FACULTY OF LIFE SCIENCES

SYLLABUS

Of

Bachelor of Science Bio-Technology (Semester: I-II)

(Under Credit Based Continuous Evaluation Grading System)

Session: 2023-24

The Heritage Institution
KANYA MAHA VIDYALAYA
JALANDHAR
(Autonomous)

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

PSO1. gain and apply knowledge of Biotechnology and Science concepts to solve problems related to field of Biotechnology.

PSO2: design, perform experiments, analyze and interpret data for investigating complex problems in the field of biotechnology.

PSO3: apply ethical principles and commit to professional ethics and responsibilities and norms of the Biotechnological practices.

PSO4: design and develop solution to Biotechnology problems by applying appropriate tools while keeping in mind safety factor for environment & society.

PSO5: to undertake any responsibility as an individual and as a team in a multidisciplinary environment.

PSO6: contribute to the field of biotechnology and allied industries designing, developing and providing solutions for product/processes/technology development.

PSO7: able to justify societal, health, safety and legal issues and understand his responsibilities in biotechnological engineering practices.

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

Bachelor of Science (Bio-Technology)

Session: 2023-24

Semester-I

Course No.	Course Title	Course Type	Credits		Total Credits	L	P	CA	Marks
			L	P					
BBTL -1421 BBTL -1031 BBTL -1431	Punjabi (Compulsory) [1]Basic Punjabi [2]Punjab History and Culture	C	4	0	4	80	-	20	100
BBTL-1102	Communication Skills in English	C	4	0	4	80	-	20	100
BBTL-1483	Cell Biology	C	4	0	4	80	-	20	100
BBTL-1074	Botany-I	C	4	0	4	80	-	20	100
BBTL-1085	Biochemistry-I	C	4	0	4	80	-	20	100
BBTL-1346	General Microbiology-I	C	4	0	4	80	-	20	100
BBTL-1087	Chemistry-I	C	4	0	4	80	-	20	100
BBTP-1488	Lab in Cell Biology	C	0	2	2	-	40	10	50
BBTP-1079	Lab in Botany-I	C	0	2	2	-	40	10	50
BBTP-1080	Lab in Biochemistry-I	C	0	2	2	-	40	10	50
BBTP-1341	Lab in General Microbiology-I	C	0	2	2	-	40	10	50
BBTP-1082	Lab in Chemistry-I	C	0	2	2	-	40	10	50
AECD-1161	*Drug Abuse: Problem, Management and Prevention (Compulsory)	AC	2	0	2	40	-	10	50
SECF-1492	*Foundation Course	AC	2	-	2	40	-	10	50
Total Credits					42				

[1] Special Course in lieu of Punjabi (Compulsory)

[2] Special Course in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab

***Credits of these papers will not be added towards SGPA/CGPA and only grades will be provided**.

C-Compulsory

AC- Audit course

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

Bachelor of Science (Bio-Technology)

Session: 2023-24

Semester-II

Course No.	Course Title	Course Type	Credits		Total Credits	L	P	CA	Marks
			L	P					
BBTL -2421 BBTL -2031 BBTL -2431	Punjabi (Compulsory) [1]Basic Punjabi [2]Punjab History and Culture	C	4	0	4	80	-	20	100
BBTM-2102	Communication Skills in English	C	3	1	4	50	30	20	100
BBTL-2333	Biomathematics and Biostatistics	C	4	0	4	80	-	20	100
BBTL-2484	Zoology-I	C	4	0	4	80	-	20	100
BBTL-2065	Genetics	C	4	0	4	80	-	20	100
BBTL-2086	Biochemistry-II	C	4	0	4	80	-	20	100
BBTL-2347	General Microbiology-II	C	4	0	4	80	-	20	100
BBTP-2488	Lab in Zoology-I	C	0	2	2	-	40	10	50
BBTP-2069	Lab in Genetics	C	0	2	2	-	40	10	50
BBTP-2080	Lab in Biochemistry-II	C	0	2	2	-	40	10	50
BBTP-2341	Lab in General Microbiology-II	C	0	2	2	-	40	10	50
SECM-2502	*Moral Education	AC	-	-	2	40	-	10	50
Total Credits					38				

[1] Special Course in lieu of Punjabi (Compulsory)

[2] Special Course in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab

***Credits of these papers will not be added towards SGPA/CGPA and only grades will be provided**.

C-Compulsory

AC- Audit course

B.Sc. Bio-Technology

Semester -I

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-24
Course Code: BBTL-1421
Punjabi Compulsory (Theory)

COURSE OUTCOMES

CO1: ਆਤਮ ਅਨਾਤਮ' ਪੁਸਤਕ ਦੇ ਕਵਿਤਾ ਭਾਗ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋ+ਕ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਵਿਤਾ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਤਾਂ ਕਿ ਉਹ ਆਧੁਨਿਕ ਦੌਰ ਵਿਚ ਚੱਲ ਰਹੀਆਂ ਕਾਵਿ ਧਾਰਾਵਾਂ ਅਤੇ ਕਵੀਆਂ ਬਾਰੇ ਗਿਆਨ ਹਾਸਿਲ ਕਰ ਸਕਣ।ਇਸ ਦਾ ਹੋਰ ਮਨੋਰਥ ਕਵਿਤਾ ਦੀ ਵਿਆਖਿਆ, ਵਿਸ਼ਲੇਸ਼ਣ ਤੇ ਮੁਲੰਕਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ ਵੀ ਹੈ ਤਾਂ ਕਿ ਉਹ ਸਮਕਾਲੀ ਸਮਾਜ ਦੀਆਂ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਸਮਝ ਸਕਣ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਦ੍ਰਿਸ਼ਟੀ ਬਣਾ ਸਕਣ।

CO2: ਗੱਦ ਪ੍ਰਵਾਹ (ਰੇਖਾ ਚਿਤ੍ਰ ਤੇ ਹਲਕੇ ਲੇਖ) ਪੁਸਤਕ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਮੁੱਲਵਾਨ ਇਤਿਹਾਸ ਤੋਂ ਜਾਣੂ ਕਰਵਾਉਣਾ ਹੈ।

CO3:ਪੈਰ੍ਹਾ ਰਚਨਾ ਅਤੇ ਪੈਰ੍ਹਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ ਦੇਣ ਦਾ ਮਨਰੋਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO4:ਧੁਨੀ ਵਿਉਂਤ ਪੜ੍ਹਣ ਨਾਲ ਵਿਦਿਆਰਥੀ ਧੁਨੀਆਂ ਦੀ ਉਚਾਰਨ ਪ੍ਰਣਾਲੀ ਤੋਂ ਵਾਕਫ਼ ਹੋਣਗੇ।

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-24
Course Code: BBTL-1421
Punjabi Compulsory (Theory)

ਸਮਾਂ : 3 ਘੰਟੇ

Maximum Marks: 100
Theory : 80
CA: 20

ਪਾਠਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

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

(ਭਾਈ ਵੀਰ ਸਿੰਘ ,ਡਾ.ਜਸਵੰਤ ਸਿੰਘ ਨੇਕੀ,ਸਿਲੇਬਸ ਦਾ ਹਿੱਸਾ ਨਹੀਂ ਹੈ)

(ਸਾਰ,ਵਿਸ਼ਾ ਵਸਤੂ) 16 ਅੰਕ

ਯੂਨਿਟ-II

ਗੱਦ ਪ੍ਰਵਾਹ (ਰੇਖਾ ਚਿਤ੍ਰ ਤੇ ਹਲਕੇ ਲੇਖ), ਸੰਪਾ.ਬਿਕਰਮ ਸਿੰਘ ਘੁੰਮਣ, ਜਸਪਾਲ ਸਿੰਘ ਰੰਧਾਵਾ,ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ,ਅੰਮ੍ਰਿਤਸਰ।

(ਸਾਰ,ਵਿਸ਼ਾ ਵਸਤੂ)

16 ਅੰਕ

ਯੂਨਿਟ-III

(ੳ) ਪੈਰ੍ਹਾ ਰਚਨਾ

(ਅ) ਪੈਰ੍ਹਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ। 16 ਅੰਕ

ਯੂਨਿਟ-IV

(ੳ) ਪੰਜਾਬੀ ਧੁਨੀ ਵਿਉਂਤ :ਪਰਿਭਾਸ਼ਾ ਤੇ ਉਚਾਰਨ ਅੰਗ

(ਅ) ਸਵਰ, ਵਿਅੰਜਨ 16 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

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

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

3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 16 ਅੰਕ ਹਨ।

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

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-24
Course Code: BBTL-1031
Basic punjabi

In lieu of Punjabi(Compulsory)

Course outcomes

CO1: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਨੂੰ ਸਿਖਾਉਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਵਿਚ ਪਾ ਕੇ ਇਕ ਹੋਰ ਭਾਸ਼ਾ ਸਿੱਖਣ ਦਾ ਮੌਕਾ ਪ੍ਰਦਾਨ ਕਰਨਾ ਹੈ। ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੈਂਤੀ ਅੱਖਰੀ, ਅੱਖਰ ਕ੍ਰਮ, ਪੈਰ ਬਿੰਦੀ ਵਾਲੇ ਵਰਣ ਅਤੇ ਪੈਰ ਵਿਚ ਪੈਣ ਵਾਲੇ ਵਰਣ ਅਤੇ ਮਾਤਰਾਵਾਂ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ) ਲਗਾਖ਼ਰ (ਬਿੰਦੀ, ਟਿੱਪੀ, ਅੱਧਕ) ਦੀ ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ ਤੋਂ ਜਾਣੂ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

CO2: ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਸ਼ਬਦ ਬਣਤਰ : ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ (ਸਾਧਾਰਨ ਸ਼ਬਦ, ਸੰਯੁਕਤ ਸ਼ਬਦ, ਮਿਸ਼ਰਤ ਸ਼ਬਦ,ਮੂਲ ਸ਼ਬਦ,ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ) ਤੋਂ ਜਾਣੂ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

CO3: ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ : ਬਾਜ਼ਾਰ, ਵਪਾਰ, ਰਿਸ਼ਤੇਨਾਤੇ, ਖੇਤੀ ਅਤੇ ਹੋਰ ਧੰਦਿਆਂ ਆਦਿ ਨਾਲ ਸੰਬੰਧਤ ਤੋਂ ਜਾਣੂ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

CO4: ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਿਚ ਹਫ਼ਤੇ ਦੇ ਸੱਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰ੍ਹਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕ ਤੋਂ ਸੌ ਤੱਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂ ਵਿਚ ਸਿਖਾਉਣਾ ਹੈ।

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-24
Course Code: BBTL-1031
Basic punjabi

In lieu of Punjabi(Compulsory)

ਸਮਾਂ : 3 ਘੰਟੇ **Maximum Marks: 100**
Theory : 80
CA :20

ਪਾਠਕ੍ਰਮ

ਯੂਨਿਟ-I

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

16ਅੰਕ

ਯੂਨਿਟ-II

ਪੰਜਾਬੀ ਸ਼ਬਦ ਬਣਤਰ : ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ (ਸਾਧਾਰਨ ਸ਼ਬਦ, ਸੰਯੁਕਤ ਸ਼ਬਦ, ਮਿਸ਼ਰਤ ਸ਼ਬਦ, ਮੂਲ ਸ਼ਬਦ, ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ) 16 ਅੰਕ

ਯੂਨਿਟ-III

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

ਸੰਬੰਧਤ। 16 ਅੰਕ

ਯੂਨਿਟ-IV

ਹਫ਼ਤੇ ਦੇ ਸੱਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰ੍ਹਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕ ਤੋਂ ਸੌ ਤਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂਵਿਚ ।

16 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ। ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 16 ਅੰਕ ਹਨ।

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

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-24
Course code: BBTL-1431

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

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

COURSE OUTCOMES

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

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

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

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

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

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-24
Course code: BBTL-1431

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

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

Examination Time: 3 Hours **Max. Marks: 100**
Theory: 80
CA: 20

Instructions for the Paper Setter:

1. Question paper shall consist of four Units
2. Examiner shall set 8 questions in all by selecting Two Questions of equal marks from each Unit.
3. Candidates shall attempt 5 questions in 1000 words, by at least selecting One Question from each Unit and the 5th question may be attempted from any of the four Units.
4. Each question will carry 16 marks

Unit-I

1. Physical features of the Punjab
2. Sources of the ancient history of Punjab

Unit-II

3. Harappan Civilization: social, economic and religious life of the Indus Valley People.
4. The Indo-Aryans: Original home

Unit-III

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

UNIT-IV

7. Teachings of Buddhism
8. Teachings of Jainism

Suggested Readings

- B.N. Sharma, Life in Northern India, Delhi. 1966.
- Budha Parkash, Glimpses of Ancient Punjab, Patiala, 1983.
- Chopra, P.N., Puri, B.N., & Das, M.N.(1974). A Social, Cultural & Economic History of India, Vol. I, New Delhi: Macmillan India.
- L. M Joshi (ed.), History and Culture of the Punjab, Art-I, Patiala, 1989 (3rd edition)
- L.M. Joshi and Fauja Singh (ed.), History of Punjab, Vol.I, Patiala 1977.

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-24
Course Code: BBTL-1102
Communication skills in English

(Theory)

COURSE OUTCOMES

At the end of this course, the students will develop the following Skills:

CO 1: Reading skills that will facilitate them to become an efficient reader

CO 2: Through reading skills, the students will have an ability to have a comprehensive understanding of the ideas in the text and enhance their critical thinking

CO 3: Writing skills of students which will make them proficient enough to express ideas in clear and grammatically correct English

CO 4: The skill to use an appropriate style and format in writing letters (formal and informal) and resume, memo, notices, agenda, minutes

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-24
Course Code: BBTL-1102
Communication skills in English

(Theory)

Total Marks: 100
Examination Time: 3 Hrs **Theory: 80**
CA: 20

Instructions for the paper setter and distribution of marks:

The question paper will consist of four sections. The candidate will have to attempt five questions in all selecting one from each section and the fifth question from any of the four sections. Each question will carry 16 marks. Each question can be sub divided into two parts. (16 x 5 = 80)

Section-A: Two questions of theoretical nature will be set from Unit I.

Section-B: Two comprehension passages will be given to the students from Unit II.

Section-C: Two questions will be given from Unit III.

Section-D: Two questions will be set from Unit IV.

The syllabus is divided in four units as mentioned below:

Unit I

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

Unit II

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

Unit III

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

Activities:

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

Unit IV

Resume, memo, notices, agenda, minutes, Tips for effective blog writing

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
- Writing blogs

Recommended Books:

1) *Oxford Guide to Effective Writing and Speaking* by JohnSeely.
2) *Business Communication,* by Sinha, K.K. GalgotiaPublishers, 2003.
3) *Business Communication* by Sethi, A and Adhikari, B., McGraw Hill Education2009.
4) *Communication Skills* by Raman, M. & S. Sharma, OUP, New Delhi, India (2011).

Bachelor of Science (Bio-Technology) Semester-I

Session: 2023-24

Course Code: BBTL-1483

Course Title: Cell Biology

(Theory)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1. Understanding the basic unit of life – cell and broad classification of cell types.

CO2. Understanding the structure and functions of cell organelles.

CO3: Understand Cell Division and Cell Cycle.

CO4. Understanding the biological membranes along with membrane transport mechanism.

Bachelor of Science (Bio-Technology) Semester-I

Session: 2023-24

Course Code: BBTL-1483

Course Title: Cell Biology

(Theory)

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

Theory: 80

CA: 20

Instructions for the Paper Setter

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

Unit-I

Cell as a basic unit of living systems. The cell theory Broad Classification of Cell Types: PPLO's, bacteria, eukaryotic microbes, plant and animal cells. A detailed classification of cell types within an organism. Cell, tissue, organ and organism as different levels of organizations of otherwise genetically similar cells.

Unit-II

Structure and function of cell organelles, ultrastructure of cell membrane, cytosol, Golgi bodies, endoplasmic reticulum (rough and smooth), ribosomes, cytoskeletal structures (actin, microtubules etc.), Mitochondria, chloroplasts, lysosomes, peroxysomes, nucleus (nuclear membrane, nucleoplasm, nucleolus, chromatin).

Unit-III

Cell Division and Cell Cycle: mitosis, meiosis, stages of cell cycle, binary fission, amitosis and its regulation. Cell-cell interaction, Cell locomotion (amoeboid, flagellar and ciliar).

Unit-IV

Biological Membranes: Supramolecular architecture of membranes; Solute transport across membranes; Model membranes and Liposomes.

Books Recommended:

1. De-Robertis, F.D.P. and De-Robertis Jr. E.M.F. (2017) Cell and Molecular Biology, Saunders, Philadelphia.
2. Lodish, Berk, Kaiser, Krieger, Scott, Bretscher, Ploegh and Matsudaira (2007) Molecular Cell Biology 6th Edition, W.H.Freemen& Co Ltd.
3. Geoffrey, M. Cooper & Robert E. Hausman (2013) The Cell: A molecular approach 6th Edition, Sinauer Associates.
4. Alberts, Johnson, Lewis, Raff, Roberts and Walter (2008) Molecular Biology of the Cell, 5th Edition, Garland Science.

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-2024
Course Code: BBTL-1074
Botany-I

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

CO1: Understand the diversity of plants.

CO2: Understand the structure of meristems, permanent tissues, anatomy of root, stem and leaf in flowering plant.

CO3: Understand the reproduction and different aspects of pollination and self-incompatibility in flowering plants.

CO4: Understand the different plant classification systems, terminology related to floral descriptions and economic importance of various angiosperm families.

Bachelor of Science (Bio-Technology) Semester -I
Session: 2023-2024
Course code: BBTL-1074
Botany-I
(Theory)

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

Theory: 80

CA: 20

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

Unit –I

Diversity in plants: General characters of Algae, Fungi, Lichens, Bryophytes, Pteridophytes, Gymnosperms and Angiosperms. Concepts of species, hierarchical taxa and biological nomenclature.

Unit –II

Anatomy of flowering plants: Meristems, simple and complex permanent tissues, internal structure of stem, root and leaf, secondary growth in stem and root of *Helianthus*.

Unit –III

Reproduction in flowering plants: Structure and development of anther and male gametophyte, Structure and development of ovule and female gametophyte; Pollination (self and cross) and fertilization; structure and function of endosperm and embryo (dicot and monocot), polyembryony, self-incompatibility.

Unit –IV

Taxonomy of flowering plants: Artificial (Linnaeus), natural (Bentham & Hooker) and phylogenetic (Engler and Prantl) systems of classification; Terminology pertaining to floral description, General characteristics (including economic importance) of following families of angiosperms; giving examples of few important genera: Solanaceae: *Solanum/Petunia*, Rutaceae: *Citrus, Murraya,* Cruciferae- *Brassica*, Apiaceae (Umbelliferae)- Coriander, Asteraceae - *Helianthus,* Leguminosae –*Cassia/Acacia*/Sweet pea, Poaceae (Graminae)- *Triticum*

Suggested Readings:

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.

5. Fahn, A. (1974). Plant Anatomy. Pergmon Press, USA and UK. 6. Hopkins, W.G. and Huner, P.A. (2008). Introduction to Plant Physiology. John Wiley and Sons. 7. Taiz, L. and Zeiger, E. (2006). Plant Physiology, 4 th edition, Sinauer Associates Inc .MA, USA.

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-24
Course Code: BBTL-1085
Biochemistry-I
(Theory)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Gain basic knowledge about water and pH.

CO2: Acquire the knowledge of carbohydrates, classification, and their biological functions

CO3: Understand the definition, structure and biological functions of lipids and their subclasses.

CO4: Understand the definition, structure, biological functions, and classification of proteins.

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-24
Course Code: BBTL-1085
Biochemistry-I
(Theory)

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

Theory: 80

CA: 20

Instructions for the Paper Setters:

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

Unit-I

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 monosaccharide 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, and chitin; Heteropolysaccharides: Peptidoglycan, proteoglycan, glycoproteins

Unit-III

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

Unit-IV

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

Books Recommended:

1. Voet, D.,Voet, J.G. and Prait, C.W. (2018). Principles of Biochemistry, 5th 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. (2019). Biochemistry, 9th Edition, Freeman.

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

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

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-24
Course Code: BBTL-1346
General Microbiology-I
(Theory)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Know the contribution of microbiologists and general features of various microbes.

CO2: Study the structure of bacteria cell and bacterial classification

CO3: Study the microbial culture collection centers, microbial preservation and sterilization methods and understand the basic concepts of bacterial nutrition.

CO4: To learn different types of microscopy techniques.

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-24
Course Code: BBTL-1346
General Microbiology-I
(Theory)

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

Theory: 80

CA: 20

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

Unit-I

Introduction to microbiology- Historical perspective and important discoveries related to microbiology. Relationship between microbiology and biotechnology- The microbial biotechnology. General features-Bacteria, Fungi, Neurospora, Yeast and Viruses. Microbes in extreme environments- the thermophiles, halophiles, acidophiles, psychrophiles and alkalophiles.

Unit-II

Gram-positive and Gram-negative bacteria: Introduction, structure and anatomy of bacterial cell walls and nature of the microbial cell surface. Types of bacterial flagella. Different types of bacterial staining. Bacterial classification: Bacterial classification and taxonomy based on Bergey's Manual of Determinative bacteriology– General outline only. An introduction to Bacterial Serotypes.

Unit-III

Microbial culture collection centers, Methods of microbial preservation: Refrigeration, cryopreservation, lyophilization, Paraffin method. Basic concept of microbial growth and culture media and its components, Sterilization-Basic concept, physical and chemical methods of sterilization. Bacterial nutrition-Introduction, nutritional forms of bacteria, Basic concept of transport mechanisms of nutrients across microbial cell membranes: Facilitated diffusion, Active transport and group translocation

Unit-IV

Principles and application of bright field, dark field, phase contrast, fluorescence and immunofluorescence, electron microscopy (Scanning electron microscopy & transmission electron microscopy).

Books Recommended:

1. Davis, B.D., Dulbecco. R., Eisen, H.N. and Ginsberg, H.S. (1990). Microbiology: 4th Edition, Harper & Row, Publishers, Singapore.
2. Stanier, R.Y. (1999). General microbiology, MacMillan Press, London.
3. Tortora, G.J., Funke, B.R. and Case, C.L. (2015). Microbiology: An introduction, 12th Edition, Pearson College Div.
4. Willey, J., Sherwood, L. And Wooverton, C. J. (2017). Prescott's Microbiology, 10th Edition, McGraw-Hill Education/ Asia
5. Pelczar, M.J., Chan, E.C.S. and Krieg, N.R. (2010). Microbiology: An application-based approach, Tata McGraw Hill.
6. Purohit, S.S. (2006). Microbiology: Fundamentals and Applications, 7th Edition, Agrobios (India).

Bachelor of Science (Biotechnology)
(Semester-I)
Session: 2023-24
Course Code: BBTL-1087
COURSE TITLE: Chemistry-I
(Theory)

Course outcomes:

Students will be able to:

CO1: understand the key features of coordination compounds viz.variety of structures, oxidation numbers and electronic configurations, coordination numbers and explain the bonding and stability of complexes along with their nomenclature and structure.

CO2: understand the postulates of VBT, inner and outer orbital complexes

CO3: describe the stability of metal complexes by the use of formation constants and to calculate thermodynamic parameters from them, understand macrocyclic effect, crown ethers, cryptands

CO4: understand Crystal field splitting of d-orbitals in octahedral, tetrahedral, cubic and square planer fields of ligands.

Bachelor of Science (Biotechnology)
(Semester-I)
Session: 2023-24
Course Code: BBTL-1087
COURSE TITLE: Chemistry-I
(Theory)

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

Theory: 80

CA: 20

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

Unit-I

Introduction, Werner's coordination theory, naming of co-ordinate complexes.

Co-ordination numbers 1-12. Factors affecting co-ordination numbers and stereo-chemistry, Isomerism in coordination compounds.

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-lll

Stability of co-ordination compounds

Introduction Factors affecting the stability of metal ion complexes with general ligands

Alkali metal and alkaline earth metal chelators: Definition and few examples of macrocyclic ligands, macrocyclic effect, crown ethers and cryptands.

Unit-IV

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

Books Recommended:

1. G.L. Eichorn, Inorganic Biochemistry, Vol. I Elsevier,
2. J.E. Huheey, E.A. Keiter, R.L. Keiter, Inorganic Chemistry, 4th ed. Pearson Education, Singapore, 1999.
3. D.F.C Shriver, P.W. Atkins and C.H. Langford, Inorganic Chemistry, ELBS Oxford, 1991.
4. Cowan, J.A. (1997) – Inorganic Biochemistry – An Introduction, Wiley- VCH

Bachelor of Science (Bio-Technology) Semester-I

Session: 2023-24

Course Code: BBTP-1488

Course Title: Lab in Cell Biology

(Practical)

COURSE OUTCOMES:

After passing this course the student will be able to:

- **CO1.** Perform a variety of molecular and cellular biology techniques.
- **CO2**. Describe cellular membrane structure and function, fine structure and function of cell organelles.
- **CO3**. Understand Microtomy, staining and histology of different tissues.
- **CO4**. Study about electron micrographs of different organelles

Bachelor of Science (Bio-Technology) Semester-I

Session: 2023-24

Course Code: BBTP-1488

Course Title: Lab in Cell Biology

(Practical)

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

Practical: 40

CA: 10

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

1. Study of Cells:

(a) Prokaryotic cells: Lactobacillus, E. coli. Blue green algae.

(b) Eukaryotic cells: Testicular material (for studies of spermatogenesis)

2. Study of electron micrographs of various cell organelles-plasma membrane, Mitochondria, Golgi complex, Lysosomes, Endoplasmic Reticulum (smooth and granular), Cilia, Centrioles, inclusions like glycogen, lipids, etc.
3. Preparation of Permanent Slides: Principles and procedures- Section cutting of tissues and staining of tissues with Haematoxylin/eosin method.
4. Study of permanent slides of various tissues (gut region, liver, lung, spleen, kidney, pancreas, testis, ovary, tongue, skin etc.).
5. Preparation of Buccal Smear for microscopic examination.
6. Barr body observation in human squamous epithelial cells.
7. Microtomy of Plant Tissue specimens (Stem & Root)

Books Recommended:

1. Shah, V.C., Bhatavdekar, J., Chinoy, N.J. and Murthy, S.K. (1988). Essential techniques in Cell Biology.Anand Book Depot, Ahemadabad.
2. Celis, J.E. (1998) Cell Biology: A Laboratory handbook. Vol. 1-3. Academic Press, UK

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-2024
Course Code: BBTP-1079
Botany-I

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

CO1: Understand the anatomy of dicot root, stem and leaf.

CO2: Understand structure and development of anther, male gametophyte, ovule, female gametophyte and endosperms.

CO3: Understand the description of flowers including floral diagram, floral formula, V.S. of flower of various angiosperm families.

CO4: Understand the morphology and economic importance of different angiosperm families.

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-2024
Course Code: BBTP-1079
Lab in Botany-I
(Practical)

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

Practical: 40

CA: 10

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

Experiments:

Plant Anatomy:
Anatomical studies of stem, root and leaf in *Helianthus* and maize plant.

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 Unit IV of the theory paper.

Suggested Readings:

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.
5. Fahn, A. (1974). Plant Anatomy. Pergmon Press, USA and UK.
6. Hopkins, W.G. and Huner, P.A. (2008). Introduction to Plant Physiology. John Wiley and Sons.
7. Taiz, L. and Zeiger, E. (2006). Plant Physiology, 4 th edition, Sinauer Associates Inc .MA, USA.

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-24
Course Code: BBTP-1080
Lab in Biochemistry-I
(Practical)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Perform Beer Lamberts Law

CO2: Determine pKa value while performing practical

CO3: Estimate carbohydrates in the given sample

CO4: Estimate proteins and fats in the sample by different methods

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-24
Course Code: BBTP-1080
Lab in Biochemistry-I
(Practical)

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

Practical: 40

CA: 10

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

Experiments:

1. Verification of Beer Lamberts Law for p-nitrophenol or cobalt chloride.
2. Determination of pKA value of p-nitrophenol.
3. Estimation of carbohydrate in given solution by anthrone method.
4. Study the presence of reducing/ non-reducing sugar in biological samples.
5. Protein estimation by Lowry's method.
6. Protein estimation by Bradford method.
7. Protein estimation by Biuret method.
8. The determination of acid value of a fat.
9. The determination of 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 Singh, R. (2014). Introductory Practical Biochemistry, Narosa Publishing House.
3. Wilson, K. And Walker, J. (2018). Principles and Techniques of Biochemistry, 8th Edition, McGraw Hill Education.

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-24
Course Code: BBTP-1341
Lab in General Microbiology-I
(Practical)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Understand sterilization techniques of different types of materials.

CO2: Learn methods of isolation and identification of bacteria

CO3: Learn methods of detection of microbes.

CO4: Understand preservation methods of microbes.

Bachelor of Science (Bio-Technology) Semester-I
Session: 2023-24
Course Code: BBTP-1341
Lab in General Microbiology-I
(Practical)

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

Practical: 40

CA: 10

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

Experiments:

1. Cleaning of glassware.
2. Preparation of cotton plugs
3. Preparation of media, and aseptic techniques of sterilization.
4. Isolation of micro-organism from air, water and soil samples. Dilution, spread plating and pour plating, Colony purification.
5. Identification of bacteria by simple staining, negative staining, and Gram staining.
6. Detection of specific bacteria by Wet mount preparation method and Hanging drop mount method.
7. To preserve bacteria by short term preservation methods like direct transfer to subculture, Immersion in oil, cryopreservation.

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.

Bachelor of Science (Biotechnology)
(Semester-I)
Session: 2023-24
Course Code: BBTP-1082
COURSE TITLE: Lab in Chemistry-I
(Practical)

Course outcomes:

Students will be able to:
CO1: understand the technique of volumetric analysis

CO2: understand Iodimetry, Iodometry

CO3: understand Redox titrations using $K_2Cr_2O_7$ and $KMnO_4$.

CO4: identify the various ions present in the mixture.

Bachelor of Science (Biotechnology)
(Semester-I)
Session: 2023-24
Course Code: BBTP-1082
COURSE TITLE: Lab in Chemistry-I
(Practical)

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

Practical: 40

CA: 10

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 submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Experiments

Volumetric Analysis:

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

Inorganic qualitative analysis:

Four ions (Two cations two anions).

A. Preliminary tests: Physical examination, Dry heating test, charcoal cavity test,

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

B. Acid radical analysis:

Dil. H_2SO_4 group: CO^{2-}_3, NO^-_2, S^{2-}, SO_3^{2-}

Conc, H_2SO_4 group: Cl^-, Br^-, I^-, NO_3^-, CH_3COO^-

Individual group: 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.

Book recommended:

G. Svehla, B. Sivasankar, Vogels Qualitative Inorganic Analysis 7 Edition, 2012

Bachelor of Science (Bio-Technology) Semester-I

Session: 2023-24

Course Code: AECD-1161

Course Title: Drug Abuse: Problem Management and Prevention (Compulsory)

(Theory)

Course Outcomes

After completing the course the students will be able to:

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

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

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

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

Bachelor of Science (Bio-Technology) Semester-I

Session: 2023-24

Course Code: AECD-1161

Course Title: Drug Abuse: Problem Management and Prevention (Compulsory)

(Theory)

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

Practical: 40

CA: 10

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

UNIT-I

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

Consequences of Drug Abuse for:

Individual : Education, Employment, Income.

Family : Violence.

Society : Crime , Social Disorganization

UNIT-II

Prevention of Drug abuse: Role of family: Parent child relationship, Family support, Supervision, Shaping values, Active Scrutiny.

School: Counselling, Teacher as role-model. Parent-teacher-Health, Professional Coordination, Random testing on students

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

UNIT-III

Management of Drug Abuse

Medical management : medication for treatment and to withdrawal effects.

UNIT-IV

Psychiatric Management: Counselling, Behavioural and Cognitive therapy.

Social Management: Family, Group therapy and Environmental Intervention.

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

Suggested Readings:

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

Bachelor of Science (Bio-Technology) Semester-I

Session: 2023-24

Course Code: SECF-1492

Course Title: Foundation course

(Theory)

Time: 1 Hr

Max. Marks: 50
Theory: 40
CA: 10

PURPOSE & AIM

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

INSTRUCTIONAL OBJECTIVES

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

CURRICULUM

MODULE	TITLE	CONTACT HOURS
I	**Introduction & Initial Assessment**	**2**
II	**The Human Story**	**3**
III	***The Vedas* and the Indian Philosophy**	**2.5**
IV	**Woman: A Journey through the Ages**	**2.5**
V	**Changing Paradigms in Society, Religion & Literature**	**2.5**
VI	**Makers of Modern India**	**2.5**
VII	**Racism: Story of the West**	**2.5**

VIII	**Modern World at a Glance: Political & Economic Perspective**	**2.5**
IX	**Technology Vis a Vis Human Life**	**2.5**
X	**My Nation My Pride**	**2.5**
XI	**The KMV Experience**	**2.5**
XII	**Final Assessment, Feedback & Closure**	**2.5**

EXAMINATION

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

SYLLABUS

Module I Being a Human: Introduction & Initial Assessment

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

Module 2 The Human Story

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

Module 3 *The Vedas* and the Indian Philosophy

- Origin, teachings and significance of *The Vedas*
- Upnishads and Puranas
- Karma Theory of *The Bhagwad Gita*

- Main tenets of Buddhism & Jainism
- Teachings of Guru Granth Sahib

Module 4 Changing Paradigms in Society, Religion & Literature

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

Module 5 Woman: A Journey through the Ages

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

Module 6 Makers of Modern India

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

Module 7 Racism: Story of the West

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

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

- Changing world order
- World War I & II
- UNO and The Commonwealth
- Nuclear Powers; Terrorism

- Economic Scenario: IMF, World Bank
- International Regional Economic Integration

Module 9 Technology Vis a Vis Human Life

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

Module 10 My Nation My Pride

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

Module 11 The KMV Experience

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

Module 12 Final Assessment, Feedback & Closure

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

PRESCRIBED READING

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

B.Sc. Bio-Technology Semester-II

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTL-2421
Punjabi Compulsory (Theory)

COURSE OUTCOMES

CO1: ਆਤਮ ਅਨਾਤਮ ਪੁਸਤਕ ਦੇ ਕਹਾਣੀ ਭਾਗ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਹਾਣੀ ਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਕਹਾਣੀ ਜਗਤ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO2: ਗੱਦ ਪ੍ਰਵਾਹ (ਰੇਖਾ ਚਿਤ੍ਰ ਤੇ ਹਲਕੇ ਲੇਖ) ਪੁਸਤਕ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਮੁੱਲਵਾਨ ਇਤਿਹਾਸ ਤੋਂ ਜਾਣੂ ਕਰਵਾਉਣਾ ਹੈ।

CO3: ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

CO4: ਸੰਖੇਪ ਰਚਨਾ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸਮੇਂ ਅਤੇ ਮਿਹਨਤ ਦੀ ਬੱਚਤ ਕਰਨ ਬਾਰੇ ਦੱਸਣਾ ਹੈ।ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂ ਨਾਲ ਗੱਲਬਾਤ ਵਿਚ ਪਰਪੱਕਤਾ ਆਉਂਦੀ ਹੈ।ਇਹ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤ ਵਿਚ ਨਿਖਾਰ ਲਿਆਉਣ ਦਾ ਕੰਮ ਕਰਨਗੇ।

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTL-2421
Punjabi Compulsory (Theory)

ਸਮਾਂ : 3 ਘੰਟੇ **Maximum Marks: 100**

Theory : 80

CA: 20

ਪਾਠਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਆਤਮ ਅਨਾਤਮ(ਕਹਾਣੀਭਾਗ),(ਸੰਪ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ) ਗੁਰੂ ਨਾਨਕ ਦੇਵ

ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

(ਉਜਾੜ,ਦਲਦਲ ਕਹਾਣੀਆਂ ਸਿਲੇਬਸ ਦਾ ਹਿੱਸਾ ਨਹੀਂ ਹੈ)

(ਵਿਸ਼ਾ-ਵਸਤੂ, ਸਾਰ)

16ਅੰਕ

ਯੂਨਿਟ-II

ਗੱਦ ਪ੍ਰਵਾਹ (ਰੇਖਾ ਚਿਤ੍ਰ ਤੇ ਹਲਕੇ ਲੇਖ), ਸੰਪਾ.ਬਿਕਰਮ ਸਿੰਘ ਘੁੰਮਣ, ਜਸਪਾਲ ਸਿੰਘ ਰੰਧਾਵਾ,ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ,ਅੰਮ੍ਰਿਤਸਰ।

(ਸਾਰ,ਵਿਸ਼ਾ ਵਸਤੂ) 16ਅੰਕ

ਯੂਨਿਟ-III

(ੳ) ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ : ਨਾਂਵ,ਪੜਨਾਂਵ,ਕਿਰਿਆ,ਵਿਸ਼ੇਸ਼ਣ
(ਅ) ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ: ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ,ਸੰਬੰਧਕ,ਯੋਜਕ,ਵਿਸਮਿਕ

16 ਅੰਕ

ਯੂਨਿਟ-IV

(ੳ) ਸੰਖੇਪ ਰਚਨਾ

(ਅ) ਮੁਹਾਵਰੇ / ਅਖਾਣ 16 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

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

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

3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 16ਅੰਕ ਹਨ।

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

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTL-2031
Basic punjabi

In lieu of Punjabi(Compulsory)

Course outcomes

CO1: ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ (ਨਾਂਵ, ਪੜਨਾਂਵ, ਕਿਰਿਆ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ, ਸਬੰਧਕ, ਯੋਜਕ ਅਤੇ ਵਿਸਮਿਕ) ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

CO2: ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਵਾਕ ਬਣਤਰ (ਸਾਧਾਰਨ ਵਾਕ, ਸੰਯੁਕਤ ਵਾਕ, ਮਿਸ਼ਰਤ ਵਾਕ, ਬਿਆਨੀਆ ਵਾਕ, ਪ੍ਰਸ਼ਨ ਵਾਚਕ ਵਾਕ ਅਤੇ ਹੁਕਮੀ ਵਾਕ) ਦੀ ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਇਸ ਦੀ ਬਣਤਰ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ ਅਤੇ ਉਨ੍ਹਾਂ ਦੀ ਭਾਸ਼ਾ ਤੇ ਪਕੜ ਮਜਬੂਤ ਹੋਵੇਗੀ।

CO3: ਪੈਰ੍ਹਾ ਰਚਨਾ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ। ਅਖਾਣ ਦੀ ਵਰਤੋਂ ਨਾਲ ਗੱਲਬਾਤ ਵਿਚ ਪਰਪੱਕਤਾ ਆਉਂਦੀ ਹੈ।ਇਹ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤ ਵਿਚ ਨਿਖਾਰ ਲਿਆਉਣ ਦਾ ਕੰਮ ਕਰਨਗੇ।

CO4: ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ ਲਿਖਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇਸ ਕਲਾ ਵਿਚ ਨਿਪੁੰਨ ਕਰਨਾ ਹੈ।ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂ ਨਾਲ ਗੱਲਬਾਤ ਵਿਚ ਪਰਪੱਕਤਾ ਆਉਂਦੀ ਹੈ।ਇਹ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤ ਵਿਚ ਨਿਖਾਰ ਲਿਆਉਣ ਦਾ ਕੰਮ ਕਰਨਗੇ।

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTL-2031
Basic punjabi

In lieu of Punjabi(Compulsory)

ਸਮਾਂ: 3 ਘੰਟੇ **Maximum Marks: 100**

Theory : 80

CA : 20

ਪਾਠਕ੍ਰਮ

ਯੂਨਿਟ-I

ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ (ਨਾਂਵ, ਪੜਨਾਂਵ, ਕਿਰਿਆ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ, ਸਬੰਧਕ, ਯੋਜਕ ਅਤੇ ਵਿਸਮਿਕ) 16 ਅੰਕ

ਯੂਨਿਟ-II

ਪੰਜਾਬੀ ਵਾਕ ਬਣਤਰ : ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ

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

(ਅ) ਬਿਆਨੀਆ ਵਾਕ, ਪ੍ਰਸ਼ਨ ਵਾਚਕ ਵਾਕ ਅਤੇ ਹੁਕਮੀ ਵਾਕ (ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ) 16 ਅੰਕ

ਯੂਨਿਟ-III

ਪੈਰ੍ਹਾ ਰਚਨਾ

ਅਖਾਣ (ਅਖਾਣਾਂ ਦੀ ਲਿਸਟ ਨਾਲ ਨੱਥੀ ਹੈ) 16 ਅੰਕ

ਯੂਨਿਟ-IV

ਚਿੱਠੀ ਪੱਤਰ (ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀ)

ਮੁਹਾਵਰੇ (ਮੁਹਾਵਰਿਆਂ ਦੀ ਲਿਸਟ ਨਾਲ ਨੱਥੀ ਹੈ) 16 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

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

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

3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 16 ਅੰਕ ਹਨ।

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

ਅਖਾਣ

ਉੱਦਮ ਅੱਗੇ ਲੱਛਮੀ ਪੱਖੇ ਅੱਗੇ ਪੌਣ ,ਉਹ ਦਿਨ ਡੁੱਬਾ ਜਦੋਂ ਘੋੜੀ ਚੜ੍ਹਿਆ ਕੁੱਬਾ ,ਉੱਚੀ ਦੁਕਾਨ ਫਿੱਕਾ ਪਕਵਾਨ ,ਉਲਟੀ ਵਾੜ ਖੇਤ ਨੂੰ ਖਾਏ ,ਉੱਚਾ ਲੰਮਾ ਗੱਭਰੂ ਪੱਲੇ ਠੀਕਰੀਆਂ ,ਅੱਖੀਂ ਵੇਖ ਕੇ ਮੱਖੀ ਨਹੀਂ ਨਿਗਲੀ ਜਾਂਦੀ ,ਅੰਦਰ ਹੋਵੇ ਸੱਚ ਤਾਂ ਕੋਠੇ ਚੜ੍ਹ ਕੇ ਨੱਚ ,ਆਪੇ ਮੈਂ ਰੱਜੀ ਪੁੱਜੀ ਆਪੇ ਮੇਰੇ ਬੱਚੇ ਜਿਉਣ ,ਆਪ ਕੁਚੱਜੀ ਵਿਹੜੇ ਨੂੰ ਦੋਸ਼ ,ਅੰਨ੍ਹਾ ਵੰਡੇ ਰਿਉੜੀਆਂ ਮੁੜ ਮੁੜ ਆਪਣਿਆਂ ਨੂੰ ,ਅਕਲ ਵੱਡੀ ਕੇ ਮੱਝ ,ਅੰਨ੍ਹਿਆਂ ਵਿੱਚ ਕਾਣਾ ਰਾਜਾ ,ਆਪਣੀ ਪੀੜ੍ਹੀ ਹੇਠ ਸੋਟਾ ਫੇਰਨਾ ,ਇਕ ਅਨਾਰ ਸੌ ਬਿਮਾਰ ,ਇਕ ਹੱਥ ਨਾਲ ਤਾੜੀ ਨਹੀਂ ਵੱਜਦੀ ,ਇੱਕ ਚੁੱਪ ਸੌ ਸੁੱਖ ਝੱਟ ਮੰਗਣੀ ਪੱਟ ਵਿਆਹ ,ਸਹਿਜ ਪੱਕੇ ਸੋ ਮੀਠਾ ਹੋਵੇ ,ਦਾਲ ਵਿੱਚ ਕਾਲਾ ਹੋਣਾ ,ਸੱਦੀ ਨਾ ਬੁਲਾਈ ਮੈਂ ਲਾੜੇ ਦੀ ਤਾਈਂ ,ਸਵੈ ਭਰੋਸਾ ਵੱਡਾ ਤੋਸਾ,ਸੌ ਦਿਨ ਚੋਰ ਦੇ ਇਕ ਦਿਨ ਸਾਧ ਦਾ ,ਸੱਪ ਦਾ ਬੱਚਾ ਸਪੋਲੀਆ ,ਸੱਪ ਮਰ ਜਾਵੇ ਲਾਠੀ ਵੀ ਨਾ ਟੁੱਟੇ ,ਸਾਈਆਂ ਕਿਤੇ ਵਧਾਈਆਂ ਕਿਤੇ ,ਹੰਕਾਰਿਆ ਸੋ ਮਾਰਿਆ ,ਹਾਥੀ ਲੰਘ ਗਿਆ ਪੂਛ ਰਹਿ ਗਈ ,ਕੁੱਛੜ ਕੁੜੀ ਸ਼ਹਿਰ ਢੰਡੋਰਾ ,ਕੋਲਿਆਂ ਦੀ ਦਲਾਲੀ ਵਿੱਚ ਮੂੰਹ ਕਾਲਾ ,ਕਰੇ ਕੋਈ ਭਰੇ ਕੋਈ ,ਖ਼ਵਾਜੇ ਦਾ ਗਵਾਹ ਡੱਡੂ ,ਖੇਤੀ ਖਸਮਾਂ ਸੇਤੀ ,ਖੂਹ ਪੁੱਟਦੇ ਨੂੰ ਖਾਤਾ ਤਿਆਰ ,ਘਰ ਦਾ ਭੇਤੀ ਲੰਕਾ ਢਾਹੇ ,ਘਰ ਦੀ ਕੁੱਕੜੀ ਦਾਲ ਬਰਾਬਰ ,ਚਿੰਤਾ ਚਿਖਾ ਬਰਾਬਰ , ਛੱਜ ਤਾਂ ਬੋਲੇ ਛਾਣਨੀ ਵੀ ਬੋਲੇ,ਛੋਟੀ ਮੂੰਹ ਵੱਡੀ ਗੱਲ ,ਜਾਂਦੇ ਚੋਰ ਦੀ ਲੰਗੋਟੀ ਹੀ ਸਹੀ ,ਜਿਸ ਦੀ ਕੋਠੀ ਦਾਣੇ ਉਹਦੇ ਕਮਲੇ ਵੀ ਸਿਆਣੇ ,ਜਿਹੜੇ ਗੱਜਦੇ ਨੇ ਉਹ ਵਰ੍ਹਦੇ ਨਹੀਂ , ਝੱਟ ਮੰਗਣੀ ਪੱਟ ਵਿਆਹ , ਰੱਸੀ ਸੜ ਗਈ ਵੱਟ ਨ੍ਹੀਂ ਗਿਆ

ਮੁਹਾਵਰੇ

ਉਸਤਾਦੀ ਕਰਨੀ, ਉਂਗਲ ਕਰਨੀ, ਉੱਲੂ ਬਣਾਉਣਾ ,ਉੱਚਾ ਸਾਹ ਨਾ ਕੱਢਣਾ, ਉੱਡਦੇ ਫਿਰਨਾ ,ਉੱਘ ਸੁੱਘ ਮਿਲਣੀ,ਅੱਖਾਂ ਵਿਚ ਰੜਕਣਾ ,ਅੱਗ ਲਾਉਣਾ ,ਆਵਾ ਊਤ ਜਾਣਾ ,ਅਸਮਾਨ ਨੂੰ ਟਾਕੀਆਂ ਲਾਉਣਾ, ਅੱਖਾਂ ਵਿੱਚ ਲਾਲੀ ਉਤਰਨੀ ,ਅਕਲ ਤੇ ਪਰਦਾ ਪੈਣਾ, ਈਨ ਮੰਨਣੀ, ਈਦ ਦਾ ਚੰਨ ਹੋਣਾ, ਇੱਟ ਨਾਲ ਇੱਟ ਖੜਕਾਉਣਾ,ਸਿਰ ਫਿਰਨਾ, ਸਿਰ ਤੇ ਚੜ੍ਹਨਾ ,ਸਬਰ ਦਾ ਘੁੱਟ ਭਰਨਾ, ਸਿਰ ਪੈਰ ਨਾ ਹੋਣਾ, ਹੱਥ ਧੋ ਕੇ ਪਿੱਛੇ ਪੈਣਾ, ਹੱਥੀਂ ਛਾਂਵਾਂ ਕਰਨੀਆਂ, ਹੱਡ ਭੰਨਣੇ, ਹੱਥ ਤੰਗ ਹੋਣਾ ,ਹੱਥ ਮਲਣਾ,ਹੱਥ ਪੈਰ ਮਾਰਨਾ,ਕੰਨੀਂ ਕਤਰਾਉਣਾ, ਕੰਨ ਤੇ ਜੂੰ ਨਾ ਸਰਕਣਾ, ਕੰਨ ਘੇਸਲ ਮਾਰਨੀ, ਖ਼ਾਨਾ ਖ਼ਰਾਬ ਹੋਣਾ, ਖਾਨਿਓ ਜਾਣਾ, ਗੁੱਡੀ ਚੜ੍ਹਨੀ, ਗਲ ਪੈਣਾ ,ਗੰਗਾ ਨਹਾਉਣਾ ,ਚੜ੍ਹ ਮੱਚਣੀ, ਚੰਦ ਚਾੜ੍ਹਨਾ, ਚਾਦਰ ਵੇਖ ਕੇ ਪੈਰ ਪਸਾਰਨਾ ,ਚਕਮਾ ਦੇਣਾ ,ਛੱਕੇ ਛੜਾਉਣਾ ,ਛਾਪਾ ਮਾਰਨਾ, ਛਿੱਲ ਲਾਉਣੀ ,ਛਿੱਕੇ ਟੰਗਣਾ

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course code: BBTL-2431

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

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

COURSE OUTCOMES

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

CO 1: The reasons and impact of Alexander's invasions and to comprehend various factors leading to rise and fall of empires and emergence of new dynasties and their administration specifically of Maurya rule in general and Ashok in particular

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

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

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

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course code: BBTL-2431

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

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

Examination Time: 3 Hours **Max. Marks: 100**
Theory: 80
CA: 20

Instructions for the Paper Setter:

1. Question paper shall consist of four Units
2. Examiner shall set 8 questions in all by selecting Two Questions of equal marks from each Unit.
3. Candidates shall attempt 5 questions in 1000 words, by at least selecting One Question from each Unit and the 5th question may be attempted from any of the four Units.
4. Each question will carry 16 marks

Unit-I

1. Alexander's Invasion's and Impact
2. Administration of Chandragupta Maurya with special reference to reforms introduced by Ashok

Unit-II

3. The Kushans: Gandhar School of Art
4. Gupta Empire: Golden Period-Social and cultural life, Art and Architecture)

Unit-III

5. The Punjab under Harshvardhana-Society and Religion During the time of Harshvardhana
6. Socio-cultural History of Punjab from 7th to 1000 A.D.

UNIT IV

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

8. Development to Art and Architecture

Suggested Readings

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

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTL-2102
Communication skills in English

(Theory)

COURSE OUTCOMES

At the end of this course, the students will develop the following skills:

CO 1: Enhancement of listening skills with the help of listening exercises based on conversation, news and TV reports

CO 2: The ability of Note-Taking to be able to distinguish the main points from the supporting details and the irrelevant information from the relevant one

CO 3: Improvement of speaking skills enabling them to converse in a specific situation

CO 4: Acquisition of knowledge of phonetics which will help them in learning about correct pronunciation as well as effective speaking

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTM-2102
Communication skills in English

(Theory)

Time: 3 hours (Theory) **Max. Marks: 100**

3 hours (Practical) **Theory: 50**

Practical: 30

Continuous Assessment: 20

Instructions for the paper setter and distribution of marks:

The question paper will consist of four sections. The candidate will have to attempt five questions in all selecting one from each section and the fifth question from any of the four sections. Each question will carry 10 marks. Each question can be sub divided into two parts. (10 x 5 = 50)

Section-A: Two questions of theoretical nature will be set from Unit I.

Section-B: Two questions will be given to the students from Unit II.

Section-C: Two questions will be given from Unit III.

Section D: Two questions will be given from Unit IV.

Course Contents:

Unit I

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

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

Unit II

Attending telephone calls; note taking and note making

Activities: Taking notes on a speech/lecture

Unit III

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

Unit IV

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.

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTM-2102
Communication skills in English

(Practical/Oral testing)

Time: 3 hours **Marks: 30**

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.

Bachelor of Science (Bio-Technology)

Semester–II

Session 2023-24

Course Title: Biomathematics and Biostatistics

Course Code: BBTL-2333

Course Outcomes

Upon completion of this course, students should be able to:

CO 1: Calculate summary statistics (mean, median, mode, range, standard deviation and variance) from the data.

CO 2: Familiar with the concepts of probability, conditional probability and Bayes theorem.

CO 3: Familiar with the concepts of correlation and regression, Scatter diagram, linear correlation and linear regression lines.

CO 4: State the null hypothesis and alternative hypothesis (both one way and two ways) appropriate to a given scenario and determine if it is appropriate to use the Chi-Square test for testing the significance of fit between data and predicted data.

Bachelor of Science (Bio-Technology)

Semester–II

Session 2023-24

Course Title: Biomathematics and Biostatistics

Course Code: BBTL-2333

(Theory)

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

L-T-P **Theory: 80**

4-0-0 **CA: 20**

Instructions for the Paper Setter:

Eight questions of equal marks (16 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

The students can use only Non Programmable & Non Storage Type Calculator and statistical tables.

Unit-I

Scientific notation, Significant digits, Rounding off, Sampling, Data Collection, Log, Indices. Differentiation and Integration of Standard Functions, results relating to the sum, difference, product and quotient of functions (without proofs), derivative & integration of trigonometric functions, inverse trigonometric functions, logarithmic functions and exponential functions, logarithmic differentiation & integration.

Unit-II

Measurement of Central tendency, mean, geometric mean, harmonic mean, Median, Mode, Quartile mean, decile, percentile, Dispersion, Mean Deviation, Standard Deviation, Standard error, Coefficient of variation, Variance, Coefficient of determinant, moments, skewness and kurtosis.

Unit-III

Graphical representation of data, scattered diagram, Straight line, Least square test, Correlation coefficient, Regression Coefficient. Normal Distribution, Poisson distribution, Binomial distribution.

Unit-IV

Testing of hypothesis, null and alternate hypothesis, level of significance, Student ‘t’ test as a test of single mean and difference of mean and ‘F’ test as a test of equality of variances, Chi-square test (Goodness of fit & Association of Attributes), Analysis of variance (one way ANOVA).

Text Book:

P.N. Arora, P.K. Malhan, Biostatistics, Himalaya Publishing House, thoroughly revised edition, 2020. (Unit-II, III, IV)

Reference Books:

1. S.C Gupta, V.K Kapoor, Fundamentals of mathematical statistics, Sultan Chand and Sons, Delhi, Ninth edition, 1997
2. Mathematics Textbook for class XI, NCERT
3. Mathematics Textbook for class XII, NCERT
4. C.R. Kothari, Research Methodology Methods and Techniques, New Age International Publications, New Delhi (2004)
5. Robert R. Sokal and F. James Rohlf, Introduction to Biostatistics, Dover Publications, INC, Mincola, New York, 2nd Edition 2009

Bachelor of Science (Bio-Technology) Semester-II

Session: 2023-24

Course Code: BBTL-2484

Course Title: Zoology-I

(Theory)

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

Theory: 80

CA: 20

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

Unit-1

Introduction to Animal Kingdom and its diversification:
Overview and General classification of Kingdom Animalia, General Characteristics of each group upto class level with an example.

Unit-2

Digestive System: The alimentary canal and associated glands of Man. Digestion of dietary constituents, regulation of digestive processes and absorption. Extra and intracellular digestion, enzymatic digestion and symbiotic digestion.

Respiratory System: Respiratory system of man, Transport of O2 and CO2, Oxygen dissociation curve of haemoglobin, Bohr effect, chloride shift, Haldane effect and control of breathing.

Unit-3

Circulatory System: General plan of circulation in Man, structure of human heart. Origin and regulation of heart beat, Electrocardiogram, Cardiac output and Blood pressure, Composition and functions of blood and lymph, Blood clotting, blood groups including Rh-factor.

Excretory system: Structure of Kidney and nephron. Urine formation and osmoregulation.

Unit-4

Skeletal system: Ultrastructure, chemical and physical basis of skeletal muscle contraction.

Neural Integration: Structure and functions of brain, Structure of neuron, resting membrane potential, Origin and propagation of impulse along the axon, synapse and myoneural junction.

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

Suggested Readings:

1. Sobti, R.C. & Nigam, S.K. (2002). Structural & function biology of chordates, VishalPublishers, Jalandhar.

2. Sobti, R.C. & Sharma, V.L. (2005). Basics of Biotechnology: Introduction of LifeSciences. Vishal Publishers, Jalandhar.

3. Sobti, R.C. (2005). Introduction to Biotechnology, Part-2, Concepts Tools andApplication, Vishal Publishers.

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTL-2065
Genetics
(Theory)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Understand Mendelian and Neo-mendelian genetics along with the study of phenomenon of dominance, laws of segregation, independent assortment of genes

CO2: Develop an understanding of the principles and mechanisms of linkage and crossing over.

CO3: To learn various types of mutations their significance and practical applications along with basic microbial genetics

CO4: Understand the organization of chromosomes and concept of human genetics

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTL-2065
Genetics
(Theory)

Time: 3 Hours

Theory: 80
CA: 20

Instructions for the Paper Setter

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

Unit - I

Mendel's Laws of Inheritance: Principle of segregation and independent assortment, Monohybrid, dihybrid, and trihybrid crosses, back cross and test cross, concept of probability

Interaction of Genes: Incomplete inheritance and co-dominance, pleiotropism, modification of **F2** ratios: epistasis, complementary genes, supplementary genes, inhibitory genes, duplicate genes, lethality, and collaborators genes. Multiple allelism.

Unit – II

Linkage: Coupling and repulsion hypothesis, chromosomal theory of linkage, complete and incomplete linkage, linkage groups and significance of linkage.

Crossing Over: Introduction, mechanism of meiotic crossing over, types of crossing over, factors affecting it and its significance.

Unit – III

Mutation: Spontaneous versus induced mutations, types of mutations, mutations rate and frequency, Mutagens: Physical and chemical, the molecular basis of mutations. Significance and practical applications of mutation

Basic Microbial Genetics: Conjugation, transduction, transformation

Unit – IV

Organization of Chromosomes: The structure of prokaryotic and eukaryotic chromosome, centromere, and telomere structure, euchromatin and heterochromatin, Special chromosomes: Polytene chromosomes and lampbrush chromosomes, satellite DNA, supercoiling of DNA.

Human Genetics: Population genetics, Hardy Weinberg law, Pedigree analysis, Karyotyping, genetic disorders.

Books Recommended:

1. Gupta, P.K. (2018). Genetics, 5th Revised Edition, Rastogi Publications.
2. Hartl, D.L., Cochrane, B. (2017). Genetics: Analysis of Genes & Genomes 9th Edition. Jones & Bartlett Publishers.
3. Brooker, R.J. (2017). Genetics: Analysis and Principles, McGraw-Hill Education.
4. Pierce, B. (2016). Genetics: A conceptual approach, 6th Edition, WH Freeman.
5. Snustad and Simmons (2015). Principles of Genetics, 7th Edition, John Wiley & Sons.

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTL-2086
Biochemistry – II
(Theory)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Familiarize with biomolecules and related metabolic pathways

CO2: Know the importance and metabolic role of ATP and other energy rich metabolites

CO3: Familiarize with enzymes and related mechanism

CO4: Get acquainted with the concept of enzyme kinetics.

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTL-2086
Biochemistry – II
(Theory)

Time: 3 Hours

Theory: 80
CA: 20

Instructions for the Paper Setters:

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

Unit-I

Introduction to metabolism, catabolism, anabolism, Laws of thermodynamics and living system, free energy change and direction of metabolism, Characteristics of metabolic pathways, Compartmentation and inter-organ metabolism, Regulation and evolution of metabolic pathways

Unit-II

ATP: Structure, free energy change, energy coupling with ATP (Creatinine phosphokinase, NDP kinase, Adenylate kinase), metabolic roles of ATP; Experimental methods for studying metabolism, energy rich metabolites, biological oxidation – reduction reactions

Unit-III

Introduction to enzymes: Nomenclature, classification and characteristics of enzymes, cofactors, co-enzyme and prosthetic group, Mechanism of enzyme action: Nature of active site, enzyme substrate complex, Factors responsible for catalytic efficiency of enzymes., covalent catalysis, acid base catalysis, strain and distortion theory, induced fit hypothesis.

Unit-IV

Enzyme Kinetics: A brief overview of enzyme energetics, Michaelis Menten equation. Derivation of Michaelis Menten equation and determination of Km and Vmax values

Enzyme inhibition: Reversible and irreversible inhibition, Kinetics of competitive, uncompetitive, and non-competitive inhibition. Regulation of enzyme activity, isozymes, and their importance

Books Recommended:

1. Voet, D., Voet, J.G. and Prait, C.W. (2018). Principles of Biochemistry, 5th 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.

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTL-2347
General Microbiology-II
(Theory)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Know the concept of microbial growth in batch and continuous system.

CO2: Know the basics of viruses and its types.

CO3: Have the basic mechanism of action, diagnosis, and treatment for different viral, bacterial, and fungal diseases.

CO4: Acquire the knowledge of industrial microbiology and to understand the role of microbes in environment.

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTL-2347
General Microbiology-II
(Theory)

Time: 3 Hours

Theory: 80
CA: 20

Instructions for the Paper Setters:

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

UNIT-I

Factors affecting microbial growth: temperature, pH, provision of gases. Introduction to concept of microbial growth in batch and continuous system. Bacterial generation, doubling time, and specific growth rate. Monoauxic, diauxic and synchronized growth curve. Sporulation and regeneration of bacteria.

UNIT-II

Viruses-Introduction, plant and animal viruses-structure and composition, classification based on differences 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 microorganisms- Factors contributing towards 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. Bacterial diseases-Diphtheria, Tuberculosis, Typhoid, *Streptococcus*, *Klebsiella* infection. Fungal diseases-Aspergillosis and Candidiasis.

UNIT-IV

Introduction to role of microbes in environment, bio-mining, bioconversion, bioremediation, and municipal solid waste transformations.

Books Recommended:

1. Davis, B.D., Dulbecco. R., Eisen, H.N. and Ginsberg, H.S. (1990). Microbiology: 4th Edition, Harper & Row, Publishers, Singapore.
2. Tortora, G.J., Funke, B.R. and Case, C.L. (1994). Microbiology: An Introduction: 5th Edition, The Benjamin / Cummings Publishing Company, Inc.
3. Stanier, R.Y. (1995). General microbiology, MacMillan Press, London.
4. Pelczar, M.T. (1995). Microbiology, Tata McGraw Hill Publication, New Delhi.
5. Schlegel, H. G., (1995). General Microbiology 7th Edition, Cambridge Univ. Press.
6. Jain, S.K. (1999). Prescott and Dunn's Industrial Microbiology 4th Edition, CBS Publishers & Distributors.
7. Chander, M. and Puri, P (2008). A Concise Course in Microbiology, Krishna Brothers Publishers, Old Railway Road, Jalandhar.
8. Postgate. J. (2000). Microbes & Man, 4th Edition, Cambridge Univ. Press.
9. Tortora. G.J., Funke. B.R. (2001). Microbiology: An Introduction, Benjamin Cummings.

Bachelor of Science (Bio-Technology) Semester-II

Session: 2023-24

Course Code: BBTP-2488

Course Title: Lab in Zoology-I

(Practical)

COURSE OUTCOMES

After passing this course the student will be able to:

- CO1 Understand the estimation of blood haemoglobin
- CO2 Familiarize with the various systems of mammals such as digestive, arterial, venous and urinogenital systems.
- CO3 The students will be able to record blood pressure and blood groups.
- CO4 Analyse the food stuff for the presence of starch, protein and fats.

Bachelor of Science (Bio-Technology) Semester-II

Session: 2023-24

Course Code: BBTP-2488

Course Title: Lab in Zoology-I

(Practical)

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

Practical: 40

CA: 10

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

1. Study the following system of mammals with the help of charts / models /videos:

   Digestive, Arterial, Venous and Urinogenital systems.

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. Make a temporary preparation of the following:

   Blood smear of mammals.

6. Visit to clinical laboratory / hospital for demonstration of ECG, ECHO, X-ray, ultrasound, CT-scan and MRI.

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTP-2069
Lab in Genetics
(Practical)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Understand Mendelian laws.

CO2: Solve paternity disputes.

CO3: Demonstrate segregation in preserved material.

CO4: Study polytene chromosomes and dermatoglyphics.

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTP-2069
Genetics
(Practical)

Time: 3 Hrs. **Practical Marks: 40**
CA: 10

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

Experiments:

1. Demonstration of Law of segregation and Independent assortment (use of colored beads, capsules etc.).
2. Numerical problems on Mendelism and on modified F2 ratios.
3. Numerical problems on paternity disputes (Blood groups)
4. Segregation demonstration in preserved material
5. Study of polytene chromosomes from permanent slides.
6. Dermatographics: Palm print taking and fingertip patterns.
7. Preparation and study of mitosis slides from onion root tips by squash method.

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTP-2080
Lab in Biochemistry – II
(Practical)

Upon completion of this course, the student will be able to:

CO1: Estimate the enzyme activity.

CO2: Determine the effect of physical parameters on enzyme activity.

CO3: Determine Km (Michaelis constant) for enzymes

CO4: Perform and analyze competitive and non-competitive inhibition in enzymes

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTP-2080
Lab in Biochemistry – II
(Practical)

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

CA:10

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

Experiments:

1. Estimation of Alpha-amylase activity from saliva.
2. Assay of acid phosphatase activity.
3. Effect of temperature on enzyme activity.
4. Effect of pH on enzyme activity
5. Determination of Km for acid phosphatase.
6. Competitive and non-competitive inhibition.

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. (2018). Principles and Techniques of Biochemistry, 8thEdition, McGraw Hill Education.

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTP-2341
Lab in General Microbiology-II
(Practical)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Count microorganisms by different methods using microbiological practices

CO2: Know the importance of personal hygiene.

CO3: Identify different fungus by staining

CO4: Study the growth curve of different microorganisms

Bachelor of Science (Bio-Technology) Semester-II
Session: 2023-24
Course Code: BBTP-2341
Lab in General Microbiology-II
(Practical)

Time: 3 Hrs. **Practical Marks: 40**
CA: 10

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

Experiments:

1. Enumeration of microorganism. Total vs viable counts.

2. Personal hygiene-Microbes from hands, tooth-scum and other body parts.

3. Monoauxic and diauxic growth curve of micro-organisms.

4. Identification of fungus by and lactophenol staining.

5. Identification of formation of germ tube by *Candida albicans*.

6.Visualization of *Streptococcus*

7.Waste water management test

Books Recommended:

1. Cappuccino, J.G. and Sherman, N. (2014). Microbiology: A Laboratory Manual 10th Edition, Harlow, Addition-Wesley.

2. Sambrook, J. and Russel, D.W. (2012). Molecular Cloning: A laboratory manual 4th Edition, Cold Spring Harbor Laboratory Press, New York.

3. Dubey, R.C. and Maheshwari (2012) Practical Microbiology 5th Edition, S. Chand and company Ltd, New Delhi

Bachelor of Science (Bio-Technology) Semester-II

Session: 2023-24

Course Code : SECM-2502

Course Title : Moral Education Course

AUDIT COURSE (Value Based)

Course Duration: 30 hours

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

Course Credits: 2

Course Description:-

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

Expectations:-

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

EXAMINATION

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

80%-89% marks : B grade

70%-79% marks : C grade

60%-69% marks : D grade

50%-59% marks : E grade

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

SYLLABUS

Module I: Introduction

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

Module II: The Self and You

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

Module III: The Family and You

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

Module IV: The Society and You

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

Module V: The Nation and You

- International peace and brotherhood
- Saving the environment