc and ac circuits.

UNIT- III

(i). Junction Diode Circuits: Basic idea about junction (Homojunction and Hetrojunction), Theory of PN junction diode, depletion layer, Volt- Ampere Characteristics, Temperature Dependence of PN diode, diode breakdown, circuit model of PN diode.

(ii). Types of diodes and Applications – Zener diode, LED, photo diode, varactor diode, Diode Clippers, Diode Clampers, Zener as voltage regulator, Rectifiers–half wave and full wave, filters.

UNIT-IV

(i). Bipolar Junction Transistors: Junction Transistor structure and types, current components, CB, CE and CC transistor configurations and characteristics, current amplification factor, transistor as an amplifier, transistor as an switch.

(ii). Field Effect Transistors: The JFET, V/I characteristics, pinch off voltage, MOSFET Enhancement type and depletion type(structure and operation).

Books Recommended:

1. Basic Electronics & Linear Circuits by N.N. Bhargava (TMH).

2. Basic Electronics by B.L.Theraja (S. Chand & Co.).
3. Circuit and Network Analysis & Synthesis by R. Sudhakar, Tata McGraw-Hill Education.
4. Circuit Theory: Analysis and Synthesis by A. Chakrabarti, Dhanpat Rai Publications.
5. Network and Systems by D.R.Choudhury, New Age International Publishers.

B.Sc. (Non Medical), Semester–I (Session 2018-19)
Electronics
DIGITAL ELECTRONICS-I
Course Code: BSNM-1184 (II)
(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Demonstrate basic Number system, binary arithmetic, logical Operations, 1's complement, 2's complement of binary number.

CO2: Understand weighted and unweighted Code conversion

CO3: Solve Boolean Algebra, Duality theorem, De Morgans' Laws and logic gates.

CO4: Karnaugh mapping (up to 4 variables),SOP and POS form, Don't care terms, Q-M method.

B.Sc. (Non Medical), Semester-I (Session 2018-19)
Electronics
DIGITAL ELECTRONICS-I
Course Code: BSNM-1184 (II)
(THEORY)

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

Binary System: Number system (Decimal, binary, octal, hexadecimal), binary addition and subtraction, negative number representation, 1's complement, 2's complement of binary number, subtraction using 1's and 2's complement method.

UNIT-II

Digital Codes: Weighted Codes – Binary Coded Decimal (BCD), Unweighted Codes – Excess-3 Code, Gray Code, Code conversion— binary to BCD, BCD to binary, binary to Gray, Gray to binary, decimal to Excess-3, BCD to Seven segment display.

UNIT-III

Boolean Algebra–Logic Gates

Boolean Algebra, Minimization using Boolean algebra, Logic Gates, universal property of NAND and NOR gates, Duality theorem, De Morgans' Laws,

UNIT-IV

Simplification of Boolean

Karnaugh mapping (up to 4 variables), SOP and POS form, Don't care terms, Q-M Method.

Books Recommended:

1. Digital Design by Mano M. Morris (PHI),
2. Fundamentals of Digital Circuits by A. Anand Kumar (PHI).
3. Digital Principles & Applications by Mulvino and Lelach (TAIII)
4. Digital Electronics Principal Malvino (TIIM).
5. Digital Electronics by V.K. Puri

B.Sc. (Non Medical), Semester-I (Session 2018-19)
Electronics
BASIC ELECTRONICS LAB-I
Course Code: BSNM-1184 (P)
(PRACTICAL)

Course Outcomes:

- CO1:** This course gives an overview of various semiconductor devices like diodes and transistors.
- CO2:** students will be familiar with CRO and multimeter operations.
- CO3:** students will be able to verify Theorems, series and parallel LCR circuit and Transient response of RC circuit.
- CO4:** Problems related to digital electronics by using Boolean Algebra.

B.Sc. (Non Medical), Semester–I (Session 2018-19)
Electronics
BASIC ELECTRONICS LAB-I
Course Code: BSNM-1184 (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 verify (1) Thevenin’s theorem; (2) Reciprocity theorem; (3) Maximum power transfer theorem. (4) Norton theorem.
2. Practical on Source Transformation.
3. To study the forward and reverse characteristics of PN junction diode.
4. To design a regulated power supply using Zener diode.
5. To use a digital trainer to verify the given Boolean identity.
6. To study the logic gates (OR, AND, NOT, NAND, NOR, X-OR and X-NOR).
7. To demonstrate the operation BCD to seven segment display.
8. To study Half wave Rectifier with and without filter.
9. To study Full Wave Rectifier with and without filter.

Books Recommended:

1. Basic Electronics and Linear Circuits by N.N. Bhargava et. al. (TMH, New Delhi).
2. Circuits and Systems by K.M. Soni (S.K. Kataria & Sons, New Delhi).
3. Digital Electronics Circuit and System by V.K. Puri (TMH, New Delhi).
4. Digital Design by M. Morris Mano (PHI, New Delhi).

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 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)

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) center 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 Vol.-I by C. Kittel.
2. Mechanics, H.S. Hans & S.P. Puri.

SEMESTER-I
PHYSICS
ELECTRICITY AND MAGNETISM
(THEORY)

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

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)

Course code: BSNM-1395 (II)

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 quadrupole moments, long uniformly charged wire, charged disc. Stoke's theorem and its applications in Electrostatic field, $\text{curl } \mathbf{E} = 0$. Electric fields as gradient of scalar potential. Calculation of \mathbf{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 ($\mathbf{J} = \sigma \mathbf{E}$) 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. Behavior 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.

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

Course Outcomes : Phy 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
PHYSICS PRACTICAL
Course code: BSNM-1395 (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, 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 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.

SEMESTER-I
BIOINFORMATICS (VOCATIONAL)
FUNDAMENTALS OF COMPUTERS, MOLECULAR BIOLOGY
& rDNA TECHNOLOGY
(THEORY)
Course Code: BSNM/ BSMM-1046

Course outcomes: Fundamentals of computer, molecular Biology & rDNA technology.

After passing this course the student will be able to:

CO1: Understand History of Computers, Classification of Computers, Computer Organization and Architecture.

CO2: Understand MS- Word, MS- PowerPoint and MS- excel.

CO3: Understand computer networking, Internet, Internet services and applications of HTML.

CO4: Understand the introduction to Molecular Biology, Proteins Primary, Secondary, Tertiary and Quaternary structures.

CO5: Understand prokaryotic and eukaryotic DNA replication, Prokaryotes and Eukaryotes Translation, Prokaryotes and Eukaryotes Transcription.

CO6: Learn Gene Regulation in Bacteria and Eukaryotes.

CO7: Understand rDNA Technology, Techniques used for Sequencing, Genetic Engineering and DNA sequencing methods and concepts of mapping, basic commands of LINUX. Basic DOS and HTML commands.

SEMESTER-I
BIOINFORMATICS (VOCATIONAL)
FUNDAMENTALS OF COMPUTERS, MOLECULAR BIOLOGY
& rDNA TECHNOLOGY
(THEORY)
Course Code: BSNM/ BSMM-1046

Time: 3 Hrs

Max Marks: 100
Theory Marks: 60
Practical Marks: 20
CA: 20

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

History of Computers: Evolution, Generation of Computers (I, II, III, IV, V)

Classification of Computers: Notebook, Personal, Mainframe, Minicomputers, Workstation and Supercomputers)-comparison with memory, power, cost, size-then and now.

Computer Organization and Architecture: Computer Architecture, I/O Devices, ALU, Memory chips (RAM, ROM, DRAM), Storage devices, Memory hierarchy.

MS-Word: Introduction to parts of Window, Creating, Opening, Saving and Printing a Document, Text formatting, Page Setup, Margins, Line spacing, Page break, Header and Footers, Spell Checking, Table , Mail Merge.

MS-Power Point: Introduction Power Point Elements, Creating, opening, saving of Power Point slide, Adding text and title, moving and resizing text, text formatting (using Bullets, font style, font size, color and effects) custom animation, slide transition, insert pictures and sound file to slide.

MS-Excel: Introduction, format of electronic worksheet, adding data in worksheet, cell Addressing Ranges, applying and copying formula, various mathematical and statistical functions, and Inserting charts.

UNIT-II

Computer Networking's reference model, Network Topologies, Router, Switch, LAN, WAN, MAN, Wireless LAN and Mobile Computing, TCP/IP protocol.

Internet: Introduction to Internet, World Wide Web, Concepts of Domain, Concept of Web Browser, Concept of Intranet and Extranet, Computer network and security

Internet Services and Applications: Internet Tools. Telnet, FTP, E-Mail, Chat, newsgroups,

HTML: Introduction, common tags, creating hyper links, incorporation of images, Tables;

Frames, Formatting of text with fonts.

UNIT-III

Introduction to Molecular Biology: Structure and properties of Nucleic acids: (DNA, RNA), Organization of DNA in chromosome in (Prokaryotes and Eukaryotes), Heterochromatin/Euchromatin, Repetitive sequences.

Proteins: Amino acids and their properties; Primary, secondary, tertiary and quaternary structures.

DNA Replication: Mechanisms of prokaryotic and Eukaryotic DNA replication, **DNA**

Replication: Mechanisms of prokaryotic and Eukaryotic DNA replication,

UNIT-IV

Introduction to Bioinformatics : History of bioinformatics, milestones, objectives and Applications of Bioinformatics.

Nucleic Acid Sequence Databases: GenBank, EMBL, DDBJ; **Protein Sequence Databases:**

Uniprot-KB: SWISS-PROT, TrEMBL, UniParc

Sequence Formats: FASTA, Genbank, PIR, EMBL

Concept of central dogma ,ORF and using ORF FINDER

Recommended Books:

1. Norton's P. (2001). Introduction to Computing Fundamental. *McGraw Hill Education, New Delhi.*
2. Sinha P.K. (2001). Fundamental of Computers. *BPB Publication, New Delhi.*
3. Deborah S. Ray, Eric J. Ray (2002) Mastering HTML and XHTML, Sybex Inc.
4. HTML Complete, 3rd Edition (2003), Sybex Inc.
5. Kapila H. (2003). PC Computing Window Based Computer System. *Dinesh Publishers, Jalandhar.*
6. Grauer B. (2005). Exploring Microsoft Office 2003 (Volume 1). *Prentice Hall, New Jersey.*
7. Brooker, R.J. Genetic Analysis and Principles. Addison Wisely Longman, N.Y. (2001).
8. Pevzner, J. Bioinformatics and Functional Genomics, 3rd Edition. **John Wiley and Sons, N.Y. (2003).**
9. Baxevanis A.D. Bioinformatics: A practical guide to the analysis of Gene and Proteins (**2nd Edition**) **2001.**
10. **Lodish H, Berk A, Zipursky, S.L., Baltimore, D. Darnel, J. Molecular Cell Biology. W.H. Freeman and Company, USA (2000).**
11. Lesk A. M. (2002). Introduction to Bioinformatics. *Oxford University Press.*
12. Krane D. E. and Raymer M. L. (2002). Fundamental Concepts of Bioinformatics. *Benjamin Cummings.*
13. Lehninger, A.L. Nelson, DL and Cox, MM (2008). Principles of Biochemistry, 5th Ed., *Worth Publishers, New York.*
14. Krane D. E. and Raymer M. L. (2002). Fundamental Concepts of Bioinformatics.
15. Higgins D. And Taylor W. (2000). Bioinformatics: Sequence Structure & Data Banks:

SEMESTER-I
BIOINFORMATICS (VOCATIONAL)
(LAB IN COMPUTER FUNDAMENTALS)
(PRACTICAL)
Course Code: BSNM/ BSMM-1046

Time: 3 Hrs.

Marks:20

Instructions for the Paper Setters and Candidates:

The Question paper for practical examination will be set on the spot jointly by the internal and external examiner.

MS-WORD

1. To create, open, close a document and toolbar operations.
2. Practical to demonstrate formatting options
3. Practical based on page setup, print a document.
4. To add headers, footer, page break.
5. Table handling, Mail Merge.

MS-POWERPOINT

1. Concept of slide, presentation, custom animation.
 2. To insert pictures and sound file to slide.
- Slide transition.

MS-EXCEL

1. To create, open, close worksheet.
2. To add numeric as well as character data in a cell.
3. To develop formulas, create and modify charts

Basic commands of LINUX.

Basic DOS commands.

Basic Exercises on HTML.

Estimation of amino acids using TLC.

Study of NCBI , EBI AND ExPasy repositories.

Find ORF using ORF finder.

**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 drug and alcohol 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 alcohol,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.

FOUNDATION PROGRAMME

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

FOUNDATION PROGRAMME

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

CURRICULUM

Course Code: V1

Course Credits: 1

Total Contact Hours: 20

MODULE	TITLE	HOURS
I	Introduction & Initial Assessment	2
II	The Human Story	3
III	<i>The Vedas, The Gita & Eastern Philosophy</i>	2.5
IV	<i>The Holy Bible & Genesis</i>	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*
- Upanishads 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

Session 2019-20
B.A/B.Sc/B.Com/BBA
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: ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂ ਨਾਲ ਗੱਲਬਾਤ ਵਿਚ ਪਰਪੱਕਤਾ ਆਉਂਦੀ ਹੈ। ਇਹ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤ ਵਿਚ ਨਿਖਾਰ ਲਿਆਉਣ ਦਾ ਕੰਮ ਕਰਨਗੇ।

Session 2019-20
B.A/B.Sc/B.Com/BBA
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/ਲੇਖਕ ਦਾ ਜੀਵਨ ਤੇ ਰਚਨਾ)

8 ਅੰਕ

ਯੂਨਿਟ-II

ਸੰਸਾਰ ਦੀਆਂ ਪ੍ਰਸਿਧ ਹਸਤੀਆਂ (ਜੀਵਨੀ ਨੰ: 10 ਤੋਂ 18 ਤਕ)(ਸੰਪਾ. ਪ੍ਰਿੰ. ਤੇਜਾ ਸਿੰਘ, ਹਰਨਾਮ ਸਿੰਘ ਸ਼ਾਮ),

ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।

(ਵਿਸ਼ਾ/ਸਾਰ/ਨਾਇਕ ਬਿੰਬ)

8 ਅੰਕ

ਯੂਨਿਟ-III

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

(ਅ) ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ

8 ਅੰਕ

ਯੂਨਿਟ-IV

(ੳ) ਦਫ਼ਤਰੀ ਚਿਠੀ ਪਤਰ

(ਅ) ਮੁਹਾਵਰੇ ਅਤੇ ਅਖਾਣ

8 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

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

SESSION 2019-20

**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.Sc(Hons.)Agriculture/B.A(Hons.)In English SEMESTER-II
ਮੁੱਢਲੀ ਪੰਜਾਬੀ**

(In lieu of Compulsory Punjabi)

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

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 ਮਜ਼ਬੂਤ ਹੋਵੇਗੀ।

CO7:ਪੈਰ੍ਹਾ ਰਚਨਾ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨ੍ਹਾਂ 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:ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂ ਨਾਲ ਗੱਲਬਾਤ ਵਿਚ ਪਰਪੱਕਤਾ ਆਉਂਦੀ ਹੈ। ਇਹ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤ ਵਿਚ ਨਿਖਾਰ ਲਿਆਉਣ ਦਾ ਕੰਮ ਕਰਨਗੇ।

SESSION 2019-20

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.Sc(Hons.)Agriculture/B.A(Hons.)In English SEMESTER-II

ਮੁੱਢਲੀ ਪੰਜਾਬੀ

(In lieu of Compulsory Punjabi)

COURSE CODE-BARL/BSML/BSNL/BCSL/BECL/BCRL/BBRL/BJML/BFDL/

BHSL/BCAL/BITL/BBTL/BOEL/BACL-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

ਪੈਰਾ ਰਚਨਾ

ਸੰਖੇਪ ਰਚਨਾ

08 ਅੰਕ

ਯੂਨਿਟ-IV

ਚਿੱਠੀ ਪੱਤਰ (ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀ)

ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰੇ

08 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪੇਪਰ ਸੈਟਰ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਯੂਨਿਟ ਹੋਣਗੇ। ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ ਹਰ ਯੂਨਿਟ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 16 ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿੱਚ ਕਰ ਸਕਦਾ ਹੈ।

Punjab History & Culture (From Earliest Times to C. 320)
(Special Paper in lieu of Punjabi compulsory)

Session 2019-20
SEMESTER-II
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

(Special Paper in lieu of Punjabi compulsory)
SEMESTER-II

Time: 3 Hours

Max. Marks: 50

Theory: 40

Continuous Assessment: 10

Instructions for the Paper Setters

The question paper will have 4 units, namely unit I, II, III and IV.

Question paper shall consist of four Units. 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. Each question will carry 8 marks.

Unit-I

1. Punjab under Chandragupta Maurya and Ashoka
2. The Kushans and their Contribution to the Punjab

Unit -II

3. The Panjab under the Gupta Emperor
4. The Punjab under the Vardhana Emperors

Unit-III

5. Political Developments 17th Century to 1000 A.D. (Survey of Political)
6. Socio-cultural History of Punjab from 7th to 1000 A.D.

Unit -IV

7. Development of languages and Literature
8. Development of art & Architecture

Suggested Readings

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

SEMESTER-II
ENGLISH (COMPULSORY)

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

COURSE OUTCOMES

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

- CO 1:** Appreciate the writings of various Indian and foreign poets 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:** Change the narration and voice of sentences after understanding fundamental grammatical rules governing them.
- CO 4:** Enrich their vocabulary and use new words in their spoken and written language.
- CO 5:** Independently write personal letters to their family and friends on various issues.

**SEMESTER-II
ENGLISH (COMPULSORY)**

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

Time: 3 Hours

Max.

Marks: 50

Theory: 40, CA: 10

Instructions for the Paper-Setter and Distribution of Marks:

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. Fourteen sentences would be set and the students would be required to attempt any ten. Each sentence would 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 personal letter out of the given two. It would carry five marks. The second question will be based on grammar. The students will be required to attempt any five sentences out of eight and each sentence will carry one mark.

(2x5=10)

Section-C: Two questions will be set from Unit III of the syllabus. One essay type question with internal choice would be set, which carries six marks. The students would be required to attempt any one. The second question would carry three questions. The students would be required to attempt any two. Each question would carry two marks.

(6+2x2=10)

Section-D: Two questions will be set from Unit IV of the syllabus. One essay type question with internal choice would be set, which carries six marks. The students would be required to attempt any one. The second question would carry three questions. The students would be required to attempt any two. Each question would carry two marks.

(6+2x2=10)

Texts Prescribed:

1. *Tales of Life* (Guru Nanak Dev University, Amritsar) Stories at Sr. No. 7, 9, 10, 11, 12
2. *Prose for Young Learners* (Guru Nanak Dev University, Amritsar) Essays at Sr. No. 7, 8, 9, 10, 11
3. *English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP (Units: 49-97)

The syllabus is divided in four sections as mentioned below.

Unit I: English Grammar in Use, 4th Edition by Raymond Murphy, CUP (Units: 49-81)

Unit II: Personal letter Writing and English Grammar in Use (Units: 82-97)

Unit III: Tales of Life (Guru Nanak Dev University, Amritsar) 7, 9, 10, 11, 12

Unit IV: Prose for Young Learners (Fourth Edition) by Raymond Murphy, CUP 7, 8, 9, 10 and

Course Title: 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.

Session: 2019-20
Course Title: Calculus and Differential Equations
Course Code: BARM/BECM/ BCSM/BSNM-2333(I)

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

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).

Books Recommended:

1. D.A. Murray: Introductory Course in Differential Equations. Orient Longman (India), 1967.
2. G.F. Simmons: Differential Equations, Tata McGraw Hill, 1972.
3. E.A. Codington: An Introduction to Ordinary Differential Equations, Prentice Hall of India, 1961.
4. Gorakh Prasad: Integral Calculus, Pothishala Pvt. Ltd., Allahabad.
5. Erwin Kreyszig: Advanced Engineering Mathematics, John Wiley and Sons, 1999. 52

B.A./B.Sc. Semester–II
Session: 2019-20
Course Title: Calculus
Course Code: BARM/BECEM/ 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.

B.A./B.Sc. Semester–II
Session: 2019-20
Course Title : Calculus
Course Code: BARM/BECEM/ BCSM/BSNM-2333(II)

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

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., Applications to evaluation of areas, Volumes, Surfaces of solid of revolution, Change of order of integration in double integrals.

Unit-IV

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

Books Recommended:

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.

(Session-2019-20)
B.Sc (Med and Non-Medical) SEMESTER-II
COURSE CODE: BSMM/BSNM-1084(I)
INORGANIC CHEMISTRY
(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 4th, 5th and 6th period.

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

(Session-2019-20)
B.Sc (Med and Non-Medical) SEMESTER-II
COURSE CODE: BSMM/BSNM-1084(I)
INORGANIC CHEMISTRY
(THEORY)

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. p-Block Elements-I

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

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

III. Acids and Bases

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

UNIT-III

IV. p-Block Elements-II

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

UNIT-IV

V. Chemistry of Transition Elements

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 3d 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-Wesley 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.

(Session-2019-20)
B.Sc. (Med and Non-Medical) SEMESTER-II
COURSE CODE: BSMM/BSNM-1084(II)
PHYSICAL CHEMISTRY
(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.

(Session-2019-20)
B.Sc. (Med and Non-Medical) SEMESTER-II
COURSE CODE: BSMM/BSNM-1084(II)
PHYSICAL CHEMISTRY
(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 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: Postulates of kinetic theory of gases, deviation from ideal behaviour, van der Waal's equation of state.

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

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

UNIT -II

II. Liquid State

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

UNIT -III

III. Colloidal State

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

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.

(Session-2019-20)
B.Sc. (Med and Non-Medical) SEMESTER-II
COURSE CODE: BSMM/BSNM-1084(P)
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

(Session-2019-20)
B.Sc. (Med and Non-Medical) SEMESTER-II
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.

Crystallisation:

Concept of indication of crystallization. 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.**

B.Sc. (Non Medical), Semester–II (Session 2019-20)
Electronics
PRINCIPLE OF ELECTRONICS-II
Course Code: BSNM-2184 (I)
(THEORY)

Course Outcomes:

After passing this course the student will be able to:

- CO1:** Apply the Laplace transform to linear circuits and systems.
- CO2:** Analyze simple two-port circuit using different types of network parameters like z-parameter, h-parameter, y-parameter etc.
- CO3:** Perform DC and AC analysis of basic electronic circuits. Also understand the concept of feedback and its use in oscillator and amplifier circuits.
- CO4:** Analyze and design single and multistage amplifiers like direct coupled, RC coupled or transformer coupled multistage amplifier as well as oscillators like RC phase shift, Hartley, colpitt etc.

B.Sc. (Non Medical), Semester–II (Session 2019-20)
Electronics
PRINCIPLE OF ELECTRONICS-II
Course Code: BSNM-2184 (I)
(THEORY)

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

Laplace Transforms: Basic Introduction to Laplace Transformation, Transforms of elementary functions like exponential, step, ramp, impulse, sinusoidal, partial fraction expansion, evaluation of residues, Initial value theorem and final value theorem, application of Laplace transforms to network analysis, Relation between step response, impulse response and frequency.

UNIT-II

Network Functions: Z, Y, H and ABCD parameters, equivalent circuit in terms of parameters, between parameter sets, parallel and cascade interconnection of two port network function of terminated two port, application of two port parameters to analysis of T, ladder bridged–T and lattice networks.

UNIT–III

Single stage transistor amplifier, graphical analysis, DC and AC equivalent of amplifier, load line analysis, current and voltage gain of amplifier, small signal transistor model (H parameter, resistance models), Multistage amplifiers, RC coupled amplifiers, transformer coupled amplifier, direct coupled amplifier, Amplifier classification, Distortion in amplifiers.

UNIT–IV

Feedback and Oscillator: Feedback in amplifiers, positive feedback, negative feedback, Principles of oscillators, types of oscillators, Hartley, Collpit, Crystal Oscillators, RC Phase Shift, Wein Bridge Oscillator.

Books Recommended:

1. Basic Electronics & Linear Circuits by N.N. Bhargava (TMH).
2. Basic Electronics by B.L. Theraja (S. Chand & Co.)
3. Electronic devices and circuit Theory by Boylestad
4. Network Analysis & Synthesis by K.M Soni.
5. Network Analysis & Synthesis by R. Sudhakar.

B.Sc. (Non Medical), Semester–II (Session 2019-20)
Electronics
Digital Electronics -II
Course Code: BSNM-2184 (II)
(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the concept of arithmetic and Logic circuits, half adder, full adder, half subtractor, full subtractor, comparator, multiplexer, demultiplexer, encoder, decoder, parity generator and checker.

CO2: Demonstrate Introduction to sequential circuits; flip flops, RS flip-flop, Clocked RS flip-flop, D flip-flop, Latches, level triggered & edge triggered flip-flops, positive and negative edge triggering, limitations of JK flip-flop, race-around condition. Applications of flip flop.

CO3: Understand the concept of Digital to analog converters: variable resistor network, binary ladder. Analog-to-digital converters: simultaneous conversion, counter method, continuous conversion, dual-slope conversion.

CO4: Understand the concept of memories and their characterization.

B.Sc. (Non Medical), Semester–II (Session 2019-20)
Electronics
Digital Electronics -II
Course Code: BSNM-2184 (II)
(THEORY)

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

Combinational Logic Circuits: Arithmetic and Logic circuits, half adder, full adder, half subtractor, full subtractor, comparator, multiplexer, demultiplexer, encoder, decoder, parity generator and checker.

UNIT–II

Flip-flop: Introduction to sequential circuits; flip flops, RS flip-flop, Clocked RS flip-flop, D flip-flop, Latches, level triggered & edge triggered flip-flops, positive and negative edge triggering, limitations of JK flip-flop, race-around condition. Applications of flip flops.

UNIT–III

Converters: Digital to analog converters: variable resistor network, binary ladder. Analog-to-digital converters: simultaneous conversion, counter method, continuous conversion, dual-slope conversion.

UNIT-IV

Semiconductor Memories:

Introduction, Memory organization, Classification and characteristics of memories. Read/write memory, ROM, RAM, EPROM, EEPROM, Basic idea of static dynamic memory,

Books Recommended:

1. Digital Design by Mano M. Morris (PHI).
2. Fundamentals of Digital Circuits by A. Anand Kumar, (PHI).
3. Digital Principles & Applications by Leach & Donald (TMH).
4. Digital Logic Design by Leach/Mal. (McGraw Hill).
5. An Engg. Approach to Digital Design : Fletcher (PRI)

B.Sc. (Non Medical), Semester–II (Session 2019-20)
Electronics
BASIC ELECTRONICS LAB-II
Course Code: BSNM-2184 (P)
(PRACTICAL)

Course Outcomes:

After passing this course the student will be able to:

CO1: This course gives an overview of converters, shift registers and flip flop.

CO2: At the end of this course student will be able to Study Gates, Adders.

CO3: At the end of this course, the students will be able to verification comparator.

CO4: Students will understand the concept of encoder, decoder.

B.Sc. (Non Medical), Semester-II (Session 2019-20)
Electronics
BASIC ELECTRONICS LAB-II
Course Code: BSNM-2184 (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 determine (1) z-parameters; (2) y-parameters; (3) h-parameters and (4) ABCD-parameters, of a two port resistive network. 2.
2. To study truth table of shift register.
4. To study the truth table of flip flop.
5. Study of encoder, decoder circuit.
6. Study of A/D and D/A converter.
7. To form a half adder and a full adder using NAND gates and verify their truth tables.
8. To form a 2 bit comparator using NAND gates.

Books Recommended:-

1. Basic Electronics and Linear Circuits by N.N. Bhargava et. al (TMH, New Delhi).
2. Circuits and Systems by K.M. Soni (S.K. Kataria & Sons, New Delhi).
3. Digital Electronics Circuit and System by V.K. Puri (TMH, New Delhi).

4. Digital Design by M. Morris Mano (PHI, New Delhi).

**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: understand the Faraday's Law of electromagnetic induction and LCR circuits

SEMESTER-II
PHYSICS
RELATIVITY AND ELECTROMAGNETISM
(THEORY)

Couse 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 relativity. Lorentz transformations, observer and viewer in relativity. Relativity of simultaneity, Length, Time, velocities. Relativistic Doppler effect. Variation of mass with velocity, mass-energy equivalence, rest mass in an inelastic collision, relativistic momentum & energy, their transformation, concepts of Minkowski 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 coefficient. 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 - 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.

**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 wave motion. Student will also be able to apply the concept of waves and oscillations to any type of waves like e. m. waves, mechanical waves.

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 behavior. 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.

**SEMESTER-II
PHYSICS PRACTICAL**

Couse 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 .

SEMESTER-II PHYSICS PRACTICAL

Couse 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, Kanya Maha Vidyalaya, 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's bridge.
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.

SEMESTER-II
BIOINFORMATICS (VOCATIONAL)
BASIC MATHEMATICS, BIOSTATISTICS & DATABASE MANAGEMENT SYSTEMS
(THEORY)
Course Code: BSNM/ BSMM-2046

Course outcomes: Basic Mathematics, Biostatistics & Database Management Systems.

After passing this course the students will be able to:

CO1: Understand matrices, Vectors, functions, Integration, Differential Equation.

CO2: Understand elementary statistics, Probability, Introduction to Correlation & Regression, probability Distribution.

CO3: Understand DBMS, how data stored in computers, applications of DBMS.

CO4: Understand Data Models, relational model concepts.

CO5: Understand the SQL, queries in SQL.

CO6: Understand to PL/SQL, Procedures, and Functions.

SEMESTER-II
BIOINFORMATICS (VOCATIONAL)
BASIC MATHEMATICS, BIOSTATISTICS & DATABASE MANAGEMENT SYSTEMS
(THEORY)
Course Code: BSNM/ BSMM-2046

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 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

Matrices and Determinants - Matrix Algebra, Addition, Subtraction, Multiplication, Transpose inverse and conjugate of a Matrix. Determinants (**upto third order**),

Functions: Concept of functions, its domain and range, only graphs of some well known functions such as linear, exponential, sine and cos.

Differentiation: Limits of functions, Complete Differentials (Simple examples), Partial differentials of functions with one variable.

Integration: Indefinite (**Simple examples**) and Introduction to Definite Integral.

UNIT-II

Elementary Statistics: The mean, median, mode, standard deviation, variance, covariance of data.

Probability: Basic concepts, sample space and events, use of counting method in probability, addition law, sample problems involving the estimation of probabilities, Conditional Probability and Independent Events, Bayes theorem. Scatter diagram , linear correlation

Probability Distributions: Bernoulli, Binomial, Poisson and Normal Distributions.

UNIT-III

Introduction to DBMS: Data, Information, Knowledge, Database approach, Characteristics of Database approach, Database System Concept, Components of Database System, DBMS, Database languages, DBMS Architecture and data Independence.

Data Models: ER Model Concepts, Notation for ER Diagram, Relational Model Concepts, relational Model Constraints.

Normalization and its forms like 1NF, 2NF, 3NF, BCNF, 4NF and 5NF. Functional Dependencies.

UNIT-IV

SQL: Introduction, DDL statements, DML statements, TCL statements, Queries in SQL: Nested Queries, Single row sub queries, multiple row sub queries, Multiple Column sub queries, views in SQL.

Introduction to PL/SQL: Basic Elements of PL/SQL, Procedures: Local and stored procedures, Functions: Local functions, Return statement and stored functions. Difference b/w procedures and functions.

Recommended Books:

1. Elhance D.N. (1984). Fundamentals of Statistics. *KitabMahal, Allahabad.*
2. Mendenhall W. and Sincich T. (1995). Statistics for Engineering and Sciences (IVth Edition). *Prentice Hall.* And sciences (IVth Edition). *Prentice Hall.*
3. Gupta S.P. (2000). Statistical Methods. *Sultan Chand and Company, New Delhi.*
4. Kapoor V.K. and Gupta S.C. (2000). Fundamentals of Mathematical Statistics. *Sultan Chand and Company, New Delhi.*
5. J. Crawshaw and J Chamber (2002). Advanced Level Statistics, 4th Edition, *Melson Thornes.*
6. Spiegel M.R. (1974). Theory and Problems of Advanced Calculus. *Tata McGraw Hill Company Ltd., New Delhi.*
7. Edward Batschelet (1992) "Introduction to Mathematics for Life Sciences", 3rd Edition, *Springer-Verlag.*
8. Brown R. (1994). Theory and Problems of Differential Equations. *Tata McGraw Hill Company Ltd., New Delhi.*
9. Kapoor V.K. and Gupta S.C. (2000) Fundamentals of Mathematical Statistics. *Sultan Chand and Company, New Delhi*
10. Nell and D. Qualing (2002) Pure Mathematics (Advanced Level Mathematics) Vol. 1, 2 & 3, *Cambridge University Press.*
11. Fundamentals of Database Systems by Elmasari and Navathe, Prentice Hall (India), 2001.
12. Fundamentals of DBMS: Anurag Gupta, Nishan Singh Dhillon, JagmohanMagho, Anshuman Sharma.
13. Data Mining Concepts and Techniques-Jiawei Han, MichelineKamber, *Morgan Kaufmann Publisher, 2001.*

SEMESTER-II
BIOINFORMATICS (VOCATIONAL)
PAPER-B: LAB IN DATABASE MANAGEMENT SYSTEMS
(PRACTICAL)
Course Code: BSNM/ BSMM-2046

Time: 3 Hrs.

Marks: 20

Instructions for the Paper Setters and Candidates:

The Question paper for practical examination will be set on the spot jointly by the internal and external examiner.

Exercise to understand RDBMS: Oracle, SQL etc.

Usage of important Commands/instructions

DDL statements

DML statements

TCL statements

Queries in SQL

Operators

Functions

Views

Basic elements of PL/SQL

Procedures

Functions

Sets (Venn – diagram, Union, Intersection, Difference of sets.

Functions (Graph of standard functions, modulus, greatest, integer, sin cos)

**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-II

Under Continuous Evaluation System

(SESSION 2019-20)

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

PROBLEM OF DRUG ABUSE

Course code: AECD-2161

(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 drug and alcohol 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 alcohol,marijuana etc.

B.A/B.Sc/BCA/B.Com/BBA Semester – II (Session 2019-20)

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) Consequences of Drug Abuse for:

- 1) Individual – Education, employment and income issues.
- 2) Family – Violence
- 3) Society – Crime.
- 4) Nation – Law and order problem

UNIT-II

2) Management of Drug abuse:

- 1) Medical Management: Medication for treatment and to reduce withdrawal effects, Drug De-addiction clinics, Relapse management.
- 2) Psycho-Social Management: Counselling, family and group therapy, behavioural and cognitive therapy, Environmental Intervention.

UNIT-III

3) Prevention of Drug Abuse:

- 1) Role of family: Parent child relationship, Family support, Supervision, Shaping values, Active Scrutiny.
- 2) School
Counselling, Teacher as role-model. Parent-Teacher-Health Professional Coordination, Random testing on students.

UNIT-IV

4) Awareness of drug abuse

- 1) Media:
Restraint on advertisements of drugs, advertisements on bad effects of drugs, Publicity and media, Campaigns against drug abuse, Educational and awareness program.
- 2) legislation:
NDPs act, statutory warnings, policing of borders, checking supply/ smuggling of drugs,

strict enforcement of laws, time bound trial.

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.

MORAL EDUCATION

Course title: Moral Education Programme

Course duration: 30 hours

Course intended for: Sem II students of all streams (UG Only)

Course credits: 1

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

Session 2019-20
B.A/B.Sc/B.Com/BBA
Semester III
PUNJABI COMPULSORY
COURSE CODE- BARL/BSML/BSNL/BCSL/BECL/BCRL /BBRL-3421

COURSE OUTCOMES

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

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

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

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

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

Session 2019-20
B.A/B.Sc/B.Com/BBA
Semester III
PUNJABI COMPULSORY
COURSE CODE- BARL/BSML/BSNL/BCSL/BECL/BCRL /BBRL-3421

ਸਮਾਂ : 3 ਘੰਟੇ

Maximum Marks: 50

Theory: 40

CA: 10

ਪਾਠ ਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

1. ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ (ਸੰਪਾ.ਡਾ. ਗੁਰਬਚਨ ਸਿੰਘ ਤਾਲਿਬ), ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।

ਵਿਸ਼ਾ ਵਸਤੂ/ਸਾਰ/ਨਾਇਕ ਬਿੰਬ (ਦੋ ਵਿਚੋਂ ਇਕ)

8 ਅੰਕ

ਯੂਨਿਟ-II

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

ਵਿਸ਼ਾ ਵਸਤੂ /ਸਾਰ (ਦੋ ਵਿਚੋਂ ਇਕ) ਜਾਂ ਚਾਰ ਵਿਚੋਂ ਦੋ ਪਾਤਰਾਂ ਦੀ ਪਾਤਰ ਉਸਾਰੀ

8 ਅੰਕ

ਯੂਨਿਟ-III

3. (ੳ) ਸੰਖੇਪ ਰਚਨਾ (ਪ੍ਰੈਸੀ)

(ਅ) ਲੇਖ ਰਚਨਾ

8 ਅੰਕ

ਯੂਨਿਟ-IV

4. ਮੂਲ ਵਿਆਕਰਣਕ ਇਕਾਈਆਂ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵੰਨਗੀਆਂ (ਭਾਵੰਸ਼, ਸ਼ਬਦ, ਵਾਕੰਸ਼, ਉਪਵਾਕ ਅਤੇ ਵਾਕ)

8 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

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

ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।

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

ਯੂਨਿਟ 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 2019-20

B.A / B.Sc (Medical) / B.Sc (Non Medical) / B.Sc (Computer Science) / B.Sc (Economics) / B.Com / BBA SEMESTER-III

ਮੁੱਢਲੀ ਪੰਜਾਬੀ

(In lieu of Compulsory Punjabi)

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

Course outcomes

CO1:ਵਿਆਕਰਣਕ ਇਕਾਈਆਂ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ - ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਅਤੇ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਨੂੰ ਸਿਖਾਉਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਵਿਚ ਪਾ ਕੇ ਇਕ ਹੋਰ ਭਾਸ਼ਾ ਸਿੱਖਣ ਦੇ ਮੌਕੇ ਪ੍ਰਦਾਨ ਕਰਨਾ ਹੈ।

CO2:ਪੈਰਾ ਰਚਨਾ ਦੇਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨ੍ਹਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO3:ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ ਲਿਖਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇਸ ਕਲਾ ਵਿਚ ਨਿਪੁੰਨ ਕਰਨਾ ਹੈ।

CO4:ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂ ਨਾਲ ਗੱਲਬਾਤ ਵਿਚ ਪਰਪੱਕਤਾ ਆਉਂਦੀ ਹੈ। ਇਹ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤ ਵਿਚ ਨਿਖਾਰ ਲਿਆਉਣ ਦਾ ਕੰਮ ਕਰਨਗੇ।

CO5: ਪੈਰਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉੱਤਰ ਦੇਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨ੍ਹਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO6:ਸੰਖੇਪ ਰਚਨਾ ਕਰਨ ਨਾਲ ਵਿਦਿਆਰਥੀ ਆਪਣੀ ਗੱਲ ਨੂੰ ਸੰਖੇਪ ਵਿਚ ਕਹਿਣ ਦੀ ਜਾਚ ਸਿੱਖਣਗੇ ਅਤੇ ਇਹ ਦਿਮਾਗੀ ਕਸਰਤ ਵਿਚ ਸਹਾਈ ਹੋਵੇਗੀ।

SESSION 2019-19

B.A/ B.Sc (Medical)/ B.Sc (Non Medical)/B.Sc(Computer Science)/ B.S(Economics)/B.Com/ BBA

SEMESTER-III

ਮੁੱਢਲੀ ਪੰਜਾਬੀ

(In lieu of Compulsory Punjabi)

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

ਸਮਾਂ : 3 ਘੰਟੇ

Maximum Marks: 50

Theory : 40

CA: 10

ਪਾਠ ਕ੍ਰਮ

ਯੂਨਿਟ-I

ਵਿਆਕਰਣਕ ਇਕਾਈਆਂ ਦੀ ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ; ਵਾਕਸ਼, ਉਪਵਾਕ ਅਤੇ ਵਾਕ

ਯੂਨਿਟ-II

ਪ੍ਰਕਾਰਜੀ ਪੰਜਾਬੀ : ਪੈਰਾ ਰਚਨਾ, ਚਿੱਠੀ ਪੱਤਰ

ਯੂਨਿਟ-III

I. ਅਖਾਣ

II. ਮੁਹਾਵਰੇ

ਯੂਨਿਟ-IV

I. ਪੈਰਾ ਅਧਾਰਿਤ ਪ੍ਰਸ਼ਨ

II. ਸੰਖੇਪ ਰਚਨਾ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਯੂਨਿਟ ਹੋਣਗੇ। ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਯੂਨਿਟ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਅੱਠ 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/B.Com/B.B.A
(From 1000 -1605 A.D.)
PUNJAB HISTORY & CULTURE
Semester III

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 2019-20
Punjab History & Culture (From Earliest Times to C 320)
(Special Paper in lieu of Punjabi compulsory)
SEMESTER-III

Time: 3 Hours

Max. Marks: 50

Theory: 40

Continuous Assessment: 10

Instructions for the Paper Setters

The question paper will have 4 units, namely unit I, II, III and IV.

Question paper shall consist of four Units. Candidates shall attempt 5 questions in all, by at least selecting one question from each section and the 5th question may be attempted from any of the four units. Each question will carry 8 marks.

Unit -1.

1. Society and Culture of Punjab during Afghan Rule
2. The Punjab Under the Mughals

Unit-II:

3. Bhakti Movement and Impact of Society of Punjab
4. Sufism in Punjab with special reference to Baba Farid

Unit-III:

Guru Nanak Life and Travels

Teachings of Guru Nanak Concept of Sangat, Pangat and dharmsal

Unit-IV:

7. Contribution of Guru Angad Dev, Guru Amar Das and Guru Ram Das
8. Compilation of Adi Granth and Martyadom of Guru Arjun Dev

Suggested Readings:

1. Chopra, P. N., Puri, B.N., & Das. M.N. (1974). A Social, Cultural and Economic History of India, Vol. II. New Delhi : Macmillan India.
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. II, I. Patiala: Punjabi University.
4. Singh, Khuswant (2011). A History of Sikhs- Vol. I (1469-1839), New Delhi: Oxford University Press

SEMESTER III
ENGLISH (COMPULSORY)
COURSE CODE: BARL/BSML/BSNL/BCSL/BECL/BCRL/BBRL–3212

COURSE OUTCOMES

At the end of 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 situations, themes and characters depicted in them
- CO 2:** Comprehend the basics of grammatical rules governing adjectives and adverbs, conjunctions and prepositions and phrasal verbs
- 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

SEMESTER-III
ENGLISH (COMPULSORY)

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

Time: 3 Hours

Max.

Marks: 50

Theory: 40

Continuous Assessment: 10

Instructions for the paper-setter and distribution of marks:

The paper setters should avoid questions of theoretical nature on English Grammar.

The question paper will consist of 3 sections, namely A, B and C

SECTION-A

1. TWENTY (20) questions on the usage of grammar related to units 98-145 of *English Grammar in Use*, from Unit-III of the syllabus will be set for the students to attempt any FOURTEEN (14) of these questions.

(1×14=14 Marks)

SECTION-B

2. TWO (2) questions (with sub parts) based on strategies and skill development exercises as given before and after reading essays in UNIT-I & UNIT-II of the prescribed text book *Making Connections* will be set. The number of items in each question will be 50% more than what a student will be expected to attempt so that the question provides internal choice.

(2×5=10 Marks)

3. ONE (1) question (with internal choice) requiring students to explain a stanza with reference to context will be set. The stanzas for explanation will be taken from the poems prescribed in the syllabus.

(1×4=4 Marks)

SECTION-C

4. THREE (3) questions on central idea, theme, tone and style etc. of the poems from the prescribed textbook, *Moments in Time* from Unit-II of the syllabus will be set. The students will be required to attempt any TWO (2) of these questions.

(3×2=6 Marks)

5. ONE (1) question requiring the students to write an essay on ONE (1) of the TWO (2) given topics will be set.

(1×6=6 Marks)

Texts Prescribed:

1. *Making Connections* by Kenneth J. Pakenham, 2nd Edn. CUP
2. *Moments in Time: An Anthology of Poems*, GNDU, Amritsar

3. *English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP

The syllabus is divided in three units as mentioned below:

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

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

Unit III: *English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP: Units 98-145

B.A./B.Sc. Semester–III
Session 2019-20
Course Title: Analysis
Course Code: BARM/BECM/ BCSM/BSNM-3333(I)

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.

B.A./B.Sc. Semester–III
Session 2019-20
Course Title: Analysis
Course Code: BARM/BECM/ BCSM/BSNM-3333(I)

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.

Section–A

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

Section–B

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.

Section–C

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.

Section–D

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

Books Recommended:

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

B.A./B.Sc. Semester–III
Session 2019-20
Course Title: 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.

B.A./B.Sc. Semester–III
Session 2019-20
Course Title: Analytical Geometry
Course Code: BARM/BECM/ BCSM/BSNM-3333(II)

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.

Section–A

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

Section–B

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.

Section–C

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).

Section–D

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 w.r.t. a sphere, radical planes.

Books Recommended

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

SESSION 2019-20
B.Sc. (Med & Non-Medical) SEMESTER-III
COURSE CODE: BSMM/BSNM-3084
(ORGANIC CHEMISTRY-I)
(THEORY)

Course outcomes: Organic Chemistry-A

Students will be able to

CO1: to resolve the different enantiomers and differentiate between dextrorotatory and leavo rotatory 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

SESSION 2019-20
B.Sc. (Med & Non-Medical) SEMESTER-III
COURSE CODE: BSMM/BSNM-3084
(ORGANIC CHEMISTRY-I)
(THEORY)

Time: 3 Hrs.

Marks: 30

45 Hrs (3 Hrs/week)

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. Each question carry equal marks (6 each).

Unit 1

Stereochemistry of Organic Compounds

(15 Hrs.)

Concept of isomerism. Types of isomerism. Optical isomerism, elements of symmetry, molecular chirality, enantiomers, stereogenic centre, optical activity, properties of enantiomers, chiral and achiral molecules with two stereogenic centres, diastereomers, threo and erythro diastereomers, 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**(8 Hrs.)**

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

Unit-III**Phenols****(7 Hrs.)**

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****(15 Hrs.)**

Nomenclature and structure of the carbonyl group. Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides, synthesis of aldehydes and ketones using 1,3-dithianes, synthesis of ketones from nitriles and from carboxylic acids. Physical properties. Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol, Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives. Wittig 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 enolizable 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.

SESSION 2019-20
B.Sc. (Med & Non-Medical) SEMESTER-III
COURSE CODE: BSMM/BSNM-3084
(PHYSICAL CHEMISTRY-II)
(THEORY)

Course outcomes: Physical Chemistry-II

Students will be able to

CO1: identify thermodynamic property of any system to apply it for various systems.

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

CO3: demonstrate an understanding of completely miscible, partially miscible and immiscible liquids.

CO4: demonstrate an understanding 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.

SESSION 2019-20
B.Sc. (Med & Non-Medical) SEMESTER-III
COURSE CODE: BSMM/BSNM-3084
(PHYSICAL CHEMISTRY-II)
(THEORY)

Time: 3 Hrs.

Marks: 30

45 Hrs (3 Hrs/week)

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. Each question carries equal marks (6 each).

Unit-I

Thermodynamics-I

15 Hrs.

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

10 Hrs.

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

10 Hrs.

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

10 Hrs.

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, ($\text{NaCl-H}_2\text{O}$), ($\text{FeCl}_3\text{-H}_2\text{O}$) and ($\text{CuSO}_4\text{-H}_2\text{O}$) 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 consolute 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.

SESSION 2019-20
B.Sc. (Med & Non-Medical) SEMESTER-III
COURSE CODE: BSMM/BSNM-3084
CHEMISTRY PRACTICAL

Course outcomes: Chemistry Practicals

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.

SESSION 2019-20
B.Sc. (Med & Non-Medical) SEMESTER-III
COURSE CODE: BSMM/BSNM-3084
CHEMISTRY PRACTICAL

Duration: 3½ Hrs.

Marks: 20

6 Period/ Week

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	16
2) Thin Layer chromatography	07
3) Viva-Voce	04
4) Note Book	

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

B.Sc. (Non Medical), Semester–III (Session 2019-20)
Electronics
Analog Integrated Circuits - I
Course Code: BSNM-3184 (I)
(THEORY)

Course Outcomes:

After passing this course, students will be able to:

CO1: Understand the concept of Differential Amplifier and their types.

CO2: Demonstrate complete introduction of Operational Amplifier.

CO3: Understand the applications of an Operational Amplifier.

CO4: Understand the concept of Operational amplifier as 555 applications.

B.Sc. (Non Medical), Semester–III (Session 2019-2020)
Electronics
ANALOG INTEGRATED CIRCUITS - I
Course Code: BSNM-3184 (I)
(THEORY)

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 -1

UNIT-I

Differential amplifier

Differential Amplifier, Differential Amplifier Circuit Configuration, Dual Input-Balanced output Differential Amplifier, Dual Input-Unbalanced output Differential Amplifier, Single Input-Balanced output Differential Amplifier, Single Input-unbalanced output Differential Amplifier with their DC and AC analysis, Differential Amplifier with swamping resistors. Level Translator.

UNIT-II

Introduction to operational Amplifier

Block diagram of a typical Op-Amp, Schematic symbol, Characteristics and performance parameters of an Op-Amp, Ideal Op-Amp, Equivalent circuit of an Op-Amp, Ideal voltage transfer curve, Open loop configurations: Differential, Inverting & Non Inverting. Practical Op- Amp: Input offset voltage, Input bias current, Input offset current, total output offset voltage, Common Mode configuration and common mode rejection Ratio, feedback amplifier (voltage series, voltage shunt).

UNIT-III

Applications of an operational Amplifier

Applications of operational amplifier: Summing, scaling, averaging-inverting configuration, non-inverting configuration, Differential configuration, integrator, differentiator, square wave, generator, Phase shift oscillator using opamp, Wein bridge oscillator using op-amp.

UNIT-IV

Specialized IC applications:

IC 555 Timer: Pin configuration, Block diagram/internal structure, The 555 as a Monostable Multivibrator, monostable Multivibrator Applications, the 555 as a Astable multivibrator, Astable multivibrator applications.

Books Recommended:

1. Op-Amplifiers & Linear Integrated Circuits by Ramakant & Gayakwars (Prentice Hall India).
2. Design with Operational Amplifier & Analog Integrated Circuits by Sergio & Franco (Tata McGraw Hill).

B.Sc. (Non Medical), Semester–III (Session 2019-2020)

Electronics

Electronics and Instrumentation - I

Course Code: BSNM-1184 (II)

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

Course Outcomes:

After passing this course the student will be able to:

CO1- To develop an understanding of fundamental units and their dimensions.

Relation between different units of dimensions

CO2- Develop an understanding of representation of resistance, capacitances and inductances.

CO3- Develop an understanding of construction and working of galvanometer.

CO4- Develop and ability to use measuring instrument.

B.Sc. (Non Medical), Semester–III (Session 2019-20)
Electronics
Electronics and Instrumentation -I
Course Code: BSNM-3184 (II)
(THEORY)

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

Units, Systems and Dimensions

Absolute Units, Fundamental and Derived Units, Dimensions, Dimensions of Mechanical Units, CGS System of Units—Electromagnetic Units, Electrostatic Units, Practical Units, Dimensional equations—Dimensions in Electrostatic Systems, Dimensions in Electromagnetic Systems, Relationship between Electrostatic and Electromagnetic System of Units.

UNIT–II

Circuit Components

Resistors: material used for resistors, resistance standard, sheet metal resistors. Inductance: primary and secondary standard for Mutual and Self Inductance. Capacitance: primary and secondary standard, ceramic capacitor.

UNIT –III

Galvanometer

Operating Principles and construction of Galvanometer. Analog Ammeter, Voltmeter and Ohmmeter. Critical, under and over damping of Galvanometers. Construction and working of ballistic galvanometer and its calibration.

UNIT–IV

Electronic Instruments I

Fluxmeter, Duddell's Oscilloscope, Multirange Voltmeters and ammeters, Series and Shunt type Ohmmeters, Megger and Ducter Ohmmeter, Measurement using multi-meters.

Books:

1. Electrical and Electronic Measurements & Instrumentation by A.K. Sawhney (4th edition 2015)
2. Electronic Measurements & Instrumentation by Dr. R.S Sedha (3rd edition,2013)
3. Electronic and Instrumentation by H.S Kalsi (3rd edition,2017)

B.Sc. (Non Medical), Semester–III (Session 2019-20)
Electronics
Analog Integrated Circuit Lab
Course Code: BSNM-3184 (P)
(PRACTICAL)

Course Outcomes:

CO1: This course gives an overview of Operational Amplifier.

CO2: Students will be familiar with CRO and multimeter operations.

CO3: Students will be able to understand the concept and applications of an Operational Amplifier.

CO4: Students will be able to understand the oscillators.

B.Sc. (Non Medical), Semester–III (Session 2019-20)

Electronics

Analog Integrated Circuit Lab

Course Code: BSNM-3184 (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 examine design and operating characteristics of an inverting Op-Amp.
- 2 To examine design and operating characteristics of a noninverting Op-Amp.
- 3 Study the response of the RC circuit to square wave (Integrator and differentiator).
- 4 To study the Op-Amp as differentiator and integrator.
- 5 To study Op-Amp as summer.
- 6 To study Clipper and Clamper Circuit using Operational Amplifier.
- 7 Design a wein-Bridge oscillator using 741.
- 8 Design a delay circuit using 555 timers.
- 9 Applications of 555 timers: Astable, Monostable and bistable multivibrators.

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)

SEMESTER-III PHYSICS
Course code: BCSM-3395 (I)
PAPER-A
STATISTICAL PHYSICS & 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 Boltzman (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 irreversible 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, Adiabatic 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, V.S. Bhatia (Sohan Lal Nagin Chand), Jalandhar.
2. A Treatise on Heat, M.N. Saha & B.N. Srivastava (The Indian Press Pvt. Ltd., Allahabad),

1965.

3. Statistical Mechanics: An Introductory Text, Bhattacharjee, J.K. (Allied Pub., Delhi), 2000.
4. Statistical Physics, Bhattacharjee, J.K. (Allied Pub., Delhi) 2000.
5. Statistical Mechanics, B.B. Laud, (Macmillan India Ltd.) 1981.

SEMESTER-III
PHYSICS
Course Code: BCSM-3395 (II)
PAPER-B: OPTICS
(THEORY)

Course Outcomes:

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, Fraunhofer 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 polarizers.

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, Lloyd'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:

Huygen's fresnel theory, half-period zones, Zone plate, Distinction between fresnel and Fraunhofer diffraction. *Fraunhofer 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, Malus'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, F.A. Jenkins and Harvey E White, (Mcgraw Hill) 4th Edition, 2001.
2. Optics, Ajoy Ghatak, (McMillan Indian) 2nd Edition, 7th Reprint, 1997.
3. Optics, Born and Wolf, (Pergamon Press) 3rd Edition, 1965.
4. Physical Optics: B. K. Mathur and T. P. Pandya.
5. A textbook of Optics: N. Subrahmanyam, Brijlal and M. N. Avadhanulu.
6. Geometrical and Physical Optics: Longhurst.
7. Introduction to Modern Optics: G. R. Fowels.
8. Optics: P. K. Srivastav.

SEMESTER-III
PHYSICS
Course Code: BCSM-3395 (P)
(PRACTICAL)

Course Outcomes:

After passing this programme the students will be able to:

- CO1: use spectrometer to determine the refractive index of different transparent materials will 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 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 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
BIOINFORMATICS (VOCATIONAL)
Introduction to Bioinformatics and Biological Databases
(THEORY)
Course Code: BSNM/ BSMM- 3046
Session (2019-2020)

Course outcomes: Introduction to Bioinformatics and Biological Databases

After passing this course the student will be able to:

CO1: Understand the basic concept and analysis of Genomic and Proteomics.

CO2: Understand the Transcriptomics, Metablomics, Pharmacogenomics and Population genomics.

CO3: Understand the Basics of Biological Databases, comes to know about the different tools used in Bioinformatics.

CO4: Understand the Nucleic Acid Sequence Databases, Protein Sequence Databases: Genome Databases.

CO5: Understand the Structural Databases, Motifs and Pattern Databases, RNA Databases, Carbohydrates and Lipid Databases, Protein sequence database Databases of protein-protein interaction

SEMESTER–III
BIOINFORMATICS (VOCATIONAL)
Introduction to Bioinformatics and Biological Databases
(THEORY)
Course Code: BSNM/ BSMM- 3046
Session (2019-2020)

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 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

Genomics and Proteomics: Basic concept and analysis, Functional and comparative genomics: Definition and applications.

Introduction to sequencing project: Genome sequencing projects, Human genome sequencing project, microbial genome sequencing, Plant genome project and its applications.

Introduction and Applications: Transcriptomics, Metabonomics, Pharmacogenomics and Population genomics.

UNIT–II

Introduction to Biological Databases: Introduction to NCBI and its Databases, Type and kind of biological databases. Introduction to ASN1. Significance of Biological databases.

Open access bibliographic resources and literature databases: PubMed, BioMed Central.

Database Retrieval and Deposition Systems- SRS, Entrez, Bankit, Webin, Seqin, Sakura, AutoDep etc.

Sequence Formats: FASTA, Genbank, PIR, EMBL

UNIT–III

Nucleic Acid Sequence Databases: GenBank, EMBL, DDBJ; **Protein Sequence Databases:** Uniprot-KB: SWISS-PROT, TrEMBL, UniParc

Genome Databases: Viral Genomes; Archeal and Bacterial Genomes; Ensemble Genome Project and TIGR, Eukaryotic genomes with special reference to model organisms (Yeast, *Drosophila*, *C elegans*, Rat, Mouse, Human, plants such as *Arabidopsis thaliana*, Rice, etc.).

UNIT-IV

Structural Databases: PDB, PDBsum, NDB etc.; **Motifs and Pattern Databases:** PROSITE, Pfam etc.; **RNA Databases:** RNABase, SCOR. **Carbohydrates and Lipid Databases:** GlycoSuiteDB, LIPIDAT.

Databases of protein-protein interaction: Biogrid, RNA-Binding protein , STRING, InterPro.

Recommended Books:

- 1 Higgins D. And Taylor W. (2000). Bioinformatics: Sequence Structure & Data Banks: A Practical Approach. *Oxford University Press, USA.*
- 2 Lesk A. M. (2002). Introduction to Bioinformatics. *Oxford University Press.*
- 3 Krane D. E. and Raymer M. L. (2002). Fundamental Concepts of Bioinformatics.
- 4 *Benjamin Cummings.*
- 5 Orengo C.A., Jones D.T. and Thornton J.M. (2003). Bioinformatics: Genes Proteins.
- 6 Zin-xiong J.(2013). *Essential Bioinformatics . Cambridge university press, new York, USA .*

**SEMESTER-III
BIOINFORMATICS (VOCATIONAL)**

**LAB IN INTRODUCTION TO BIOINFORMATICS AND BIOLOGICAL DATABASES
(PRACTICAL)**

Course Code: BSNM/ BSMM- 3046

Session (2019-2020)

Time: 3 Hrs.

Marks: 20

1. Study of NCBI .
2. Database Retrieval and deposition systems: SRS, Entrez, Bankit, Seqin, Webin, AutoDep.
3. Study of Nucleic acid and protein databases: GenBank, EMBL, DDBJ, SWISS PROT.
4. Prediction of Protein-Protein Interaction using INTERPRO, STRING.
5. Study of Various human, plants and animal databases: Ensembl Genome project, TIGR Database, Flybase, Maize GDB etc.
- 5 Study of Structural databases: PDB, PDBsum, NDB etc.
- 6 Study of Motifs and Pattern Databases: PROSITE, Pfam, etc.
- 7 Study of RNA databases: RNABase, SCOR
- 8 Carbohydrates and lipid databases: GlycoSuiteDB, LIPIDAT
- 9 Database Retrieval and deposition systems: SRS, Entrez, Bankit, Seqin, Webin, AutoDep.
- 10 Database for Searching Homologous Sequences.

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
	<ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• 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.

Session 2019-20
B.A/B.Sc/B.Com/BBA
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, ਸੁਝ 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 ਲਿਖਤ 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 2019-2020
B.A/B.Sc/B.Com/BBA
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

1. ਪਗਡੰਡੀਆਂ (ਸਵੈਜੀਵਨੀ) : ਡਾ.ਬਚਿੰਤ ਕੌਰ

ਨਾਇਕ ਬਿੰਬ/ਸਾਰ /ਵਿਸ਼ਾ ਵਸਤੂ

8 ਅੰਕ

ਯੂਨਿਟ-II

2. ਫ਼ਾਸਲੇ (ਨਾਟਕ) : ਜਤਿੰਦਰ ਬਰਾੜ,

ਵਿਸ਼ਾ ਵਸਤੂ/ਸਾਰ (ਦੋ ਵਿਚੋਂ ਇੱਕ) ਜਾਂ ਚਾਰ ਵਿਚੋਂ ਦੋ ਪਾਤਰਾਂ ਦੀ ਪਾਤਰ ਉਸਾਰੀ

8 ਅੰਕ

ਯੂਨਿਟ-III

3. ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ (ਦੋ ਵਿਚੋਂ ਇੱਕ)

8 ਅੰਕ

ਯੂਨਿਟ-IV

4. ਵਿਆਕਰਣ

(ੳ) ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮ

(ਅ) ਗੁਰਮੁਖੀ ਲਿਪੀ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

8 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਯੂਨਿਟ ਹੋਣਗੇ। ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਯੂਨਿਟ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਯੂਨਿਟ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਯੂਨਿਟ 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 2019-20
Punjab History & Culture (From Earliest Times to C 320)
(Special Paper in lieu of Punjabi compulsory)
SEMESTER-IV

Time: 3 Hours

Max. Marks: 50

Theory: 40

Continuous Assessment: 10

Instructions for the Paper Setters

The question paper will have 4 units, namely unit I, II, III and IV.

Question paper shall consist of four Units. Candidates shall attempt 5 questions in all, by at least selecting one question from each section and the 5th question may be attempted from any of the four units. Each question will carry 8 marks.

Unit-I

Politicization of Sikhism under Guru HarGobind

Martyrdom of Guru Teg Bahadur

Unit –II

Creation of Khalsa

Khalsa and Its impact on Punjab

Unit-III

Rise of Banda Bahadur and his achievements

Rise of Misls

Unit – IV

Ranjit Singh's rise to Power, Civil, Military and Land Revenue administration

Art and Architecture, Fair, Festivals and Folk Music in the Punjab during the Medieval Period

Suggested Readings:

- 1. Chopra, P. N., Puri, B.N., & Das. M.N. (1974). A Social, Cultural and Economic History of India, Vol. II. New Delhi : Macmillan India**
- 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. II,I. Patiala: Punjabi University**

4. Singh, Khuswant (2011). A History of Sikhs- Vol. I (1469-1839), New Delhi: Oxford University Press

SEMESTER IV
ENGLISH (COMPULSORY)
COURSE CODE: BARL/BSML/BSNL/BCSL/BECL/BCRL/BBRL-4212
COURSE OUTCOMES

At the end of 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 USA and be able to answer questions regarding situations, themes and characters depicted in them
- CO 2:** Understand the basic tenets of English Grammar and use of language correctly
- 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

SEMESTER-IV
ENGLISH (COMPULSORY)

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

Time: 3 Hours

Max.

Marks: 50

Theory: 40

Continuous Assessment: 10

Instructions for the Paper-Setter and Distribution of Marks:

The paper setters should avoid questions of theoretical nature on English Grammar.

The question paper will consist of 3 sections, namely A, B and C

SECTION-A

1. TWENTY (20) questions on the usage of grammar related to units 26-37, 42-48, 92-97, 113-120 of *English Grammar in Use* from Unit III of the Syllabus will be set for the students to attempt any FOURTEEN (14) of these questions.

(1×14=14 Marks)

SECTION-B

2. TWO (2) questions (with sub parts) based on strategies and skill development exercises as given before and after reading essays in UNIT-III & UNIT-IV of the prescribed text book *Making Connections* will be set. The number of items in each question will be 50% more than what a student will be expected to attempt so that the question provides internal choice.

(2×5=10 Marks)

3. ONE (1) question (with internal choice) requiring students to explain a stanza with reference to context will be set. The stanzas for explanation will be taken from the poems prescribed in Unit II of the syllabus.

(1×4=4 Marks)

SECTION-C

4. THREE (3) questions on central idea, theme, tone and style etc. of the poems from the prescribed textbook, *Moments in Time* from Unit-II of the syllabus will be set. The students will be required to attempt any TWO (2) of these questions.

(3×2=6 Marks)

5. ONE (1) question requiring the students to write an essay on ONE (1) of the TWO (2) given topics will be set.

(1×6=6 Marks)

Texts Prescribed:

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

The syllabus is divided in three units as mentioned below:

Unit I: *Making Connections* by Kenneth J. Pakenham, 2nd Edn. CUP: Unit-III and Unit-IV

Unit II: *Moments in Time: Poems* at Sr. No. 7-12

Unit III: *English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP: Revision of units: 26-37, 42-48, 92-97, 113-120.

B.A./B.Sc. Semester-IV
Session 2019-20
Course Title: Statics and Vector Calculus
Course Code: BARM/BECM/ BCSM/BSNM-4333(I)

Course Outcomes

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

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.

CO 7: To find the application of Gauss theorem, Green's theorem and Stokes's theorem in real life problems.

B.A./B.Sc. Semester-IV
Session 2019-20
Course Title: Statics and Vector Calculus
Course Code: BARM/BECM/ BCSM/BSNM-4333(I)

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.

Section-A

Composition and resolution of forces(parallelogram law, triangle law, polygon law,Lami's Theorem, $(\lambda-\mu)$ 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.

Section-B

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.

Section-C

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

Section-D

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

Books Recommended:

1. S.L. Loney: Statics, Macmillan and Company, London.
2. R.S. Verma: A Text Book on Statics, Optical Pvt. Ltd., Allahabad.
3. Spiegel, M.R.: Introduction to Vector Calculus and Tensor
4. Spiegel,M.R.: Vector Analysis

B.A./B.Sc. Semester-IV
Session 2019-20
Course Title: 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.

B.A./B.Sc. Semester-IV
Session 2019-20
Course Title: Solid Geometry
Course Code: BARM/BECM/ BCSM/BSNM-4333(II)

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.

Section-A

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

Section-B

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.

Section -C

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.

Section-D

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

Books Recommended:

1. Narayan, S & P.K.Mittal : Analytical Solid Geometry, Sultan Chand & Sons(2005)
2. Kreyszig, E : Advanced Engineering Mathematics.

SESSION 2019-20
B.Sc. (Med & Non-Medical) SEMESTER-IV
COURSE CODE: BSMM/BSNM-4084
(INORGANIC CHEMISTRY-I)
(THEORY)

Course outcomes: Inorganic chemistry-I

Students will be able to

CO1: understand the key features of coordination compounds viz. 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 Lamer, 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 the properties and reactions of non-aqueous solvents.

SESSION 2019-20
B.Sc. (Med & Non-Medical) SEMESTER-IV
COURSE CODE: BSMM/BSNM-4084
(INORGANIC CHEMISTRY-I)
(THEORY)

Time: 3 Hrs.

45 Hrs. (3 Hrs./Week)

Marks: 30

Note:

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. Each question carries equal marks (6 each).

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-aqueous Solvents

5 Hrs.

Physical properties of a solvent, types of solvents and their general characteristics, reactions in non-aqueous solvents with reference to liquid NH₃ and liquid SO₂.

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.

SESSION 2019-20
B.Sc. (Med & Non-Medical) SEMESTER-IV
COURSE CODE: BSMM/BSNM-4084
(ORGANIC CHEMISTRY-II)
(THEORY)

Course outcomes: Organic Chemistry-II

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, 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.

SESSION 2019-20
B.Sc. (Med & Non-Medical) SEMESTER-IV
COURSE CODE: BSMM/BSNM-4084
(ORGANIC CHEMISTRY-II)
(THEORY)

Time: 3 Hrs.

45 Hrs. (3 Hrs./Week)

Marks: 30

Note:

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. Each question carries equal marks (6 each).

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

(7 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 nucleophilic 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 Hofmann bromamide reaction. Physical properties. Stereochemistry of amines. separation of a mixture of primary, secondary and tertiary amines. Structural features effecting basicity of amines. Amine salts as phase-transfer catalysts.

Unit-IV

Organometallic Compounds

(7 Hrs.)

Organomagnesium Compounds: The Grignard reagents formation, 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.

SESSION 2019-20
B.Sc. (Med & Non-Medical) SEMESTER-IV
COURSE CODE: BSMM/BSNM-4084
CHEMISTRY PRACTICAL

Course outcomes: Practical

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

SESSION 2019-20
B.Sc. (Med & Non-Medical) SEMESTER-IV
COURSE CODE: BSMM/BSNM-4084
CHEMISTRY PRACTICAL

Duration: 3½ hrs.

Marks: 20

6 Period/Week

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	05
2) Detection of functional group and derivative preparation	18
3) Viva-Voce	04
4) Note Book	03

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.

B.Sc. (Non Medical), Semester–IV (Session 2019-20)
Electronics
Application of Digital Electronics
Course Code: BSNM-4184 (I)
(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the concept of Shift registers, Applications of shift registers.

CO2: Demonstrate the Counters: Synchronous and Asynchronous

CO3: Students will understand the types of Counter.

CO4: Understand the concept of Logic Families: RTL, DCTL, DTL, TTL, ECL, CMOS and its types, Comparison of logic families.

B.Sc. (Non Medical), Semester–IV (Session 2019-20)
Electronics
Application of Digital Electronics
Course Code: BSNM-4184 (I)
(THEORY)

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

Shift registers, shift-left Registers, shift right registers. Serial in serial out shift registers (SISO), serial in parallel out Shift Registers (SIPO), Parallel in serial out shift registers (PISO), parallel in parallel out shift registers (PIPO), Universal shift registers, Applications of shift registers

UNIT–II

Counters; serial counters, parallel counters, up-down counters and speed limitation of serial counters, Designing of synchronous & asynchronous counters.

UNIT-III

Hybrid counters, shift register counters, ring counters, twisted ring counters, cascading of synchronous counters

UNIT–IV

Logic Families: RTL, DCTL, DTL, TTL, ECL, CMOS and its types, Comparison of logic families.

Books:

1. Fundamentals of Digital Circuits by A. Anand Kumar (PHI).
2. Modern Digital Electronics by R.P. Jain (Tata McGraw Hill).
3. Principals of Electronics by S.K. Bhattacharya & Dr. Renu Vij (S.K. Kataria & Sons).
4. Digital Electronics (DCLD) by Neeraj Anand.
5. Digital Electronics by Malvino Leach.

B.Sc. (Non Medical), Semester–IV (Session 2019-20)
Electronics
Electronics and Instrumentation - II
Course Code: BSNM-4184 (II)
(THEORY)

Course Outcomes:

After passing this course the student will be able to:

- CO1 - To understand the concept of frequency meter and measurement of resistances.
- CO2- To develop an understanding of construction and working of dc potentiometers.
- CO3- To understand the concept of AC potentiometer and its types.
- CO4- To develop an understanding of principle and working measurements of voltage, frequency and phase angle with CRO.

B.Sc. (Non Medical), Semester–IV (Session 2019-20)
Electronics
Electronics and Instrumentation - II
Course Code: BSNM-4184 (II)
(THEORY)

Time: 3Hrs.

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

Measurement of frequency and resistances

Frequency meters, types of frequency meters: electrodynamic type, ratio type, saturable core frequency meter and synchrosopes: electrodynamic and moving iron type synchrosopes. Measurement of medium resistance with ammeter voltmeter method, wheatstone bridge method, substitution method, measurement of low resistance with potentiometer method, kelvin's double bridge method and high Resistances with loss of charge method, direct deflection method.

UNIT–II

DC Potentiometer and its applications

Potentiometers; DC potentiometer circuit, principle of operation, applications for DC Potentiometer: Calibration of voltmeter, ammeter. Measurement of resistance and power. Construction and working of self balancing Potentiometers.

UNIT-III

AC Potentiometer and AC Bridges

AC Potentiometers, types and applications. AC Bridges; general form of ac bridges, Maxwell's Inductance Bridge, Maxwell's Inductance Capacitance Bridge for mutual inductance, Wein's bridge for frequency, De Sauty bridge for capacitance.

UNIT–IV

Electronic instruments and CRO

Electronic Voltmeters, FET Voltmeters s.a amplifier type of electronic voltmeter and source follower type of electronic voltmeter. Principle and working of Cathode Ray Oscilloscope measurements of Voltage, Frequency and Phase angle with CRO, Multiple trace and storage type Oscilloscope.

Books:

1. Electrical and Electronic Measurements & Instrumentation by A.K. Sawhney (4th edition 2015)
2. Electronic Measurements & Instrumentation by Dr. R.S Sedha (3rd edition,2013)
3. Electronic and Instrumentation by H.S Kalsi (3rd edition,2017)

B.Sc. (Non Medical), Semester–IV (Session 2019-20)
Electronics
Digital Electronics and Electronics Instrument Lab
Course Code: BSNM-4184 (P)
(PRACTICAL)

Course Outcomes:

After passing this course the student will be able to:

CO1: This course gives an overview of CRO.

CO2: At the end of this course student will be able to Study converters,

CO3: At the end of this course, the students will be able to study counters and shift register.

CO4: Students will understand the applications of counter.

B.Sc. (Non Medical), Semester–IV (Session 2019-20)
Electronics
Digital Electronics and Electronics Instrumentation Lab
Course Code: BSNM-4184 (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 Determination of Frequency and phase angle using CRO.

2 Verification of truth Table for Shift right and Shift Left Registers.

3 Verification of truth table for Ring Counters.

5 Study the Analog to digital Converter.

6 To Study the Digital to Analog Converter.

7 Measurement of Frequency by Wein's Bridge.

8 Measurement of Displacement with help Potentiometer.

Books Recommended:

1. Fundamentals of Digital Circuits by A. Anand Kumar (PHI).

2. Modern Digital Electronics by R.P. Jain (Tata McGraw Hill).

3. Principals of Electronics by S.K. Bhattacharya & Dr. Renu Vij (S.K. Kataria & Sons).

4. Digital Electronics (DCLD) by Neeraj Anand.

5. Digital Electronics by Malvino Leach.

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

Course Outcomes:

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.

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

SEMESTER-IV
PHYSICS
Course code: BCSM-4395 (II)
PAPER-B
ATOMIC SPECTRA & LASERS
(THEORY)

Course Outcomes:

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

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, Fauchber Ledenberg 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, CO₂ laser and Nd: YAG laser, applications of lasers—a general outline, Q-switching, Basics of holography.

Text Reference Books:

1. Introduction to Atomic Spectra: H.E. White-Auckland McGraw Hill, 1934.
2. Spectroscopy Vol. I, II & III: Walker & Straughen
3. Introduction to Molecular Spectroscopy: G.M. Barrow-Tokyo McGraw Hill, 1962.
4. Spectra of Diatomic Molecules: Herzberg-New York, 1944
5. Introduction to Atomic Spectra, H.E. White (Mcgraw Hill, Book Co., Inc., New York)
6. Laser Fundamentals, W.T. Silfvast (Foundation Books), New Delhi, 1996

7. Laser and Non-Linear Optics, B.B. Laud (New Age Pub.) 2002
8. Laser, Svelto, (Plenum Pres) 3rd edition, New York

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

Course Outcomes: PHY Lab Sem IV

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.

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 γ .
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.

SEMESTER-IV
BIOINFORMATICS (VOCATIONAL)
Computer Programming in C++ and PERL
(THEORY)
Course Code: BSNM/ BSMM- 4046
Session (2019-2020)

Course outcomes: Computer Programming in C++ and PERL

After passing this course the student will be able to:

CO1: Understand the basic Principles of computing, benefits and applications of object oriented programming.

CO2: Understand the Programming basics in C++.

CO3: Understand the Programming of C++ with Arrays, strings.

CO4: Understand the Programming of C++ with functions, Inheritance, Polymorphism, Pointers.

CO5: Understand the Programming basics in PERL

CO6: Understand the different data types used in PERL.

CO7: Understand the different Conditional, logical, control Statements used in PERL.

SEMESTER-IV
BIOINFORMATICS (VOCATIONAL)
Computer Programming in C++ and PERL
(THEORY)
Course Code: BSNM/ BSMM- 4046
Session (2019-2020)

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 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

Principles of Computing: Computer Hardware, System Software, Applications Software, Algorithm Design and Flow Charts. Introduction to procedure oriented programming and object oriented programming. Basic concepts, benefits and applications of object oriented Programming.

C++ Programming Basics: Variable, constant, Expression, Statements, Comments and Keywords of C++, Arithmetic, Relational, Logical, Assignment, Increment/Decrement, Conditional, Precedence of Operators, Data type.

Decision Making and Looping Statement: If Statement, If else statement, nesting of if statement, switch statement, conditional operator statement, While loop, do loop, for loop, nesting of loops, break and continue statement, go to statement.

Arrays Defining an array, array type, array elements, Accessing, and averaging array elements, initializing array, Programming of C++ with array, String handling, array of strings.

UNIT-II

Functions: Declaring and defining function, Local, global variables, execution of function, passing argument to function, Return values, Overloading functions, Inline function.

Object Oriented Programming: Objects & Classes, Constructor & Destructor, Operator overloading, Overloading unary operators, Overloading binary operators, Data conversion.

Inheritance: Derived class and Base Class, Derived Class Constructors, Overriding member functions.

Polymorphism: Virtual Functions, single inheritance, Multiple inheritance.

Structures A simple structure, specifying the structure, defining a structure variable.

Pointers: Addresses and pointers, Pointers and Arrays, Pointer to objects.

UNIT-III

Getting Started with PERL: Perl's Benefits, Downloading & installing perl in Linux/Windows environment, How to run perl Programs in linux/windows environment. Applications of perl in Bioinformatics.

Perl Values and Data Types: Scalar, Arrays, Hashes, Operators; Operator precedence, I/O: Input from STDIN, Built in File handlers, Input from file, Input from file named on command line, Output to file.

UNIT-IV

Conditional and Logical Statements: Statement Blocks, if, else, elsif, unless, while, do while, do until, for, foreach statements. **Control Statements:** Next, last, redo, continue statements.

Regular Expressions: Match, substitute and translate operators, Meta characters, Metasymbols and Pattern Modifiers. PERL subroutines and functions, Introduction to Bioperl.

Recommended Books:

1. Schildt H. C++: the Complete Reference. Tata McGraw Hill. New Delhi (1999).
2. Balagurisamy E. ooP with C++. 2nd Edition. Tata McGraw Hill. New Delhi (2002).
3. Eubard. Schaum's Outline Series: Programming with C++. 2nd Edition. Tata McGraw Hill. New Delhi (2002).
4. Lafore, R. C++. Galgotia Publication (2000).
5. James D. Tisdall, (2001). "Beginning Perl for Bioinformatics," *O'Rilley and Associates*
6. D. Curtis Jamison. *Perl programming for biologists*. Hoboken, N.J.: Wiley-Liss, 2003.

SEMESTER-IV
BIOINFORMATICS (VOCATIONAL)
LAB IN COMPUTER PROGRAMMING IN C++ AND PERL
(PRACTICAL)
Course Code: BSNM/ BSMM- 4046
Session (2019-2020)

Time: 3 Hrs

Marks: 20

Practicals Using C++ Language:

- 1 Write a Program for addition and multiplication of two matrices.
- 2 Write a Program to create dynamic array.
- 3 Create a class having default constructor, copy constructor and destructor.
- 4 Write a Program to implement the concept of virtual base class.
- 5 Write a Program to implement multiple inheritances.
- 6 Write a Program to overload binary operator (-).
- 7 Write a Program to implement run time polymorphism.
- 8 Write a program to collect student information.

Practicals Using PERL Language:

- 1 Write a Program to show the concept of standard input/output.
- 2 Write a Program to declare and use variables.
- 3 Write a Program to use the operators.
- 4 Write a Program to use hashes and arrays.
- 5 Write a Program to use Array & hashes its function.
- 5 Write a Program to implement the conditional statements.
- 6 Write a Program to implement the iterative statement.
- 7 Write a Program which uses NEXT, LAST, REDO, and CONTINUE statement
- 8 Write a program to show file handling.
- 9 Write a Program to show the concept of subroutine.
- 10 Write a program to transcription of DNA.
- 11 Write a program to concatenate two strings
- 12 Programs related with Regular Expression
 - Searching for a regular expression in a file.
 - Searching and replacing a regular expression a file.

**SEMESTER-IV
BIOINFORMATICS (VOCATIONAL)
ON JOB TRAINING**

Satisfactory/Unsatisfactory

This should be taken up during summer vacations over a period of one month in the area of Bioinformatics/Computer. The college should send the satisfactory/Unsatisfactory report of students after receiving the project/training report from the student.

