

FACULTY OF SCIENCES

SYLLABUS

For

B.Sc. (Semester I-II)

(Under Continuous Evaluation System)

(12+3 System of Education)

Session: 2018-19



The Heritage Institution

**KANYA MAHA VIDYALAYA
JALANDHAR
(AUTONOMOUS)**

**Scheme of Studies and Examination
B.Sc. (Non-Medical)**

B.Sc. (Non-Medical) Semester I							
Course Code	Course Name	Course Type	Marks				Examination time (in Hours)
			Total	Ext.		CA	
				L	P		
BSNL-1421 BSNL-1031 BSNL-1431	Punjabi (Compulsory) Basic Punjabi PHC	C	50	40	-	10	3
BSNI-1212	English (Compulsory)	C	50	40	-	10	3
BSNM-1333	Maths	E	100	80	-	20	3+3
BSNM-1084 BSNM-1184	Chemistry Electronics	E	100	60	20	20	3+3+3
BSNM-1395	Physics	E	100	60	20	20	3+3+3
BSNM-1046	Bioinformatics	E	100	60	20	20	3+3
AECD-1161	*Drug Abuse: Problem Management and Prevention (Compulsory)	AECC	50	40	-	10	3
SECF-1492	*Foundation Programme	VBCC	25	-	-	-	2
Total							

Note: For a student opting for bioinformatics Chemistry is a Compulsory Subject.

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

C-Compulsory

E-Elective

AECC- Ability Enhancement Compulsory Course

VBCC- Value Based Compulsory Course

Session 2018-19
B.A/B.Sc/B.Com/BBA
Semester I
PUNJABI COMPULSORY
COURSE CODE-BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-1421

;wK L 3 xzN/

Maximum Marks: 50

Theory: 40, CA: 10

gkm eqw ns/ gkm g[;seK

:{fBN-I

d' ozr (eftsk Gkr) (;zghH jofizdo f;zx fYb'A ns/ gqhsW ;or'Xhnk),
f;zx r[o{ BkBe d/t :{Bhtof;Nh, nzfwqs;o.

(ਲੇਖਕ ਦਾ ਜੀਵਨ ਤੇ ਰਚਨਾ / ਪ੍ਰੰਗ ਹਸਤ ਹਵਆਹਖਆ/ਕਹਵਤਾ ਦਾ-ਵ ਤੂ)ਹਵਸ਼ਾ 8 nze

:{fBN-II

;z;ko dhNk gqf;X j;shNk (ihtBh BzL 1 s'A 9 se)
(;zghH fgqzH s/ik f;zx, joBkw f;zx Pkw),gzikph ;kfjs gqekPB, nzfwqs;o.

(ਹਵਸ਼ਾ-ਵ ਤੂ/ ਾਰ/ਨਾਇਕ ਹਬੰ ਬ) 8 nze

:{fBN-III

(T) g?oQk ouBk (fszB ftu'A fJe)
(n) g?oQk gVQ e/ gqPBK d/ T[so.

8 nze

:{fBN-IV

(T) GkPk tzBrhNk L GkPk dk Ne;kbh o{g, GkPk ns/ T[g-GkPk ftu nzso, gzikph T[gGkpktK
d/ gSkD fuzBQ.

(n) gzikph GkPk L fBek; s/ ftek;

8 nze

nze tzv ns/ gohfyne bJh jdkfJsK

1H gqPB gZso d/ uko :{fBN j'Dr/.;?ePB A-D sZe d/ gqPB :{fBN I-IV ftu'A g[ZS/ ikDr
jo :{fBN ftu d' gqPB g[ZS/ ikDr/.

2H ftfdnkoEh B/ e[b gzi gqPB eoB/ jB. jo :{fBN ftu'A fJe gqPB bklwh j?.
gzitK gqPB fe;/ th :{fBN ftu'A ehsk ik ;edk j?.

3H jo/e gqPB d/ 08 nze jB.

4H g/go ;?ZN eoB tkbk i/eo ukj/ sK gqPBK dh tzv nr'A tX s'A tX uko
T[g gqPBK ftu eo ;edk j?.

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

w[ZYbh gzikph

(In lieu of Compulsory Punjabi)

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

;wK L 3 xzN/

Maximum Marks: 50

Theory: 40, CA: 10

gkm eqw

:{fBN-I

g?Ash nyoh, nyo eqw, g?o fpzdh tkb/ toD ns/ g?o ftu g?D tkb/ toD ns/ wksqtK
(w[Ybh ikD gSkD) brkyo (fpzdh, fNgh, nXe) L gSkD ns/ tos'A. 08nze :{fBN-II

gzikph Ppd pDso L w[Ybh ikD gSkD (;kXkoB Ppd, ;z:[es Ppd, fwPos Ppd,
w{b Ppd, nr/so ns/ fgS/so) 08nze :{fBN-III

fBs tos'A dh gzikph Ppdktbh L pklko, tgko, foPs/Bks/, y/sh ns/ j'o XzfdnK
nkfd Bkb ;zpzXs. 08nze

:{fBN-IV

j]s/ d/ ;s fdBK d/ BK, pkoQK wjhfBnK d/ BK, o[sK d/ BK, fJe s'A ;" se frDsh
PpdK ftu .

08nze

nze tzv ns/ gohyne bJh jdkfJsK

- 1H gqPB gZso d/ uko :{FfBN j'Dr/..;?ePB A-D sZe d/ gqPB :{fBN I-IV ftu'A g[ZS/
ikDr/. jo :{fBN ftu d' gqPB g[S/ ikDr/.
- 2H ftdnkoEh B/ e[b gzi gqPB eoB/ jB. jo Gkr ftu'A fJe gqPB bkiwh j?. gzik
gqPB fe;/ th Gkr ftu'_ ehsk ik ;edk j?.
- 3H jo/e gqPB d/ nZm nze jB.
- 4H g/go ;?N eoB tkbk i/eo ukj/ sK gqPBK dh tzv nr'A tX s'A tX uko T[g gqPBK
ftu eo ;edk j?.

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

Eight questions of equal marks (8 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. 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

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 2018-19
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 2018-19
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.

(Session-2018-19)

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. McDamiel, D., Alexander, J., Concepts and Models of Inorganic Chemistry; 3rd edition, Pubs: John Wiley and Sons Inc., 1994.
5. Miessler, G.L., Larr, D.A., Inorganic Chemistry; 3rd edition, Pubs: Pearson Education Inc., 2004.
6. Jolly, W.L., Modern Inorganic Chemistry; 2nd edition, Pubs: McGraw-Hill Publishing Company Limited, 1991.
7. Purcell, K.F., Kotz, J.C., Inorganic Chemistry; Pubs: W.B. Saunders Company, 1977.
8. Puri, B.R., Sharma, L.R., Kalia, K.C., Principles of Inorganic Chemistry; 30th edition, Pubs: Milestones Publisher, 2006-07.
9. University General Chemistry, C.N.R. Rao, Macmillan.
10. Inorganic Chemistry, W.W. Porterfield Addison-Wesley.
11. Inorganic Chemistry, A.G. Sharpe, ELBS.

(Session-2018-19)

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, arennes 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, mercuriation 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-2018-19)
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)

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)

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)

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)

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 of inthese systems, Solid angle, Relationship conservation laws and symmetries of space and time.

UNIT-II

Various forces in Nature (Brief introduction) center of mass, equivalent one body problem, centralforces, equation of motion under central force, equation of orbit and turning points. Kepler Laws. Concept of Ether and Michel son-Morley experiment.

UNIT-III

Inertial frame of reference. Galilean transformation and Invariance. Non Inertial frames, Coriolisforce and its applications. Variation of acceleration due to gravity with latitude. Foucaultpendulum.

UNIT-IV

Elastic collision in Lab and C.M. system, velocities, angles and energies, cross section of elasticsscattering, 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. Kittle.
2. Mechanics, H.S. Hans & S.P. Puri.

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, $\text{curl } E=0$. Electric fields as gradient of scalar potential. Calculation of E due to a point charge and dipole from potential. Potential due to arbitrary charge distribution and multipole moments.

UNIT-III

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

UNIT-IV

E in different frames of reference. Field of a point charge moving with constant velocity. Interaction between moving charges and force between parallel currents. 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)

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

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/BCA/B.Com/BBA Semester – I (Session 2018-19)

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: Sem. I students of all streams (UG Only)

Course credits: 2

Course code: SECF-I

CURRICULUM

Course Code: V1

Course Credits: 1

Total Contact Hours: 20

MODULE	TITLE	HOURS
1	Introduction & Initial Assessment	1
2	The Human Story: A Panoramic View from Primitive to the Present Times	2.5
3	<i>The Vedas, The Gita</i> & Eastern Philosophy	1.5
4	<i>The Holy Bible</i> & Genesis	1.5
5	Woman: A Journey through the Ages	1.5
6	Changing Paradigms in Society, Religion & Literature	1.5
7	Indian Freedom Struggle & Makers of Modern India	1.5
8	Racism & Martin Luther King Jr.	1.5
9	Modern India at a Glance: Geographical, Political, Economic & Cultural Perspective	1.5
10	Modern World at a Glance: Political & Economic Perspective	1.5
11	Technology & Human Life	1.5
12	The KMV Experience	1.5
13	Final Assessment, Feedback & Closure	1.5

EXAMINATION

- Final multiple choice quiz. Marks – 20; Time: 1 hour
- Comparative assessment questions (medium length) in the beginning and close of the programme. Marks: 5; Time: 0.5 hour each at the beginning and end.
- Total marks: 25 converted to grade for final result

- 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

B.Sc. (Non-Medical) Semester II							
Course Code	Course Name	Course Type	Marks				Examination time (in Hours)
			Total	Ext.		CA	
				L	P		
BSNL-2421 BSNL-2031 BSNL-2431	Punjabi (Compulsory) Basic Punjabi PHC	C	50	40	-	10	3
BSNL-2212	English (Compulsory)	C	50	40	-	10	3
BSNM-2333	Maths	E	100	80	-	20	3+3
BSNM-2084 BSNM-2184	Chemistry Electronics	E	100	60	20	20	3+3+3
BSNM-2395	Physics	E	100	60	20	20	3+3+3
BSNM-2046	Bioinformatics	E	100	60	20	20	3+3
AECD-2161	*Drug Abuse: Problem Management and Prevention (Compulsory)	AECC	50	40	-	10	3
SECM-2502	*Moral Education Programme	VBCC	25	-	-	-	2
Total							

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

C-Compulsory

E-Elective

AECC- Ability Enhancement Compulsory Course

VBCC- Value Based Compulsory Course

Session 2018-19
B.A/B.Sc/B.Com/BBA
Semester II
PUNJABI COMPULSORY
COURSE CODE-BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-2421

;wKL 3 xzN/

Maximum Marks: 50

Theory: 40

CA: 10

gkm eqw ns/ gkm g[;seK

:{fBN-I

**d' ozr (ejkDh Gkr) (;zgh jofizdo f;zx fYb'A ns/ gqhsW f;zx
;or'Xhnk),r[o{ BkBe d/t :{Bhtof;Nh, nzfwqs;o.**

(ਹਵਲਾ-ਵ ਤੂ/ ਾਰ/ਲਿਖਕ ਦਾ ਜੀਵਨ ਤੇ ਰਚਨਾ)

8 nze

:{fBN-II

**;z;ko dhNk gqf;X j;shNk (ihtBh BzL 10 s'A18 se)(;zgh fgqzH s/ik
f;zx, joBkw f;zx Pkw),
gzikph ;kfjs gqekPB, nzfwqs;o.**

(ਹਵਲਾ/ ਾਰ/ਨਾਇਕ ਹਥੰ ਬ)

8 nze

:{fBN-III

(T) Ppd pDso ns/ Ppd ouBk L gfoGkPk, w[Yb/ ;zebg.

(n) Ppd Pq/DhNk

8 nze

:{fBN-IV

(T) d|soh fumh gso

(n) w[jkto/ ns/ nykD

8 nze

nze tzv ns/ gohfyne bJh jdkfJsK

**1H gqPB gZso d/ uko :{fBN j'Dr/.;?ePB A-D sZe d/ gqPB :{fBN I-IV ftu'A
g[ZS/ ikDr jo :{fBN ftu d' gqPB g[ZS/ ikDr/.**

**2H ftfdnkoEh B/ e[b gzi gqPB eoB/ jB. jo :{fBN ftu'A fJe gqPB
bklwh j?. gzik gqPB fe;/ th :{fBN ftu'A ehsk ik ;edk j?.**

3H jo/e gqPB d/ 08 nze jB.

**4H g/go ;?ZN eoB tkbk i/eo ukj/ sK gqPBK dh tzv nr'A tX s'A tX uko
T[g gqPBK ftu eo ;edk j?.**

SESSION 2018-19

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

w[ZYbh gzikph

(In lieu of Compulsory Punjabi)

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

smW: 3 GMty
Marks: 50

Maximum

Theory : 40, CA: 10

gkm eqw

:{fBN-I

Ppd P/qDhnK L gSkD ns/ tos'A (BKt, gVBKt, fefonk, ftP/PD,
fefonk ftP/PD, ;pzXe, :'ie ns/ ft;fwe)

08 nze

:{fBN-II

gzikph tke pDso L w[Ybh ikD gSkD
(T) ;kXkoB tke, ;z:[es tke ns/ fwPos tke (gSkD ns/ tos'A)
(n) fpnkBhnk tke, gqPBtkue tke ns/ j[ewh tke (gSkD ns/ tos'A)

08 nze

:{fBN-III

g?oQk ouBk
;zy/g ouBk

08 nze

:{fBN-IV

fumh gZso (xo/b{ ns/ d|soh)
nykD ns/ w[jkto/

08 nze

nze tzv ns/ gohfyne bJh jdkfJsK

1H gqPB gZso d/ uko :{fBN j'Dr/.;?ePB A-D sZe d/ gqPB :{fBN I-IV ftu'A g[ZS/ ikDr/. jo :{fBN ftu d' gqPB g[ZS/ ikDr/.

**2H ftfdnkoEh B/ e[b gzi gqPB eoB/ jB. jo Gkr ftu'A fJe gqPB bklwh j?.
gzitK gqPB fe;/ th Gkr ftu'A ehsk ik ;edk j?.**

3H jo/e gqPB d/ 08 nze jB.

**4H g/go ;?ZN eoB tkbk i/eo ukj/ sK gqPBK dh tzv nr'A tX s'A tX uko T[g
gqPBK ftu eo ;edk j?.**

SEMESTER-II
Punjab History & Culture (C. 320 to 1000A.D)
(Special Paper in lieu of Punjabi compulsory)
Course Code: BSNL -2431

Time: 3 Hours

Max. Marks: 50

Theory: 40

CA: 10

Instructions for the Paper Setters

Eight questions of equal marks (8 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. 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. 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-II
ENGLISH (COMPULSORY)
Course Code: BARL/BSML/BSNL/BCSL/BECL/BCRL/ BBRL-2212

Time: 3 Hours
Marks: 50

Max.

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

B.A./B.Sc. Semester–II
Session 2018-19
Course Name: Calculus and Differential Equations
Course Code: BARM/BECM/ BCSM/BSNM-2333

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

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. Codrington: 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 2018-19
Course Name: Calculus
Course Code: BARM/BECM/ BCSM/BSNM-2333

Time: 3 hrs.
40

Max. Marks:

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-2018-19)
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-2018-19)
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-2018-19)
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 CCl₄, 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 2018-19)
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 Boylsted
4. Network Analysis & Synthesis by K.M Soni.
5. Network Analysis & Synthesis by R. Sudhakar.

B.Sc. (Non-Medical) Semester–II (Session 2018-19)
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 2018-19)
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)

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)

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)

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

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/BCA/B.Com/BBA Semester – II (Session 2018-19)

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: 2

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