FACULTY OF LIFE SCIENCES

SYLLABUS
of
B. Sc. BIOTECHNOLOGY (Semester: I-II)

(Under Continuous Evaluation System)

Session: 2018-19

The Heritage Institution

KANYA MAHA VIDYALAYA
JALANDHAR
(Autonomous)

B.Sc. Biotechnology (Session2018-19)

Scheme of Studies and Examination

Biotechnology Semester I							
Course Code	**Course Name**	**Course Type**	**Marks**				**Examination time (in Hours)**
			Total	**Ext.**		**CA**	
				L	**P**		
BBTL -1421 BBTL -1031 BBTL -1431	Punjabi (Compulsory) Basic Punjabi PHC	C	50	40	-	10	3
BBTL-1102	Communication Skills in English	C	50	40	-	10	3
BBTM-1483	Zoology-A	C	60	30	18	12	3+3
BBTM-1074	Botany-A	C	60	30	18	12	3+3
BBTM-1085	Inorganic Chemistry-A	C	60	30	18	12	3+3
BBTM-1086	Organic Chemistry-A	C	60	30	18	12	3+3
BBTM-1137	Computer Fundamentals and bioinformatics	C	60	30	18	12	3+3
BBTM-1348	General Microbiology -A	C	60	30	18	12	3+3
BBTM-1089	Biochemistry – A	C	60	30	18	12	3+3
AECD-1161	*Drug Abuse: Problem Management and Prevention (Compulsory)	AECC	50	40	-	10	3
SECF-1492	*Foundation Programme	VBCC	25	-	-	-	
Total			**520**				

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

C-Compulsory

AECC- Ability Enhancement Compulsory Course

VBCC- Value Based Compulsory Course

Biotechnology Semester II							
Course Code	**Course Name**	**Course Type**	**Marks**				**Examination time (in Hours)**
			Total	**Ext.**		**CA**	
				L	**P**		
BBTL -2421 BBTL -2031 BBTL -2431	Punjabi (Compulsory) Basic Punjabi PHC	C	50	40	-	10	3
BBTM-2102	Communication Skills in English	C	50	25	15	10	3+3
BBTM-2483	Zoology-B	C	60	30	18	12	3+3
BBTM-2074	Botany-B	C	60	30	18	12	3+3
BBTM-2085	Inorganic Chemistry-B	C	60	30	18	12	3+3
BBTM-2086	Organic Chemistry-B	C	60	30	18	12	3+3
BBTL-2337	Biostatistics	C	40	32	-	8	3
BBTM-2348	General Microbiology -B	C	60	30	18	12	3+3
BBTM-2089	Biochemistry – B	C	60	30	18	12	3+3
AECD-2161	*Drug Abuse: Problem Management and Prevention (Compulsory)	AECC	50	40	-	10	3
SECM-2502	*Moral Education Programme	VBCC	25	-	-	-	1
Total			**500**				

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

C-Compulsory

AECC- Ability Enhancement Compulsory Course

VBCC- Value Based Compulsory Course

BSc Biotechnology (Semester – I)

Session: 2018-19

Course Code: BBTL-2421

Punjabi Compulsory

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

Theory: 40

CA-10

ਪਾਠ ਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਸੈਕਸ਼ਨ-ਏ

ਆਤਮ ਅਨਾਤਮ (ਕਵਿਤਾ ਭਾਗ),(ਸੰਪ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ) ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

(ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ, ਸਾਰ) 08 ਅੰਕ

ਸੈਕਸ਼ਨ-ਬੀ

ਇਤਿਹਾਸਕ ਯਾਦਾਂ (ਇਤਿਹਾਸਕ ਲੇਖ ਸੰਗ੍ਰਹਿ) ਸੰਪਾ. ਸ.ਸ.ਅਮੋਲ,ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ। (ਲੇਖ 1 ਤੋਂ 6)

(ਨਿਬੰਧ ਦਾ ਸਾਰ, ਲਿਖਣ-ਸ਼ੈਲੀ) 08 ਅੰਕ

ਸੈਕਸ਼ਨ-ਸੀ

(ੳ) ਪੈਰ੍ਹਾ ਰਚਨਾ

(ਅ) ਪੈਰ੍ਹਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ। 08 ਅੰਕ

ਸੈਕਸ਼ਨ-ਡੀ

(ੳ) ਪੰਜਾਬੀ ਧੁਨੀ ਵਿਉਂਤ : ਉਚਾਰਨ ਅੰਗ, ਉਚਾਰਨ ਸਥਾਨ ਤੇ ਵਿਧੀਆਂ, ਸਵਰ, ਵਿਅੰਜਨ, ਸੁਰ-ਪ੍ਰਬੰਧ।

(ਅ) ਭਾਸ਼ਾ ਵੰਨਗੀਆਂ : ਭਾਸ਼ਾ ਦਾ ਟਕਸਾਲੀ ਰੂਪ, ਭਾਸ਼ਾ ਅਤੇ ਉਪ੍ਭਾਸ਼ਾ ਦਾ ਅੰਤਰ, ਪੰਜਾਬੀ ਉਪਭਾਸ਼ਾਵਾਂ ਦੇ ਪਛਾਣ ਚਿੰਨ੍ਹ। 08 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁਛੇ 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 08 ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅਗੋਂ ਵਧ ਤੋਂ ਵਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

BSc Biotechnology (Semester-I)

Session 2018-19

Course Code: BBTL-1031

Basic Punjabi

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

Theory: 40

CA-10

ਪਾਠ ਕ੍ਰਮ

ਸੈਕਸ਼ਨ ਏ

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

ਸੈਕਸ਼ਨ ਬੀ

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

ਸੈਕਸ਼ਨ ਸੀ

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

ਸੈਕਸ਼ਨ ਡੀ

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

08ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁਛੇ ਜਾਣਗੇ।

2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿਚੋ੍ਂ 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।

BSc Biotechnology (Semester-I)

Session 2018-19

Course Code: BACL-1431

Punjab History & Culture (From Earliest Times to C 320)

(Special Paper in lieu of Punjabi compulsory)

Time: 3 Hours

Max. Marks: 50

Theory: 40

CA: 10

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 A

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

Unit- B

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.

Section C

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

Section D

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.

B.Sc. Biotechnology (Semester-I)

Session2018-19

Course code: BBTL-1102

Communication Skills in English -I

Time: 3 Hours

Max. Marks: 50

Theory: 40 Marks

CA: 10 Marks

The syllabus is divided in four sections as mentioned below:

Section–A

Reading Skills: Reading Tactics and strategies; Reading purposes–kinds of purposes and associated comprehension; Reading for direct meanings.

Section–B

Reading for understanding concepts, details, coherence, logical progression and meanings of phrases/ expressions.

Activities:

- Comprehension questions in multiple choice format
- Short comprehension questions based on content and development of ideas

Section–C

Writing Skills: Guidelines for effective writing; writing styles for application, personal letter, official/ business letter.

Activities

- Formatting personal and business letters.
- Organising the details in a sequential order

Section–D

Resume, memo, notices etc.; outline and revision.

Activities:

- Converting a biographical note into a sequenced resume or vice-versa
- Ordering and sub-dividing the contents while making notes.
- Writing notices for circulation/ boards

Recommended Books:

1. *Oxford Guide to Effective Writing and Speaking* by John Seely.
2. *Business Communication,* by Sinha, K.K. Galgotia Publishers, 2003.
3. *Business Communication* by Sethi, A and Adhikari, B., McGraw Hill Education 2009.
4. *Communication Skills* by Raman, M. & S. Sharma, OUP, New Delhi, India (2011).
5. *English Grammar in Use: A Self Study Reference and Practice Book Intermediate Learners Book* by Raymond Murphy, Cambridge University Press.

Instructions for the paper setter and distribution of marks:

The question paper will consist of four sections and distribution of marks will be as under:

The question paper will be divided into four sections:

Section-A: The question of theoretical nature will be set from Section-A of the syllabus with internal choice and it will consist of 8 marks.

Section-B: Two comprehension passages will be given to the students based on the Section-B and the candidates will have to attempt one carrying 8 marks.

Section-C: Two questions will be given based on the topics given in the Section-C and the candidates will have to attempt one carrying 8 marks.

Section-D: One out of the two questions will have to be attempted by the candidates based on the topics given in Section-D of the syllabus. It will carry 8 marks.

Important Note:

The candidate will have to attempt five questions in all selecting one from each section of the question paper and the fifth question may be attempted from any of the four sections.

(8 x 5 = 40 marks)

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Course Code: BBTM-1483

Zoology–A

Time: 3 Hrs. **Max. Marks: 60**

Theory: 30

Practical: 18

CA: 12

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

Digestive System: The alimentary canal and associated glands of Man. Teeth : types, dental formula and function. Glands: Pancreas, Liver, Gastric glands. Digestion of dietary constituents, regulation of digestive processes and absorption, Types of nutrition, feeding mechanisms, extra and intracellular digestion, enzymatic digestion, symbiotic digestion.

Unit – II

Circulatory System: General plan of circulation in Man, structure of human heart. Origin and regulation of heart beat, cardiac cycle, electrocardiogram, Cardiac output and fluid pressure, Composition and functions of blood and lymph, Molecular structure and function of haemoglobin, Blood clotting, blood groups including Rh-factor, Homeostasis, Haemopoiesis.

Unit – III

Respiratory System: Respiratory system of man. Transport of O_2 and CO_2, Oxygen dissociation of haemoglobin, Bohr effect, chloride shift, Haldane effect, control of breathing.

Unit – IV

Integumentary System: Integument and its derivatives in mammals.

Books Recommended:

1.Guyton, A.C. & Hall, J.E. (2006). Textbook of Medical Physiology. XI Edition. Hercourt Asia PTE Ltd. /W.B. Saunders Company.

2. Tortora, G.J. & Grabowski, S. (2006). Principles of Anatomy & Physiology. XI Edition. John wiley & sons,Inc.

3. Sobti, R.C. & Nigam, S.K. (2002). Structural & function biology of chordates, Vishal Publishers, Jalandhar.

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Course Code: BBTM-1483(P)

Zoology–A

(Practical)

Time:3 Hrs **Practical Marks: 18**

Insructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitteed for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Experiments

1. Demonstration of osmosis and diffusion.
2. Analysis of food stuff for the presence of starch, protein and fats.
3. Determination of blood groups of human blood samples.
4. Recording of blood pressure of man.
5. Estimation of hemoglobin content.
6. Study of the following prepared slides: histology of man (compound tissues).
7. Visit to clinical laboratory / hospital for demonstration of ECG, ECHO, X-ray, ultrasound, CT-scan and MRI.

Books:

1. Sobti, R.C. & Sharma, V.L. (2005). Basics of Biotechnology: Introduction of Life Sciences. Vishal Publishers, Jalandhar.
2. Sobti, R.C. (2005). Introduction to Biotechnology, Part-2, Concepts Tools and Application, Vishal Publishers.

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Course Code: BBTM-1074

Botany–A

(Theory)

Time: 3 Hrs. **Max. Marks: 60**

Theory: 30

Practical: 18

CA: 12

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

Apical Meristem: Tunica corpus and Histogen theories, reproductive apex and development of flower. Secondary growth in stem and root of *Helianthus*. Study of anomalous structure in *Boerhavia, Nyctanthes, Mirabilis and Dracena.*

Unit – II

Structure and development of anther and male gametophyte. Structure and development of ovule and female gametophyte; different types of ovules and embryo sacs

Unit – III

Pollination and fertilization; structure, development and function of endosperm and embryo (dicot and monocot), polyembryony, Self-pollination, cross -pollination, male sterility, selfincompatibility.

Unit – IV

Terminology pertaining to floral description, taxonomic importance of floral parts of the following families: Solanaceae: Solanum, Petunia Liliaceae: Asphodelus/Asparagus, Rutaceae: Citrus, Murraya

Books Recommended :

1.Bhojwani, S.S. and Bhatnagar, S.P. (2000). The Embryology of Angiosperms, 4th revised and enlarged edition. Vikas Publishing House, Delhi.

2. Peau, K. (1977). Anatomy of Seed Plants, 3rd edition. John Wiley & Sons, New York.

3.Pegeri, K. And Vander Pijl (1979). The Principles of Pollination Biology, Pergamon Press, Oxford.

4.Dickinson, W.C. 2000 Integrative Plant Anatomy. Harcourt Academic Press, USA.

6. Fahn, A. 1974 Plant Anatomy. Pergmon Press, USA and UK.

7. Hopkins, W.G. and Huner, P.A. 2008 Introduction to Plant Physiology. John Wiley and Sons.

8. Taiz, L. and Zeiger, E. 2006 Plant Physiology, 4 th edition, Sinauer Associates Inc .MA, USA

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Course Code: BBTM-1074(P)

Botany–A

(Practical)

Time:3 Hrs. **Practical Marks: 18**

Insructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitteed for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Experiments

Plant Anatomy:

Anatomical studies of normal and abnormal secondary growth in general as mentioned in syllabus.

Embryology:

Study of the permanent slides pertaining to micro and megasporogenesis and female gametophytes and endosperms.

Taxonomy:

a) Description of flowers including floral diagram, floral formula, V.S. of flower of the representative genera of families mentioned in syllabus.
b) Identification and short morphological economic note on the specimens included in Units IV & V of the theory paper A.
c) Each student is required to submit a family wise herbarium consisting of atleast 20 properly pressed and mounted plants.

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Course Code: BBTM-1085

Inorganic Chemistry –A

(Theory)

Time: 3 Hrs. **Max. Marks: 60**

Theory: 30

Practical: 18

CA: 12

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

Introduction, Wemer's coordination theory, naming of co-ordinate complexes. Co-ordination numbers 1-12 and their stereo-chemistries. Co-ordination numbers and stereo chemistries of the common transition metal : Ti,V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Mo, & W. Factors affecting co-ordination numbers and stereo-chemistry Isomerism in coordination compounds. (Books Consulted-Number 1,3,8).

Unit – II

Valence bond theory for co-ordinate complexes, inner and outer orbital complexes, electro-neutrality and back bonding, limitations of V.B. theory.

Unit – III

Crystal field theory-Spliting of d-orbitals in octahedral, tetrahedral, cubic and square planer fields of ligands, calculation of C.F.S.E. in high spin and low spin octahedral and high spin tetrahedral complexes, factors affecting the 10 Dq value, structure effects of crystal

field splitting (Jahn-Teller distortion). Paramagnetism, diamagnetism, ferro and anti ferromagnetism, Microstates and spectroscopic terms, a calculation of spectroscopic terms for d^1 –d^2 electronic configurations using LS coupling, Hunds rule for finding the ground state term, limitations of C.F.T.

Unit – IV

Molecular Orbital Theory- Evidence for covalent character in bonding, MOEL diagram for octahedral and tetrahedral complexes involving σ as well as π bonding, charge transfer transitions.

Books Recommended:

1. G.L. Eichorn(1973), Inorganic Biochemistry, Vol. I, Elsevier,
2. R.Hilgenfeld & W.Saengar (1982), Topics in Current Chemistry, Vol.101.page 38-65, Top.Curr. Chem.
3. J.E. Huheey(1899), Inorganic Chemistry, 4th ed, Pearson.
4. F.A. Cotton & G. Wilkinson(1963), Advanced Inorganic Chemistry,6th edition , Interscience Publishers.
5. B.E. Douglas & D.H. McDaniel(1994), Concepts & Models of Inorganic Chemistry,3rd edition , John Wiley & Sons.
6. A. Earnshaw(1968), Introduction of Magnetochemistry, ,1st edition, Academic press.
7. R.S.Drago (1977), Physical Methods Inorganic Chemistry, 2nd edition , Chapman and Hall.
8. Cowan, J.A., (1997), Inorganic Biochemistry – An Introduction, 2nd edition, Wiley-VCH.

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Course Code: BBTM-1085(P)

Inorganic Chemistry –A

(Practical)

Time: 3 Hrs. **Practical Marks: 18**

Insructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitteed for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Experiments

Volumetric Analysis:

Iodimetry, Iodometry, Redox titrations using $K_2Cr_2O_7$ and $KMnO_4$.

Complexometric titration using EDTA Ca^{++},Mg^{++}: in context with study of hardness of water.

References:

G. Svehla, B. Sivasankar(2012), Vogel's Qualitative Inorganic Analysis

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Course Code: BBTM-1086

Organic Chemistry -A

(Theory)

Time: 3 Hrs. **Max. Marks: 60**

Theory: 30

Practical: 18

CA: 12

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

Conformations of alkanes and cycloalkanes; conformational analysis of ethane, Butane, cyclohexane, monosubstituted and disubstituted cyclohexane, conformation of small, medium and large ring cycloalkanes and of polycyclic ring systems. Factors that affect reaction rates of these reactions, structure and relative stabilities of free radicals, halogenation, mechanism of chlorination of methane, selectivity in chlorination and bromination of higher alkanes .

Alcohols as Bornsted bases and acids, reactions of alcohols with hydrogen halides with detailed mechanism structure and bonding in carbocations and their relative stabilities, potential energy diagrams for chemical reactions.

Unit-II

Stereochemistry of alkenes, naming stero isomeric alkenes by E-Z system, mechanism of hydrogenation of alkenes, stereochemistry of hydrogenation of cycloalkenes, Dehydration of alcohols and regioselectivity of these reactions, Acid catalysed dehydrohalogenation of alcohols with complete mechanistic discussion, Mechanism of dehydrohalogenation of alkylhalides (E_1 mechanism), stereoselective and antielimination in E_2 reactions, the E_1 Mechanism, electrophilic addition of hydrogen halides to alkenes its regioselectivity explained on the basis of mechanism , free radical addition of hydrogen bromide to alkenes, acid catalysed hydration of alkene with mechanism stereochemistry of halogen addition to alkenes and its mechanistic explanation. Hypohalous acid addition to alkenes, epoxidation of alkenes.

Unit-III

Stereochemistry: Molecular chirality, enantiomers/symmetry in achiaral structures, chiral centres in chiral molecules, properties of chiral molecules-optical activity, absolute and relative configuration, the Cahn-Ingold Prelog R-S notional system physical properties of enantiomers. Stereochemistry of chemical reactions that produce chiral centres, chemical reactions that produce stereoisomers, Resolution of enantionmers, chiral centres other than carbon, prochirality.

Unit-IV

Functional group transformation by nucleophilic substitution, the biomolecular (SN^2), mechanism of nucleophilic substitution , stereochemistry of SN^2 reactions, how SN^2 reactions occur, steric effect in SN^2 reactions, nucleophiles and nucleophilicity,the unimolecular (SN^1) mechanism of nucleophilies substitution, carbocation stability and the rate of substitution, by the SN^1 mechanism sterochemistry of SN^1 reactions, carbocation real arrangements in SN^1 reactions, solvent effects, subtitution and elimination as competing reactions. The SN^1 -SN^2 continum.

Books Recommended:

1. R.T. Morison and R.N. Boyd, K. Bhattacharjee(2010), Organic Chemistry,7th edition, Pearson.
2. I. L. Finar (1963), Organic Chemistry, Vol.I, IV Ed, Longmans.
3. J. March, Advanced Organic Chemistry(2015), Reactions Mechanisms and Structure, 7th edition,. Wiley-Blackwell
4. Schaum's Outlines Series (2009), Theory and Problems of Organic Chemistry, 4th edition, Tata McGraw - Hill .
5. I.L. Finar (2002), Problems and their Solution in Organic Chemistry, 1st edition, Prentice Hall Press.
6. J. D. Robert and M. C. Caserio, (1977), Basic principles of Organic Chemistry,2nd edition, Benjamin-Cummings .
7. D. J. Cram and G. S. Hammond, G.S. Hendrickson (1970), Organic Chemistry ,3rd edition,. McGraw-Hill
8. E.L. Eliel (1962), Stereochemistry of Carbon Compounds, 1th edition,. Tata McGraw-Hill
9. W. Camp, (1975), Organic Spectroscopy, 1st edition, Macmillan .
10. Robert M. Giuliano and F. A. Carey (2016), Organic Chemistry, 10th edition, McGraw-Hill .

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Course Code: BBTM-1086(P)

Organic Chemistry -A

(Practical)

Course outcomes:

Students will be able to

CO1.Detect elements (N, S and halogens) and Detect functional groups (Aldehydes,ketones carbohydrates and hydrocarbons) in simple organic compounds and prepare their derivatives.

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Course Code: BBTM-1086(P)

Organic Chemistry -A

(Practical)

Time: 3 Hrs **Practical Marks: 18**

Insructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitteed for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Experiments

Complete identification including derivation of following organic compounds:

- Amides
- Amines
- Carboxylic acids and phenols.

Books Recommended:

Arthur Vogel (1978), Vogel's Textbook of practical organic chemistry, including qualitative organic analysis, 4th ed., Longman Scientific and Technical.

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Course Code: BBTM-1137

Computer Fundamentals and Bioinformatics

(Theory)

Time: 3 Hrs. **Max. Marks: 60**

Theory: 30

Practical: 18

CA: 12

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

Computers: General introduction to computers, organization of computers, Computer hardware and software. Data Storage Devices: Primary and secondary Storage devices.

Unit-II

Input/Output Devices: Key-tape/diskette devices, light pen mouse and joystick. Printed Output: Serial, line, page, printers; plotters, visual output; voice response units.

Unit-III

Introduction to bioinformatics: History, Pairwise and Multiple Sequence Alignment, Gap Penalties, Significance of Sequence Alignment.

Unit-IV

Primary and Secondary databases, Online resources of Bioinformatics: Introduction about: NCBI, EBI,DDBJ, Expasy, PDB, NDB, Motif and domain databases i.e. Pfam, Prosite, SMART. BLAST(Basic Local Alignment Search Tool)

Books Recommended:

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. Jin Xiong.(2006) Essential Bioinformatics. Cambridge University Press.
4. Baxevanis B.F. and Quellette F. (2004). Bioinformatics a Practical Guide to the Analysis of Genes and Proteins. Wiley-Interscience.

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Course Code: BBTM-1137(P)

Computers & Bioinformatics Fundamentals

(Practical)

Time: 3Hrs. **Practical Marks: 18**

Insructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitteed for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

1. Ms-Office: word, Excel, Power-point
2. Introduction about Various Databases at NCBI, EMBL, DDBJ.
3. GenBank Format, FASTA format etc
4. Basic Local Alignment Search tools (BLAST)

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Course Code: BBTM-1348

General Microbiology–A

(Theory)

Time: 3 Hrs. **Max. Marks: 60**

Theory: 30

Practical: 18

CA: 12

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

Principles of Microbiology- Principles and application of bright field, dark field phase contrast, fluorescence & immunofluorescence, electron microscopy, bacterial nutrition- Introduction, Nutritional forms of bacteria, Transport mechanisms, Microbial culture media, Sterilization- Basic concept, physical and chemical methods of sterilization.

Unit - II

General Features-Bacteria, fungi, Neurospora, yeast and viruses. Microbes in extreme environments- the thermophiles and alkalophiles, culture collection, Methods of purification and preservation.

Unit-III

Nature of the Microbial Cell Surface. Gram positive and gram negative bacteria with type of flagella. Introduction of antibiotics and their effect on microbes, Serotypes, Structure and anatomy of bacterial cell walls, Different types of bacterial staining.

Unit - IV

Bacterial Classification: Bacterial classification and taxonomy based on Bergey's Manual of Determinative bacteriology.

Books Recommended:

1. Tortora, G.J., Funke, B.R. and Case, C.L. (2015). Microbiology: An introduction, 12th Edition, Pearson College Div.
2. Madigan, M. T., Martinko, J. M., Bender, K.S., Buckly, D. H., Stahl, D. A. And Brock, T. (2017). Brock's Biology of microorganisms, 14th Edition, Pearson Education.
3. Willey, J., Sherwood, L. And Wooverton, C. J. (2017). Prescott's Microbiology, 10th Edition, McGraw-Hill Education/ Asia
4. Harvey, R.A. and Cornelissen, C. N. (2012). Lippincott's Illustrated Reviews: Microbiology, 3rd Edition, Lippincott Williams and Wilkins.
5. Pelczar, M.J., Chan, E.C.S. and Krieg, N.R. (2009). Microbiology: An application based approach, Tata McGraw Hill
6. Talaro, K.P. and Chess, B. (2008). Foundations in Microbiology, 8th Edition, Tata McGraw-Hill Higher Education.
7. Black, J.G. and Black, L.J. (2008). Microbiology: Principles and Explorations, 7th Edition, John Wiley & sons.
8. Purohit, S.S. (2006). Microbiology: Fundamentals and Applications, 7th Edition, Agrobios (India).

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Course Code: BBTM-1348(P)

General Microbiology–A

(Practical)

Time: 3 Hrs. **Practical Marks: 18**

Insructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitteed for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

1. Aseptic techniques of sterilization.
2. Cleaning of glassware.
3. Preparation of media, cotton plugging and sterilization
4. Isolation of micro-organism from air, water and soil samples. Dilution and pour plating, Colony purification.
5. Preservation of microorganisms.
6. Identification of bacteria by simple staining, negative staining and Gram staining.
7. Detection of specific bacteria by Wet mount preparation method and Hanging drop mount method.

Books Recommended:

1. Cappuccino, J.G. and Sherman, N. (2014). Microbiology: A Laboratory Manual 10th Edition, Pearson Education India.
2. Dubey R.C. and Maheshwari (2012). Practical Microbiology 5th edition: S. Chand and company ltd.New Delhi.
3. Leooffee, M.J. and Pierce, B.E. (2015). Microbiology: Laboratory Theory and Application, 3rd Edition, Morton Pub. Co.
4. Sastry, A.S. and Bhat, S. (2018). Essentials of Practical microbiology. Jaypee Brothers Medical Publishers

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Course Code: BBTM-1089

Biochemistry-A

(Theory)

Time: 3 Hrs. **Max. Marks: 60**

Theory: 30

Practical: 18

CA: 12

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

Introduction of Biochemistry, Water and its Properties: Role of water in life, Structure of water molecules, Physico-chemical properties of water, Dissociation and association constants, pH and buffers. pI, pka, Hasselbach Hendersson equation and its implications.

Unit - II

Carbohydrates: Introduction, Monosaccharides: Families of monosaccharides: aldoses and ketoses, trioses, tetroses, pentoses, and hexoses, epimers, and anomers of glucose. Furanose and pyranose forms of glucose and fructose, Mutarotation, Structure and functions of Sugar derivatives, Disaccharides; concept of reducing and non-reducing sugars, Haworth projections of maltose, lactose, and sucrose, Structural and functional properties of Polysaccharides: storage polysaccharides - starch and glycogen; Structural Polysaccharides - cellulose, peptidoglycan and chitin

Unit - III

Structure and role of proteoglycans, glycoproteins and glycolipids (gangliosides and lipopolysaccharides). Carbohydrates as informational molecules

Unit - IV

Structure of nucleosides and nucleotides. Nucleic acid structure –Watson-Crick model of DNA, Structural features of different types of DNA, Structure of major species of RNA - mRNA, tRNA and rRNA. Nucleic acid chemistry - UV absorption, effect of temperature, acid and alkali on DNA. Structure and functions of biologically important nucleotides as - source of energy, component of coenzymes, second messengers.

Books Recommended:

1. Voet, D.,Voet, J.G. and Prait, C.W. (2013). Principles of Biochemistry, 4th Edition, Wiley.

2. Stryer, L. (2015). Biochemistry, 8th Edition, W.H. Freeman and Company, New York

3. Berg, J.M., Tymoczko, J. L. And Stryer, L. (2011). Biochemistry, 7th Edition, Freeman.

4. Nelson, D.L. And Cox, M.M. (2013). Principles of Biochemistry, 7th Edition, Freeman

5. Mathew, C.K., Van, K.E. and Anthern, K.G. (2012). Biochemistry 4th Edition, Addison Wesley.

6. Lehninger, A.L., Nelson, D.L. and Lox, M.M. (2017). Principles of Biochemistry, 7th Edition, CBS Publishers and Distributors, New Delhi.

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Course Code: BBTM-1089(P)

Biochemistry-A

(Practical)

Time: 3 Hrs. **Practical Marks: 18**

Insructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitteed for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

1. Preparation of physiological buffers.
2. Verification of Beer Lamberts Law for P-nitrophenol or cobalt chloride.
3. Determination of pKa value of P-nitrophenol
4. Estimation of carbohydrate in given solution by anthrone method.
5. Estimation of sugar in biological samples by dubois method.
6. Estimation of DNA/RNA

Books Recommended:

1. Plummer D.T. (2017) An Introduction to Practical Biochemistry. 3rd Edition Tata McGraw Hill Education.
2. Sawhney, S.K. and Randhir singh (2001). Introductory Practical Biochemistry. Narosa Publishing House.
3. Wilson, K. And Walker, J. (2010).Princiles and Techniques of Biochemistry, 3rd Edition, McGraw Hill Education.

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Drug Abuse: Problem, Management and Prevention (Compulsory)

Course Code: AECD-1161

Problem Of Drug Abuse

(Theory)

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

Theory: 40

CA:10

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.

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.

2) Types of Abused Drugs and their Effects.

1) Stimulants: Amphetamines – Benzedrine, Dexedrine, Cocaine.

2) Depressants: Alcohol Barbiturates: Nembutal, Seconal, Phenobarbital and Rohypnol.

3) Narcotics: Heroin, Morphine, Oxycodone.

4) Hallucinogens: Cannabis, Marijuana, Hashish, Hash Oil, MDMA, LSD.

5) Steroids.

3) 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.
23
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.

B.Sc. Biotechnology (Semester-I)

Session: 2018-19

Course Code: SECF-1492

Foundation programme

(Theory)

Time: 3 Hrs. **Max. Marks: 25**

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. 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

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	***The Vedas, The Gita* & Eastern Philosophy**	1.5
4	***The Holy Bible* & 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

SYLLABUS

Module1: Being a Human: Introduction & Initial Assessment

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

Module 2: The Human Story

- Comprehensive overview of human intellectual growth right from the birth of human history
- The wisdom of the Ancients
- Dark Middle Ages
- Revolutionary Renaissance

- Progressive Modern Times
- Most momentous turning points, inventions and discoveries

Module 3: *The Vedas, The Gita* & The Indian Philosophy

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

Module 4: *The Holy Bible* & Genesis

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

Module 5: Changing Paradigms in Society, Religion & Literature

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

Module 6: Woman: A Journey through the Ages

- Status of women in pre-vedic times
- Women in ancient Greek and Roman civilizations
- Women in vedic and ancient India
- Status of women in the Muslim world
- Women in the modern world
- Crimes against women

- Women labour workforce participation
- Women in politics
- Status of women- our dream

Module 7: Makers of Modern India

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

Module 8: Racism: Story of the West

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

Module 9: Modern India at a Glance: Geographical, Political, Economic & Cultural Perspective

- Geographical and physical features of India
- States, Union Territories and their governance
- India and its neighbours
- India in the global economy
- Cultural diversity of India

Module 10: 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 11: 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 12: 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 13: 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

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

Course Code: BBTL-2421

Punjabi (Compulsory)

(Theory)

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

Theory:40

CA:10

ਪਾਠ ਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਸੈਕਸ਼ਨ-ਏ

ਆਤਮ ਅਨਾਤਮ (ਕਹਾਣੀ ਭਾਗ),(ਸੰਪ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)

ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

(ਵਿਸ਼ਾ-ਵਸਤੂ, ਪਾਤਰ ਚਿਤਰਨ) 08 ਅੰਕ

ਸੈਕਸ਼ਨ-ਬੀ

ਇਤਿਹਾਸਕ ਯਾਦਾਂ (ਇਤਿਹਾਸਕ ਲੇਖ ਸੰਗ੍ਰਹਿ) ਸੰਪਾ. ਸ.ਸ.ਅਮੋਲ,ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ। (ਲੇਖ 7 ਤੋਂ 12)(ਸਾਰ, ਲਿਖਣ ਸ਼ੈਲੀ) 08 ਅੰਕ

ਸੈਕਸ਼ਨ-ਸੀ

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

(ਅ) ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ 08 ਅੰਕ

ਸੈਕਸ਼ਨ-ਡੀ

(ਓ) ਸੰਖੇਪ ਰਚਨਾ

(ਅ) ਮੁਹਾਵਰੇ ਅਤੇ ਅਖਾਣ 08 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁਛੇ 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 08 ਅੰਕ ਹਨ।

4. ਪੇਪਰ ਸੈਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅਗੋਂ ਵਧ ਤੋਂ ਵਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

Course Code: BBTL -2431

Punjab History & Culture (C 321 to 1000 A.D.)

(Special paper in lieu of Punjabi Compulsory)

(Theory)

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

Theory: 40

CA: 10

Instructions for the Paper Setters

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 sections. 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 Gurpta 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.

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

Course Code: BBTM-2102

Communication Skills in English-II

(Theory)

Time: 3 hours (Theory) **Max. Marks: 50**

3 hours (Practical) **Theory: 25 Marks**

Practical: 15 Marks

CA: 10 Marks

Course Contents:

Section–A

Listening Skills: Barriers to listening; effective listening skills; feedback skills.

Activities: Listening exercises – Listening to conversation, News and TV reports

Section–B

Attending telephone calls; note taking and note making.

Activities: Taking notes on a speech/lecture

Section–C

Speaking and Conversational Skills: Components of a meaningful and easy conversation; understanding the cue and making appropriate responses; forms of polite speech; asking and providing information on general topics.

Activities: 1) Making conversation and taking turns

2) Oral description or explanation of a common object, situation or concept

Section–D

The study of sounds of English, stress

Situation based Conversation in English

Essentials of Spoken English

Activities: Giving Interviews

Recommended Books:

1. *Oxford Guide to Effective Writing and Speaking* by John Seely.

2. *Business Communication* by Sethi, A and Adhikari, B., McGraw Hill Education 2009.

3. *Communication Skills* by Raman, M. & S. Sharma, OUP, New Delhi, India (2011).

4. *A Course in Phonetics and Spoken English* by J. Sethi and P.V. Dhamija, Phi Learning.

Instructions for the paper setters and distribution of marks:

The question paper will consist of four sections and distribution of marks will be as under:

The question paper will be divided into four sections.

Section-A: Two questions with internal choice will be set from Section-A of the syllabus and these questions will be theoretical in nature corresponding to the syllabus of Section-I. Each will carry 5 marks.

Section-B: Two questions with internal choice will be set from Section-B of the syllabus. One will be theoretical and the second will be practical in nature. Each will carry 5 marks.

Section-C: Two questions with internal choice will be set from Section-C of the syllabus and these will be theoretical in nature. Each will carry 5 marks.

Section-D: Two questions with internal choice will be set from Section-D of the syllabus. One question will be theoretical in nature and the other will be practical in nature (based on phonetic transcription and stress). Each will carry 5 marks.

Important Note:

The candidate will have to attempt five questions in all selecting one from each section of the question paper and the fifth question may be attempted from any of the four sections.

(5 x 5 = 25 marks)

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

Course Code: BBTM-2102(P)

Communication Skills in English-II

(Practical/Oral Testing)

Marks: 15

Course Contents:

1. Oral Presentation with/without audio visual aids.
2. Group Discussion.
3. Listening to any recorded or live material and asking oral questions for listening comprehension.

Questions:

1. Oral Presentation will be of 5 to 7 minutes duration. (Topic can be given in advance or it can be of student's own choice). Use of audio visual aids is desirable.
2. Group discussion comprising 8 to 10 students on a familiar topic. Time for each group will be 15 to 20 minutes.

Note: Oral test will be conducted by external examiner with the help of internal examiner.

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

Course Code:BBTM-2483

Zoology–B

(Theory)

Time: 3 Hrs. **Max. Marks: 60**

Theory: 30

Practical: 18

CA: 12

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

Urinogenital System: Structure of kidney and nephron, strcuture of gonads and urinogenital ducts, Menstural cycle, Urine formation, osmoregulation.

Unit-II

Endocrine System: Structure and physiology of thyroid, parathyroid, adrenal, hypothalamus, pituitary, pancreas and gonads of mammals.

Unit-III

Nervous System: Anatomy of brain and cranial nerves of man, Nature, origin and propagation of impulse along the axon, synapse and myoneural junctions. Sense Organs

Unit-IV

Skeletal System: Red & White muscle fibre, striped, unstriped and cardiac muscle fibre in man. Ultrastructure, physiological and biochemical basis of skeletal muscle contraction.

Books Recommended:

1. Sobti, R.C. & Nigam, S.K. (2002). Structural & functional biology of chordates, Vishal Publishers, Jalandhar.

2. Guyton, A.C. & Hall, J.E. (2006). Textbook of Medical Physiology. XI Edition. Hercourt Asia PTE Ltd. /W.B. Saunders Company.

2. Tortora, G.J. & Grabowski, S. (2006). Principles of Anatomy & Physiology. XI Edition. John wiley & sons,Inc.

3. Sobti, R.C. & Nigam, S.K. (2002). Structural & function biology of chordates, Vishal Publishers, Jalandhar.

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

Course Code: BBTM-2483(P)

Zoology–B

(Practical)

Time: 3 Hrs. **Max. Marks: 18**

Note. The question paper will be set by the examiner based on the syllabus.

1. Study the following system of white rat with the help of charts / models / videos : Digestive, arterial, venous and urinogenital systems.
2. Make a temporary preparation of the following:

   Blood smear of mammals.
3. Study of the skeleton of human.
4. Analysis of urine for urea, chloride, glucose and uric acid
5. Estimation of urea, uric acid, creatinine and bilirubin from serum.
6. Estimation of protein and bile pigment in urine.

Books:

1. Sobti, R.C. & Sharma, V.L. (2005). Basics of Biotechnology: Introduction of Life Sciences. Vishal Publishers, Jalandhar.
3. Sobti, R.C. (2005). Introduction to Biotechnology, Part-2, Concepts Tools and Application, Vishal Publishers.

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

Course Code: BBTM-2074

Botany-B

(Theory)

Time: 3 Hrs. **Max. Marks: 60**

Theory: 30

Practical: 18

CA: 12

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

Systems of classification: Artificial, Natural and Phylogenetic; Salient features of Bentham & Hooker's, Hutchinson and Engler & Prantl's system of classification, (Details of Bentham & Hooker's system only). Angiosperms, Gymnosperms, Bryophytes and Lichens- their general characteristics.

Unit-II

General characteristics (excluding economic importance) of following families of angiosperms; giving examples of few important genera:

Ranunculaceae Ranunculus, Delphinium Cruciferae Brassica Apiaceae (Umbelliferae) Coriander Asteraceae (Compositae) Helianthus, Sonchus, Ageratum Lamiaceae (Labiatae) Ocimum/Salvia

Unit-III

General characteristics (excluding economic importance) of following families of angiosperms; giving examples of few important genera: Leguminosae Lathyrus, Cassia and Acacia, Orchidaceae Zeuxine, Poaceae (graminae) Triticum

Criteria for primitive and advanced nature of families and flower. Evolutionary status of

Ranunculaceae, Compositae, Orchidaceae.

Unit-IV

Introduction to seed biology, differences between seed and grain. Classification of seed-breeder, foundation, certified and truthfully labeled seeds (TFLs). Brief introduction to methods of seed production, seed testing (seed germination and seed viability test) and seed certification.

Books Recommended:

2. Radford, A.E (1986). Fundamental of Plant Systematics, Harper and Row, New York

3. Peau, K. (1977). Anatomy of Seed Plants, 3^{RD} edition. John Wiley & Sons, New York.

4.Dickinson, W.C. 2000 Integrative Plant Anatomy. Harcourt Academic Press, USA.

6. Fahn, A. 1974 Plant Anatomy. Pergmon Press, USA and UK.

7. Hopkins, W.G. and Huner, P.A. 2008 Introduction to Plant Physiology. John Wiley and Sons.

8. Taiz, L. and Zeiger, E. 2006 Plant Physiology, 4 th edition, Sinauer Associates Inc .MA, USA

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

Course Code: BBTM-2074(P)

Botany–B

(Practical)

Time: 3 Hrs **Max. Marks: 18**

Insructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitteed for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

a) Description of flowers including floral diagram, floral formula, V.S. of flower of the representative genera of families mentioned in syllabus.
b) Identification and short morphological economic note on the specimens included in Units III, IV & V of the theory paper B.
c) Each student is required to submit a family wise herbarium consisting of at least 20 properly pressed and mounted plants.

Books Recommended:

1.Bendre, A. (2007). Practical Botany, Rastogi Publications, Meerut.

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

Course code: BBTM-2085

Inorganic Chemistry-B

(Theory)

Time: 3 Hrs. **Max. Marks: 60**

Theory: 30

Practical: 18

CA: 12

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

л- Acid ligands

Carbon monooxide complexes, Two methods of preparation, structural and bonding in (linear MCO groups, polynuclear metal carbonyls carbonyl hydrides and halides). Complexes of N_2, with Ru and No with Fe.

Unit-II

Alkali metal and alkaline earth metal chelators

Definition and few examples of macrocyclic ligands, macrocyclic effect, crown ethers & podands, coronauds, cryptands, structure of 18 crown -6 complex with KNCS, ion cavity complex, effect of anion on phase transfer catalysis, sandwich formation, cryptands and their cation complexes.

Unit-III

Stability of co-ordination compounds

Introduction Factors affecting the stability of metal ion complexes with general ligands and some biochemical ligands like amino acids, peptides, nucleotides and Nucleic acids and porphyrin

Unit-IV

Metal ions in biological system

Fe: Haemoglobin, structure and functions, oxygen transport, Bohr effect.

Mg: Chlorophyll structure and function in photosysthesis.

Zn: Carboxypeptidase enzyme functions.

Books Recommended:

1. G.L. Eichorn(1973), Inorganic Biochemistry, Vol. I, Elsevier,
2. R.Hilgenfeld & W.Saengar (1982), Topics in Current Chemistry, Vol.101.page 38-65, Top.Curr. Chem.
3. J.E. Huheey(1899), Inorganic Chemistry, 4th ed, Pearson.
4. F.A. Cotton & G. Wilkinson(1963), Advanced Inorganic Chemistry,6th edition , Interscience Publishers.
5. B.E. Douglas & D.H. McDaniel(1994), Concepts & Models of Inorganic Chemistry,3rd edition , John Wiley & Sons.
6. A. Earnshaw(1968), Introduction of Magnetochemistry, ,1st edition, Academic press.
7. R.S.Drago (1977), Physical Methods Inorganic Chemistry, 2nd edition , Chapman and Hall.
8. Cowan, J.A., (1997), Inorganic Biochemistry – An Introduction, 2nd edition, Wiley-VCH.

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

Course code: BBTM-2085(P)

Inorganic Chemistry-B

(Practical)

Time: 3 Hrs. **Max. Marks: 18**

Insructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitteed for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Experiments

- Inorganic qualitative analysis:

Four ions (Two cations two anions).

A. Preliminary tests: Physical examination, Dryheating test, charcoal cavity test,

$Co(NO_3)_2$ test, flame test, borax bead test.

B. Acid radical analysis:

Dil H_2SO_4 gp: CO^{2-}_3, NO_2^-, S^{2-}, SO_3^{2-}

Conc, H_2SO_4 gp: Cl^-, Br^-, I^-, NO_3^-, CH_3Coo^-

Individual gp: SO_4^{2-}, PO_4^{3-}, BO_3^{3-}

C. Basic radical analysis:

NH_4^+ Pb^{2+}, Cu^{2+}, Cd^{2+}, Fe^{2+} or Fe^{3+}, Al^{3+} , Co^{2+} , Ni^{2+}, Mn^{2+}, Zn^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+} Mg^{2+}, Na^+, K^+ and their confirmation.

Books Recommended:

G. Svehla, B. Sivasankar(2012), Vogel's Qualitative Inorganic Analysis 7 Edition , Pearson.

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

Course Code: BBTM-2086

Organic Chemistry–B

(Theory)

Time: 3 Hrs. **Max. Marks: 60**

Theory: 30

Practical: 18

CA:12

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

Acidity of acetylene and terminal alkenes, metal ammonia reduction of alkyne, addition of hydrogen halides and water to alkyne, with detailed discussion of mechanism of these reaction, the Diels Alder reaction, orbital symmetry and the Diels alder reaction.

Unit-II

Conversion of alcohol to ether and ester with full dicussion of the reaction, crown ethers, conversion of vicinal halohydrin to epoxides, nucleophillic ring opening reaction of epoxides, acid catalysed ring opening of epoxides.

Unit-III

Principles of nucleophillic additon to carbonyl groups: Hydration ,acetal formation , cyanohydrin formation ; reaction with primary and secondary amines, Wittig reaction, steroselective addition to carbonyl groups mechanism of halogenation ,acid and base

catalysed cholization, haloform reaction ,aldol condensaton, conjugate nucleophillic additon to unsaturated carbonyl compounds.

Unit –IV

Mechanism of acid- catalysed esterification,intramolecular ester formation lactone), Hell-Volerid-Zelinsky reaction, decarboxylation of malonic acid and related compounds. Mechanism of hydrolysis of acid chlorides, acid anhydrides, acid and base catalysed hydrolysis of esters, acid assisted hydrolysis of amides. Hoffman rearrangement of N-bromoamides. Hydrolysis of nitriles, claisen condensation, the Deckmann condensation, acetic ester synthesis, malonic ester synthesis, Michael reaction Reformatsky reaction.

Books Recommended:

1. R.T. Morison and R.N. Boyd, K. Bhattacharjee(2010), Organic Chemistry,7th edition, Pearson.
2. I. L. Finar (1963), Organic Chemistry, Vol.I, IV Ed, Longmans.
3. J. March, Advanced Organic Chemistry(2015), Reactions Mechanisms and Structure, 7th edition,. Wiley-Blackwell
4. Schaum's Outlines Series (2009), Theory and Problems of Organic Chemistry, 4th edition, Tata McGraw - Hill .
5. I.L. Finar (2002), Problems and their Solution in Organic Chemistry, 1st edition, Prentice Hall Press.
6. J. D. Robert and M. C. Caserio, (1977), Basic principles of Organic Chemistry,2nd edition, Benjamin-Cummings .
7. D. J. Cram and G. S. Hammond, G.S. Hendrickson (1970), Organic Chemistry ,3rd edition,. McGraw-Hill
8. E.L. Eliel (1962), Stereochemistry of Carbon Compounds, 1th edition,. Tata McGraw-Hill
9. W. Camp, (1975), Organic Spectroscopy, 1st edition, Macmillan .
10. Robert M. Giuliano and F. A. Carey (2016), Organic Chemistry, 10th edition, McGraw-Hill.

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

Course Code: BBTM-2086(P)

Organic Chemistry–B

(Practical)

Time: 3 Hrs **Practical Marks: 18**

Insructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitteed for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Complete identification including derivation of following organic compounds:

- Aromatic hydrocarbons
- Aldehydes
- Ketones
- Carbohydrates

B.Sc. Biotechnology (Semester–II)
Session 2018-19
Course Name: Biostatistics
Course Code: BBTL-2337

Time: 3 Hrs. **Max. Marks: 40**

Theory: 32

CA: 8

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

Elementary Statistics: **Collection of data. Frequency distribution and its graphical representation.** The mean, median, mode, standard deviation, variance, covariance of data.

Unit-II

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 with application(without proof) .**

Unit-III

Introduction to Correlation & Regression: Scatter diagram, Linear correlation, linear regression lines.

Unit-IV

Hypothesis Testing: Concept of Null and Alternate Hypothesis, **Normal test for single mean (Z-test)**, Chi-square test (Goodness of fit and association of attributes).

Recommended Books:

1. Elhance D.N. (1984). Fundamentals of Statistics. Kitab Mahal, Allahabad.

2. Mendenhall W. and Sincich T. (1995). Statistics for engineering and sciences (IVth edition).
PrenticeHall. And sciences (IVth edition). Prentice Hall.

3. B.A./B.Sc Part-I (12+3 System of Education) 225 Gupta S.P. (2000). Statistical methods. SultanChand and Company, New Delhi.

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

General Microbiology–B

Course Code: BBTM-2348

(Theory)

Time: 3 Hrs. **Max. Marks: 60**

Theory: 30

Practical: 18

CA:12

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

Microbial Growth: Bacterial generation, doubling time and specific growth rate. Monoauxic, diauxic and synchronised growth curve. Sporulation and regeneration of bacteria

Unit -II

Viruses-Introduction, Plant and animal viruses-structure and composition, Classification based on diffences in their transcription process. Cultivation of plant and animal viruses, Life cycle-Tobacco Mosaic Virus, Herpes simplex and Bacteriophages (Lysogenic and Lytic cycle)

Unit -III

Pathogenic micro-organisms- Factors contributing microbial pathogenicity (Adhesion, Invasiveness and toxigenicity), Natural resistance and Non specific defense mechanism against microorganisms. Introduction, mechanism of action, diagnosis and treatment for viral diseases- Influenza, AIDS and Hepatitis.

Unit -IV

Introduction, mechanism of action, diagnosis and treatment for bacterial diseases-Diphtheria, Tuberculosis, Typhoid. Fungal diseases-Aspergillosis and Candidiasis.

Books Recommended:

1.Tortora, G.J., Funke, B.R. and Case, C.L. (2015). Microbiology: An introduction, 12th Edition, Pearson College Div.

2.Madigan, M. T., Martinko, J. M., Bender, K.S., Buckly, D. H., Stahl, D. A. And Brock, T. (2017). Brock's Biology of microorganisms, 14th Edition, Pearson Education.

3.Willey, J., Sherwood, L. And Wooverton, C. J. (2017). Prescott's Microbiology, 10th Edition, McGraw-Hill Education/ Asia

4.Harvey, R.A. and Cornelissen, C. N. (2012). Lippincott's Illustrated Reviews: Microbiology, 3rd Edition, Lippincott Williams and Wilkins.

5.Pelczar, M.J., Chan, E.C.S. and Krieg, N.R. (2009). Microbiology: An application based approach, Tata McGraw Hill

6.Talaro, K.P. and Chess, B. (2008). Foundations in Microbiology, 8th Edition, Tata McGraw-Hill Higher Education.

7.Black, J.G. and Black, L.J. (2008). Microbiology: Principles and Explorations, 7th Edition, John Wiley & sons.

8.Purohit, S.S. (2006). Microbiology: Fundamentals and Applications, 7th Edition, Agrobios (India).

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

Course Code: BBTM-2348(P)

General Microbiology–B

(Practicals)

Time: 3 Hrs. **Practical Marks: 18**

Insructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitteed for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

1. Enumeration of microorganism. Total vs viable counts.
2. Personal hygiene-Microbes from hands, tooth-scum and other body parts.
3. Growth curve of micro-organisms.
4. Identification of fungus by and lactophenol staining.
5. Identification of formation of germ tube by *Candida albicans.*

Books Recommended:

1.Cappuccino, J.G. and Sherman, N. (2014). Microbiology: A Laboratory Manual 10th Edition, Pearson Education India.

2.Dubey R.C. and Maheshwari (2012). Practical Microbiology 5th edition: S. Chand and company ltd.New Delhi.

3.Leooffee, M.J. and Pierce, B.E. (2015). Microbiology: Laboratory Theory and Application, 3rd Edition, Morton Pub. Co.

4.Sastry, A.S. and Bhat, S. (2018). Essentials of Practical microbiology. Jaypee Brothers Medical Publishers

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

Course Code: BBTM-2089

Biochemistry - B

(Theory)

Time: 3 Hrs. **Max. Marks: 60**

Theory: 30

Practical: 18

CA: 12

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

Lipids: Classification of lipids and fatty acids. General structure and function of major lipid subclasses, acylglycerols, phosphoglycerides, Sphingolipids, glycosphingolipids and terpenes, sterols, steroids.

Unit -II

Proteins: Structure of amino acids, non-protein and rare amino acids and their chemical reactions. Structural organization of proteins (Primary, Secondary, Quaternary and domain structure, protein classification and function. Forces stabilizing Primary, Secondary and Tertiary

Unit -III

Vitamins: Occurrence, Biomedical importance, Deficiency, of Fat soluble vitamins (A,D,E,K) and water soluble vitamins (Vitamin B complex and Vitamin C), vitamins as cofactor

Unit-IV

Hormones: Secretory glands, **Introduction and Classification of Hormones,** Biomedical importance and disorders related with Steroid hormones (Ovarian, Testicular, Adrenal Cortical and Corpus luteal) and peptide hormones (Hormones of pancreas, hypophysis, parathyroid, GIT), Amino acid Hormones (Thyroidal, Adrenal medullary)

Books Recommended:

1. Voet, D.,Voet, J.G. and Prait, C.W. (2013). Principles of Biochemistry, 4th Edition, Wiley.

2. Stryer, L. (2015). Biochemistry, 8th Edition, W.H. Freeman and Company, New York

3. Berg, J.M., Tymoczko, J. L. And Stryer, L. (2011). Biochemistry, 7th Edition, Freeman.

4. Nelson, D.L. And Cox, M.M. (2013). Principles of Biochemistry, 7th Edition, Freeman

5. Mathew, C.K., Van, K.E. and Anthern, K.G. (2012). Biochemistry 4th Edition, Addison Wesley.

6. Lehninger, A.L., Nelson, D.L. and Lox, M.M. (2017). Principles of Biochemistry, 7th Edition, CBS Publishers and Distributors, New Delhi.

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

Course Code: BBTM-2089(P)

Biochemistry - B

(Practical)

Time: 3 Hrs. **Practical Marks: 18**

Insructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitteed for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

1. Protein estimation by Lowry's method.
2. Protein estimation by Bradford method.
3. Protein estimation by UV spectrophotometeric method
4. The determination of acid value of a fat.
5. The saponification value of a fat.

Books Recommended:

1. Plummer D.T. (2017) An Introduction to Practical Biochemistry. 3rd Edition Tata McGraw Hill Education.

2. Sawhney, S.K. and Randhir singh (2001). Introductory Practical Biochemistry. Narosa Publishing House.

3. Wilson, K. And Walker, J. (2010).Princiles and Techniques of Biochemistry, 3rd Edition, McGraw Hill Education.

B.Sc. Biotechnology (Semester-II)

Session: 2018-19

Course Code: AECD-2161

Drug Abuse: Problem, Management and Prevention Compulsory)

(Theory)

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

Theory: 40

CA:10

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.

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.

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.

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.

3) Media: Restraint on advertisements of drugs, advertisements on bad effects of drugs, Publicity and media, Campaigns against drug abuse, Educational and awareness program

4) Legisltaion: NDPs act, Statutory warnings, Policing of Borders, Checking Supply/Smuggling of Drugs, Strict enforcement of laws, Time bound trials.

Books Recommended:

1. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.

2. Inciardi, J.A. 1981. *The Drug Crime Connection*. Beverly Hills: Sage Publications.

3. Modi, Ishwar and Modi, Shalini (1997) *Drugs: Addiction and Prevention*, Jaipur: Rawat Publication.

4. Sain, Bhim 1991, *Drug Addiction Alcoholism*, Smoking obscenity New Delhi: Mittal Publications.

5. Sandhu, Ranvinder Singh, 2009, *Drug Addiction in Punjab*: *A Sociological Study. Amritsar*: Guru Nanak Dev University.

6. Singh, Chandra Paul 2000. *Alcohol and Dependence among Industrial Workers*: Delhi: Shipra.

7. World Drug Report 2011, United Nations office of Drug and Crime.

8. World Drug Report 2010, United Nations office of Drug and Crime.