

FACULTY OF SCIENCES

**SYLLABUS
of
B.Sc. Computer Science
(Semester I,III,V)
(Under Continuous Evaluation System)**

Session: 2020-21



**The Heritage Institution
KANYA MAHA VIDYALAYA
JALANDHAR
(Autonomous)**

	Geometry)								
BCSM-3134	Computer Science (Computer Oriented Numerical And Statistical Methods)		C	100	50	30	20	3+3	
	Computer Science Practical (P)								
BCSM-3395	Physics(Statistical Physics & Thermodynamics)		C	100	60 (30+30)	20	20	3+3+3	
	Physics(Optics)								II
	Physics Practical								P
AECE-3221	*EVS (Compulsory)		AC	50	40	-	10	3	
SECP-3512 Or	*Personality Development Course/*Gender Sensitization		AC	25	Grade only			1	
Total				400					
SemesterV									
Course Code	Course Name		Course Type	Marks				Examination time (in Hours)	
				Total	Ext.		CA		
					L	P			
BCSL-5421 BCSL-5031 BCSL-5431	Punjabi(Compulsory) Basic Punjabi PHC		C	50	40	-	10	3	
BCSL-5212	English (Compulsory)		C	50	40	-	10	3	
BCSM -5333	Mathematics (Dynamics)	I	C	100	80 (40+40)	-	20	3+3	
	Mathematics (Number Theory)	II							
BCSM-5134	Computer Science (Database Management System & Oracle)		C	100	50	30	20	3+3	
	Computer Science Practical (P)								
BCSM-5395	Physics (Condensed Matter Physics)		C	100	60 (30+30)	20	20	3+3+3	
	Physics(Nuclear Physics)								II
	Physics Practical								P
Total				400					

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

C-Compulsory

E-Elective

AECC- Ability Enhancement Compulsory Course

VBCC- Value Based Compulsory Course

Programme Specific Outcomes – B. Sc. C.Sc. (Phy. C.Sc. Maths.)

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

PSO 1. Demonstrate proficiency in mathematics and the mathematical concepts needed for a proper understanding of physics and computers.

PSO 2. Solve mathematical problems by critical understanding, analysis and synthesis.

PSO 3. Demonstrate knowledge of mechanics, electromagnetism, quantum mechanics, optics & lasers, waves & vibrations, statistical physics, condensed matter physics, electronics, nuclear & particle physics and be able to apply this knowledge to analyse a variety of physical phenomena.

PSO 4. Demonstrate knowledge of various languages of Computer programming and apply this knowledge to interpret and analyse quantitative data.

PSO 5. Show that they have learned laboratory skills, enabling them to take measurements in a physics laboratory and analyse the measurements to draw valid conclusions.

PSO 6. Capable of oral and written scientific communication i.e. able to communicate effectively by oral, written, computing and graphical means.

Session 2020-21

Semester I

PUNJABI (COMPULSORY)

COURSE CODE- BCSL -1421

COURSE OUTCOMES

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

CO2: ਇਸ ਦਾ ਹੋਰ ਮਨੋਰਥ ਕਵਿਤਾ ਦੀ ਵਿਆਖਿਆ, ਵਿਸ਼ਲੇਸ਼ਣ ਤੇ ਮੁਲਾਂਕਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ ਵੀ ਹੈ ਤਾਂ ਕਿ ਉਹ ਸਮਕਾਲੀ ਸਮਾਜ ਦੀਆਂ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਸਮਝ ਸਕਣ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਦ੍ਰਿਸ਼ਟੀ ਬਣਾ ਸਕਣ।

CO3: ਸੰਸਾਰ ਦੀਆਂ ਪ੍ਰਸਿਧ ਹਸਤੀਆਂ ਜੀਵਨੀ ਦੀ ਵਿਧਾ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਜੀਵਨੀ ਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਜੀਵਨੀ ਜਗਤ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO4: ਪੈਰ੍ਹਾ ਰਚਨਾ ਅਤੇ ਪੈਰ੍ਹਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ ਦੇਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨ੍ਹਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO6: ਧੁਨੀ ਵਿਉਂਤ ਪੜ੍ਹਣ ਨਾਲ ਵਿਦਿਆਰਥੀ ਧੁਨੀਆਂ ਦੀ ਉਚਾਰਨ ਪ੍ਰਣਾਲੀ ਤੋਂ ਵਾਕਫ਼ ਹੋਣਗੇ।

Session 2020-21

Semester I

PUNJABI (COMPULSORY)

COURSE CODE- BCSL -1421

ਸਮਾਂ: 3 ਘੰਟੇ

Maximum Marks: 50

Theory: 40

CA: 10

ਪਾਠ ਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਦੋ ਰੰਗ (ਕਵਿਤਾ ਭਾਗ) (ਸੰਪਾ. ਹਰਜਿੰਦਰ ਸਿੰਘ ਢਿਲੋਂ ਅਤੇ ਪ੍ਰੀਤਮ ਸਿੰਘ ਸਰਗੋਧੀਆ), ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

(ਕਵਿਤਾ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ)

8 ਅੰਕ

ਯੂਨਿਟ-II

ਸੰਸਾਰ ਦੀਆਂ ਪ੍ਰਸਿਧ ਹਸਤੀਆਂ (ਜੀਵਨੀ ਨੰ: 1 ਤੋਂ 9 ਤਕ)

(ਸੰਪਾ. ਪ੍ਰਿੰ. ਤੇਜਾ ਸਿੰਘ, ਹਰਨਾਮ ਸਿੰਘ ਸ਼ਾਮ), ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।

(ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ)

8 ਅੰਕ

ਯੂਨਿਟ-III

(ੳ) ਪੈਰਾ ਰਚਨਾ (ਤਿੰਨ ਵਿਚੋਂ ਇਕ)

(ਅ) ਪੈਰਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ।

8 ਅੰਕ

ਯੂਨਿਟ-IV

(ੳ) ਪੰਜਾਬੀ ਧੁਨੀ ਵਿਉਂਤ : ਪਰਿਭਾਸ਼ਾ ਤੇ ਉਚਾਰਨ ਅੰਗ

(ਅ) ਸਵਰ, ਵਿਅੰਜਨ

8 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

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

BASIC PUNJABI

In lieu of Punjabi (Compulsory)

COURSE CODE - BCSL -1031

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।

CO2:ਇਸ ਵਿਚ ਵਿਦਿਆਰਥੀ ਨੂੰ ਬਾਰੀਕਬੀਨੀ ਨਾਲ ਭਾਸ਼ਾ ਦਾ ਅਧਿਐਨ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

CO3:ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਸ਼ਬਦ ਰਚਨਾ ਤੋਂ ਜਾਣੂ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

CO4:ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ ਬਾਰੇ ਦੱਸਣਾ ਹੈ।

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

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

SESSION 2020-21
BASIC PUNJABI

In lieu of Punjabi (Compulsory)

COURSE CODE - BCSL -1031

ਸਮਾਂ : 3 ਘੰਟੇ

Maximum Marks: 50

Theory : 40

CA : 10

ਪਾਠ ਕ੍ਰਮ

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 ।

08ਅੰਕ

ਯੂਨਿਟ-II

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

08ਅੰਕ

ਯੂਨਿਟ-III

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

ਅੰਕ

08

ਯੂਨਿਟ-IV

ਹਫ਼ਤੇ ਦੇ ਸੱਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕ ਤੋਂ ਸੌ ਤਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂ ਵਿਚ ।

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

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

(Semester-I)
Session 2020-21
Course Title: Punjab History and Culture (From Earliest Times to C 320)
(Special paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)

Course Code: BCSL-1431

COURSE OUTCOMES

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

CO1: Identify and describe the emergence of earliest civilizations in: Indus Valley Civilization and Aryan Societies.

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

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

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

(Semester-I)
Session 2020-21
Course Title: Punjab History and Culture (From Earliest Times to C 320)
(Special paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)

Course Code: BCSL-1431

Examination Time: 3 Hours

Max. Marks: 50

Theory: 40

C A: 10

Instructions for the Paper Setters

1. Question paper shall consist of four Units
2. Examiner shall set 8 questions in all by selecting **Two Questions** of equal marks from each Unit.
3. Candidates shall attempt **5 questions** in **600 words**, by at least selecting **One Question** from each Unit and the **5th question** may be attempted from any of the **four Units**.
4. Each question will carry 8 marks.

Unit-I

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

Unit-II

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

Unit-III

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

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

Session 2020-21
ENGLISH (COMPULSORY)
Course Code: BCSL -1212

COURSE OUTCOMES

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

- CO 1:** appreciate the writings of various Indian and foreign story and prose writers and relate them to their socio-cultural milieu
- CO 2:** comprehend the meaning of texts and answer questions related to situations, episodes, themes and characters depicted in them
- CO 3:** understand fundamental grammatical rules governing tenses, the use of modal verbs and make correct usage in their language
- CO 4:** develop an understanding of translation of written text from Hindi/Punjabi to English
- CO 5:** independently write paragraphs on any given topic

Semester I
Session 2020-21
ENGLISH (COMPULSORY)
Course Code: BCSL -1212

Examination Time: 3 Hrs

Max. Marks: 50

Theory: 40

CA: 10

Instructions for the Examiner:

The question paper will consist of 4 sections & distribution of marks will be as under:

Section A: The question will be set from Unit I of the syllabus. Fifteen sentences will be set and the students would be required to attempt any ten. Each sentence will carry one mark.

(1x10=10)

Section B: Two questions will be set from Unit II of the syllabus. The students would be required to attempt one paragraph out of the given two topics (word limit 150 words). It will carry five marks. The second question will be based on translation. The students would be required to translate a paragraph from Hindi/Punjabi to English.

(2x5=10)

Section C: This section will be divided into two parts. Two questions will be set from Unit III of the syllabus. Part one will have one essay type question with internal choice carrying six marks (word limit 300 words). The students would be required to attempt any one. The second part will have three questions. The students would be required to attempt any two. Each question will carry two marks (50 words each).

(6+2x2=10)

Section D: This section will be divided into two parts. Two questions will be set from Unit IV of the syllabus. Part one will have one essay type question with internal choice carrying six marks (word limit 300 words). The students would be required to attempt any one. The second part will have three questions. The students would be required to attempt any two. Each question will carry two marks (50 words each).

(6+2x2=10)

Unit I

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

Unit II

Paragraph Writing and Translation of paragraph (from Hindi/Punjabi to English)

Unit III

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

Unit IV

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

Texts Prescribed:

1. *English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP
2. *Tales of Life* (Guru Nanak Dev University, Amritsar)
3. *Prose for Young Learners* (Guru Nanak Dev University, Amritsar)

(1/1)

Bachelor of Science (Computer Science) Semester–I

Session: 2020-21

Course Title: Mathematics (Algebra)

Course Code: BCSM -1333(I)

Course Outcomes

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

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

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

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

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

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

Bachelor of Science (Computer Science) Semester-I

Session: 2020-21

Course Title: Mathematics (Algebra)

Course Code: BCSM -1333(I)

Examination Time : 3 hrs.

Max.Marks:50

Theory:40

CA:10

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

Unit-I

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

Unit-II

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

Unit-III

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

Unit-IV

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

Text Book:

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

Reference Books:

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

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

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

Bachelor of Science (Computer Science) Semester–I

Session: 2020-21

Course Title: Mathematics (Calculus and Trigonometry)

Course Code: BCSM -1333(II)

Course Outcomes

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

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

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

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

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

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

Bachelor of Science (Computer Science) Semester–I
Session: 2020-21
Course Title: Mathematics (Calculus and Trigonometry)
Course Code: BCSM -1333(II)

Examination Time : 3 hrs.

Max.Marks:50

Theory :40

CA:10

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

Unit–I

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

Unit-II

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

Unit-III

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

Unit-IV

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

Text Books:

- 1.George B.Thomas and Ross L.Finney: Calculus and Analytic Geometry, 9thedition, Addison Wesley,1998(Relevant portions related to Unit-I &II)
- 2..S.L.Loney: Plane trigonometry part -II(relevant portions related to Unit-III & IV) Cambridge university press.

Reference Books:

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

**Bachelor of Arts / Bachelor of Science (Computer Science) /
Bachelor of Science (Economics) Semester- I**

Session 2020-21

Course Code: BCSM-1134

**COMPUTER SCIENCE
(COMPUTER FUNDAMENTALS& PC SOFTWARE)**

Course Outcomes:

After passing this course the student will be able to:

CO1: have knowledge of Computer components - hardware and software.

CO2: use computer system for general tasks at user level, including operative systems and programming environments.

CO3: gain knowledge on office automation software and recognize when to use a particular office program to create professional and academic documents.

**Bachelor of Arts / Bachelor of Science (Computer Science) /
Bachelor of Science (Economics) Semester- I**

**Session 2020-21
Course Code: BCSM-1134**

**COMPUTER SCIENCE
(COMPUTER FUNDAMENTALS & PC SOFTWARE)
(THEORY)**

Examination Time: (3+3) Hrs.

Max. Marks: 100

Theory: 50

Practical: 30

CA: 20

Instructions for Paper Setter -

Eight questions of equal marks (10 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 divided 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

Fundamentals of Computer: Introduction to computer, Applications of computer, Components of computers (Input unit, Output Unit, Memory Unit & CPU), type of Software, Translators (compiler, interpreter, assembler), Booting a System.

UNIT II

Input & Output Devices: Keyboards, Mouse, Joystick, Track Ball, Light Pen and Data Scanning devices (scanner, OCR, OMR, MICR, Bar Code Reader, Card Reader), Monitor, Printers (laser printer, dot matrix printer, ink jet printer).

Memories: Primary Memory-RAM and ROM. **Secondary Memory-** Hard Disk, CD, DVD.

Introduction to Windows based operating system and Desktop icons.

UNIT III

MS–Word: Introduction to word, Parts of window of word (Title bar, menu bar, status bar, and ruler), Understanding the Ribbon, Use of Office Button and Quick Access Toolbar, Creation of new documents, opening document, insert a document into another document. Page setup, margins, gutters, font properties, Alignment, page breaks, header & footer, deleting, moving, replace, editing text in document, saving a document, spell checker,

printing a document. Creating a table, entering and editing, Text in tables. Changing format of table, height, width of row/column. Editing, deleting Rows, columns in table. Adding picture, page colors and Watermarks, Borders and shading, Templates, wizards, Mail Merge.

UNIT IV

MS-PowerPoint: Introduction to PowerPoint, Exploring menus, starting a new slide, saving presentation, moving/rearranging slides, printing slides. Applying theme to presentation, Views (slide View, slide sorter, notes view, outline view), Formatting & enhancing text formatting. Creating a graph, displaying slide show, adding multimedia. Slide transitions, applying Animation, Timing slide display, adding movies & sounds. Using a pick look Wizards to change format.

References/Textbooks:

1. Anshuman Sharma, A book of Fundamentals of Information Technology, Lakhanpal Publishers, 5th Edition.
2. Prof. Satish Jain, M. Geetha, Kratika, BPB's Office 2010 Course Complete Book, BPB Publications, 2017.
3. Joyce Cox, Joan Lambert and Curtis Frye, Microsoft office Professional 2010 Step by Step, Microsoft Press, 2010.
4. V. Rajaraman, Neeharika Adabala, Fundamentals of Computers, PHI Learning, 2015.
5. P.K. Sinha, Computer Fundamentals, BPB Publications, 2004.

Note: The latest editions of the books should be followed.

**Bachelor of Arts / Bachelor of Science (Computer Science) /
Bachelor of Science (Economics) Semester- I**

Session 2020-21

Course Code: BCSM-1134

**COMPUTER SCIENCE
(COMPUTER FUNDAMENTALS & PC SOFTWARE)
(PRACTICAL)**

Examination Time: (3+3) Hrs.

Max. Marks: 100

Theory: 50

Practical: 30

CA: 20

Practical based on Windows, MS Word, MS PowerPoint.

**SEMESTER-I
PHYSICS
MECHANICS
(THEORY)**

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

Course Outcomes: Mechanics -Paper (A)

After passing this course, students will be able to:

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

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

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

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

B.Sc. (Semester System) (12+3 System of Education) (*Semester-I*) (*Session 2020-21*)
(*Faculty of Sciences*)

SEMESTER-I

**PHYSICS
MECHANICS
(THEORY)**

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

Time: 3 Hours

Marks: 30

Pass Marks: 11

Instructions for the Paper Setters:

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

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

UNIT-I

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

UNIT-II

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

UNIT-III

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

UNIT-IV

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

Books Suggested:

1. Mechanics-Berkeley Physics Course, by C. Kittel, W. D. Knight, M. A. Ruderman, C. A. Helmoltz and R. J. Moyer-Tata Mc Graw Hill Publishing Company Ltd., New Delhi. Vol-I (second edition)
2. Fundamentals of Physics by D. Halliday, R. Resnick and J. Walker (sixth edition)-Wiley India Pvt. Ltd., New Delhi, 2004.
3. Analytical Mechanics by S. K. Gupta, Modern Publishers.

SEMESTER–I
PHYSICS
ELECTRICITY AND MAGNETISM
(THEORY)

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

Course Outcomes: Electricity and magnetism

After passing this course the students will be able to:

- CO1: understand the vector calculus and vector algebra and its applications in electricity and magnetism. The students will be able to solve the electrostatic problems with the help of Gauss law and Coulomb's law.
- CO2: understand the applications of scalar potential for the calculation of electric field and electric potential due to an arbitrary charge distribution.
- CO3: solve the problems with the help of method of images and understand the conduction of electric current and fundamental laws of electricity.
- CO4: relate the electric and magnetic fields in two inertial frames of reference.

SEMESTER-I
PHYSICS
ELECTRICITY AND MAGNETISM
(THEORY)

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

Time: 3 Hours

Marks: 30

Pass Marks: 11

Instructions for the Paper Setters:

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

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

UNIT-I

Basic ideas of Vector Calculus Gradient, Divergence, curl and their physical significance. Laplacian in rectangular, cylindrical and spherical coordinates. Coulomb's Law for point charges And continuous distribution of charges. Electric field due to dipole, line charge and sheet of charge. Electric flux, Gauss's Law and its applications. Gauss's divergence theorem and differential form of Gauss's Law. Green's theorem.

UNIT-II

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

UNIT-III

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

UNIT-IV

\mathbf{E} in different frames of reference. Field of a point charge moving with constant velocity. Interaction between moving charges and force between parallel currents. Behaviour of various substances in magnetic field. Definition of \mathbf{M} and \mathbf{H} and their relation to free and bound currents. Permeability and susceptibility and their interrelationship. Orbital motion of electrons and Diamagnetism.

Books Suggested:

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

SEMESTER-I
PHYSICS
PHYSICS PRACTICAL
Course code: BCSM-1395 (P) for B.Sc. (Computer Science)

Course Outcomes : Physics Lab Sem I

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

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

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

SEMESTER-I
PHYSICS PRACTICAL
Course code: BCSM-1395 (P) for B.Sc. (Computer Science)

Instructions to Practical Examiner

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

General Guidelines for Practical Examination

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

i) One experiment **7 Marks**

ii) Brief Theory **3 Marks**

iii) Viva-Voce **5 Marks**

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

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

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

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

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

LIST OF EXPERIMENTS

1. To study the dependence of moment of inertia on distribution of mass (by noting time periods of oscillations using objects of various geometrical shapes but of same mass).

2. To establish relationship between torque and angular acceleration using fly wheel.

3. To find the moment of inertia of a flywheel.

4. Study of bending of beams and determination of Young's modulus.

5. Determination of Poisson's ratio for rubber.

6. To determine energy transfer, coefficient of restitution and verify laws of conservation of linear momentum and kinetic energy in elastic collisions using one dimensional collisions of hanging spheres.

7. To verify the laws of vibrating string by Melde's experiment.

8. Measure time period as a function of distance of centre of suspension (oscillation) from centre of mass, plot relevant graphs, determine radius of gyration and acceleration due to gravity.

9. Find the value of 'g' by Kater's pendulum.

10. Measure time period of oscillation of a Maxwell needle and determine modulus of rigidity of the material of a given wire.

11. To measure logarithmic decrement, coefficient of damping, relaxation time, and quality factor of a damped simple pendulum.

SEMESTER – I
DRUG ABUSE
Course Code: AECD-1161
(Theory)

Course Outcomes:

- CO 1. This information can include factual data about what substance abuse is; warning signs of addiction; information about how alcohol and specific drugs affect the mind and body;
- CO 2. How to be supportive during the detoxification and rehabilitation process.
- CO 3. Main focus of substance abuse education is teaching individuals about drug and alcohol abuse and how to avoid, stop, or get help for substance use disorders.
- CO 4. Substance abuse education is important for students alike; there are many misconceptions about commonly used legal and illegal substances, such as alcohol and marijuana.

SEMESTER – I
DRUG ABUSE
Course Code: AECD-1161
(Theory)

Time: 3 Hrs

Max.Marks: 50

Theory: 40

CA: 10

Instructions for the Paper Setter

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

UNIT-I

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

UNIT-II

2) Types of Abused Drugs and their Effects -I

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

UNIT-III

3) Types of abused drugs and their effects - II

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

UNIT-IV

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

References:

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

FOUNDATION PROGRAMME

Course Title: Foundation Programme

Course Duration: 30 hours

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

Course Credits: 1

Course Code: SECF-I

PURPOSE & AIM

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

INSTRUCTIONAL OBJECTIVES

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

FOUNDATION PROGRAMME

Course title: Foundation Programme

Course duration: 30 hours

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

Course credits: 1

Course code: SECF-I

CURRICULUM

Course Code: V1

Course Credits: 1

Total Contact Hours: 20

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

EXAMINATION

- Total Marks: 25 (Final Exam: 20; Internal Assessment: 5)

- Final Exam: multiple choice quiz. Marks – 20; Time: 1 hour

- Internal Assessment: 5 (Assessment: 3; Attendance: 2)

Comparative assessment questions (medium length) in the beginning and close of the programme.

Marks: 3; Time: 0.5 hour each at the beginning and end.

- Total marks: 25 converted to grade for final result

- Grading system: 90% marks & above: A grade

80% - 89% marks : B grade

70% - 79% marks : C grade

60% - 69% marks : D grade

50% - 59% marks : E grade

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

SYLLABUS

Module I Being a Human: Introduction & Initial Assessment

- Introduction to the programme

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

Module 2 The Human Story

- Comprehensive overview of human intellectual growth right from the birth of human history

- The wisdom of the Ancients

- Dark Middle Ages

- Revolutionary Renaissance

- Progressive modern times
- Most momentous turning points, inventions and discoveries

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

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

Module 4 *The Holy Bible & Genesis*

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

Module 5 *Changing Paradigms in Society, Religion & Literature*

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

Module 6 *Woman: A Journey through the Ages*

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

Module 7 *Makers of Modern India*

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

Module 8 Racism: Story of the West

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

Module 9 Modern World at A Glance: Political & Economic Perspective

- Changing world order
- World War I & II
- UNO and The Commonwealth
- Nuclear Powers; Terrorism
- Economic Scenario: IMF, World Bank
- International Regional Economic Integration

Module 10 Technology and Human Life

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

Module 11 The KMV Experience

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

Module 12 Final Assessment, Feedback & Closure

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

PRESCRIBED READING

- *The Human Story* published by Dawn Publications

SEMESTER III

SESSION 2020-21

Semester III

PUNJABI (COMPULSORY)

COURSE CODE- BCSL -3421

COURSE OUTCOMES

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

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

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

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

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

SESSION 2020-21
Semester III
PUNJABI (COMPULSORY)
COURSE CODE- BCSL -3421

ਸਮਾਂ : 3 ਘੰਟੇ

Maximum Marks: 50

Theory: 40

CA: 10

ਪਾਠ ਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਚੋਣਵੇ ਪੰਜਾਬੀ ਨਿਬੰਧ (ਜੋਗਿੰਦਰ ਸਿੰਘ ਪੁਆਰ,ਪਰਮਜੀਤ ਸਿੰਘ ਸਿੱਧੂ), ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ।

ਘਰ ਦਾ ਪਿਆਰ, ਉਮਰ ਲੰਮੀ ਹੋ ਸਕਦੀ ਹੈ,ਅੱਥਰੂ, ਪੁਰਾਣਾ ਪੰਜਾਬ, ਇੰਗਲੈਂਡ ਦਾ ਸੋਗੀ ਸੋਮਵਾਰ,ਖਿਡਾਰੀਆਂ ਦੇ ਵਹਿਮ।

(ਪਾਠਕ੍ਰਮ ਦਾ ਹਿੱਸਾ ਹਨ)

(ਵਿਸ਼ਾ ਵਸਤੂ/ਸਾਰ)

8 ਅੰਕ

ਯੂਨਿਟ-II

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

(ਵਿਸ਼ਾ ਵਸਤੂ /ਸਾਰ)

8 ਅੰਕ

ਯੂਨਿਟ-III

(ੳ) ਸੰਖੇਪ ਰਚਨਾ (ਪ੍ਰੈਸੀ)

(ਅ) ਲੇਖ ਰਚਨਾ

8 ਅੰਕ

ਯੂਨਿਟ-IV

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

8 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

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

SESSION 2020-21
SEMESTER-III

Basic Punjabi (In lieu of Punjabi Compulsory)

COURSE CODE- BCSL -3031

Course outcomes

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

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

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

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

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

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

SESSION 2020-21
SEMESTER-III

Basic Punjabi (In lieu of Punjabi Compulsory)

COURSE CODE- BCSL -3031

smW: 3 GMty

Maximum Marks : 50

Theory : 40

CA : 10

ਪਾਠ ਕ੍ਰਮ

ਯੂਨਿਟ-I

ivAwkrxk iekweIAW dI pCwx Aqy vrqoN; vwkMS, aupvwk Aqy vwk

ਯੂਨਿਟ-II

ਪ੍ਰਕਾਰਜੀ ਪੰਜਾਬੀ : ਪੈਰ੍ਹਾ ਰਚਨਾ,ਚਿੱਠੀ ਪੱਤਰ

ਯੂਨਿਟ-III

I.ਅਖਾਣ

II. ਮੁਹਾਵਰੇ

ਯੂਨਿਟ-IV

I.ਪੈਰ੍ਹਾ ADwirq pRSn

II. sMKyp rcnw

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

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

(Semester III)
Session 2020-21
COURSE TITLE: PUNJAB HISTORY AND CULTURE (FROM 1000-1605 A. D.)
(Special paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)

COURSE CODE: BCSL-3431

After completing the paper the students will have a thorough insight into the origin of Sikh faith and its major institutions in Punjab

CO 1: To able to construct original historical arguments using a blend of primary and secondary source material

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

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

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

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

**(Semester III)
Session 2020-21
COURSE TITLE: PUNJAB HISTORY AND CULTURE (From 1000-1605 A. D.)
(Special paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)**

COURSE CODEBCSL-3431

Examination Time: 3 Hours

Max. Marks: 50

Theory: 40

CA: 10

Instructions for the Paper Setters

5. Question paper shall consist of four Units
6. Examiner shall set 8 questions in all by selecting **Two Questions** of equal marks from each Unit.
7. Candidates shall attempt **5 questions** in **600 words**, by at least selecting **One Question** from each Unit and the **5th question** may be attempted from any of the **four Units**.
8. Each question will carry 8 marks

Unit -1.

1. Society and Culture of Punjab during Turko - Afghan Rule
2. The Punjab under the Mughals

Unit-II:

3. Bhakti Movement and Impact on Society of Punjab
4. Sufism in Punjab

Unit-III:

5. Guru Nanak: Early Life and Teachings
6. Concept of Sangat, and Pangat

Unit-IV:

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

Suggested Readings:

- Chopra, P. N., Puri, B.N., & Das. M.N. (1974). A Social, Cultural and Economic History of India, Vol. II. New Delhi : Macmillan India.
- Grewal, J.S. (1994) The Sikhs of the Punjab, Cambridge University Press, New Delhi.
- Singh, Fauja (1972), A History of the Sikhs, Vol. II, I. Patiala: Punjabi University.
- Singh, Khuswant (2011). A History of Sikhs- Vol. I (1469-1839), New Delhi: Oxford University Press.

Session 2020-21
ENGLISH (COMPULSORY)
Course Code: BCSL -3212

COURSE OUTCOMES

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

- CO 1:** develop an understanding of the poems taught, relate to the socio-cultural background of England and be able to answer questions regarding tone, style and central idea
- CO 2:** comprehend the basics of grammatical rules governing relative clauses, adjectives, adverbs, conjunctions and prepositions
- CO 3:** enhance their reading and analysing power of texts through guided reading
- CO 4:** enrich their vocabulary and use new words in their spoken and written language
- CO 5:** develop skills to write an essay on a given topic

Semester III
Session 2020-21
ENGLISH (COMPULSORY)
Course Code: BCSL -3212

Examination Time: 3 Hrs

Max. Marks: 50

Theory: 40

CA: 10

Instructions for the Examiner:

(The paper setters should avoid questions of theoretical nature from *Making Connections*.)

Section A: One question with sub-parts will be set from Unit I of the syllabus. Fifteen sentences will be set and the students would be required to attempt any ten. Each sentence will carry one mark. **(10x1=10)**

Section B: Two questions will be set from Unit II of the syllabus. The students would be required to attempt one essay out of the given two topics carrying six marks (word limit 300 words). The second question will be based on vocabulary. The students would be required to write single words for phrases and sentences choosing any four out of six and each carrying one mark. **(1x6+4x1=10)**

Section C: The students would be required to attempt two questions (with sub parts) based on exercises as given before and after reading essays in the prescribed text book *Making Connections*. **(2x5=10)**

Section D: This section will be divided into two parts. In part one, three questions based on central idea, theme, tone and style etc. of the poems from the prescribed textbook, *Moments in Time* from Unit IV of the syllabus will be set. The students would be required to attempt any two, each carrying three marks (100 words each). **(2x3=6)**

Part two will have one question (with internal choice) requiring students to explain a stanza with reference to context carrying four marks (word limit 200 words). The stanzas for explanation will be taken from the prescribed textbook, *Moments in Time* from Unit IV in the syllabus. **(1x4=4)**

Unit I

English Grammar in Use, 4th Edition by Raymond Murphy, CUP (Units 92-120)

Unit II

Essay Writing and *The Students' Companion* by Wilfred D. Best (Section 1: Single words for phrases and sentences: Words denoting Numbers and words denoting Places)

Unit III

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

Unit IV

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

(1/2)

Texts Prescribed:

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

Bachelor of Science (Computer Science) Semester–III

Session: 2020-21

Course Title: Mathematics (Analysis)

Course Code: BCSM -3333(I)

Course Outcomes

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

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

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

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

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

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

Bachelor of Science (Computer Science) Semester–III

Session: 2020-21

Course Title: Mathematics (Analysis)

Course Code: BCSM -3333(I)

Examination Time : 3 hrs.

Max.Marks:50

Theory:40

CA:10

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

Unit-I

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

Unit-II

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

Unit-III

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

Unit-IV

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

Text Book:

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

Reference Books:

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

Bachelor of Science (Computer Science) Semester–III

Session: 2020-21

Course Title: Mathematics (Analytical Geometry)

Course Code: BCSM/-3333(II)

Course Outcomes

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

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

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

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

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

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

Bachelor of Science (Computer Science) Semester–III

Session: 2020-21

Course Title: Mathematics (Analytical Geometry)

Course Code: BCSM -3333(II)

Examination Time : 3 hrs.

Max.Marks:50

Theory:40

CA:10

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

Unit-I

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

Unit-II

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

Unit-III

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

Unit-IV

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

Text Book:

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

Reference Books:

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

Bachelor of Science (Computer Science)
Semester- III

Session 2020-21
Course Code: BCSM-3134

COMPUTER SCIENCE
(COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand numerical methods, nonlinear equations, interpolation methods and Simultaneous Solution of Equations.

CO2: Learn about Interpolation and Curve Fitting and Numerical differentiation.

CO3: Learn Correlation, Regression, Bivariate & Multivariate distribution and Interpretation of Trend Analysis.

Bachelor of Science (Computer Science)
Semester- III

Session 2020-21
Course Code: BCSM-3134

COMPUTER SCIENCE
(COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS)
(THEORY)

Examination Time: (3+3) Hrs.

Max. Marks: 100

Theory: 50

Practical: 30

CA: 20

Instructions for Paper Setter -

Eight questions of equal marks (10 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 divided 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 Non-programmable/ scientific & Non-storage type calculator.

Unit –I

Introduction:

1. Numerical methods, Numerical methods versus numerical analysis, Errors and Measures of Errors.
2. Bisection method, false position method and Newton Raphson method.
3. Simultaneous Solution of Equations, Gauss Elimination Method, Gauss Jordan method, Gauss Siedel Method.

Unit -II

4. Interpolation and Curve Fitting, Lagrangian Polynomials, Newtons Methods: Forward Difference Method, Backward Difference Method and Divided Difference Method.
5. Numerical Integration: Trapezoidal Rule, Simpson's 1/3 Rule Simpson's 3/8 Rule.

Unit -III

6. Measure of Central Tendency, Preparing frequency distribution table, Mean Arithmetic, Mean Geometric, Mean Harmonic, Mean, Median and Mode.

7. Measure of dispersion, Range, Mean deviation, Standard deviation, co-efficient of variation, Moments, Skewness, Kurtosis.

Unit –IV

8. Correlation, Bivariate Distribution, Multivariate distribution.

9. Regression B.C., Linear Regression.

References/ Textbooks:

1. B.S. Grewal, Numerical Methods in Engineering & Science: With Programs in C, C++ & MATLAB, Khanna Publisher, 2014.
2. V. Rajaraman, Computer Oriented Numerical Methods, Prentice Hall of India Private Ltd., 2009.

Note: The latest editions of the books should be followed.

Bachelor of Science (Computer Science)
Semester–III

Session 2020-21
COURSE CODE:BCSM-3134

COMPUTER SCIENCE
(COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS)
(PRACTICAL)

Examination Time: (3+3) Hrs.

Max. Marks: 100

Theory: 50

Practical: 30

CA: 20

Practical based on Computer Oriented Numerical and Statistical Methods.

SemesterIII

Course Outcomes: PHY-Statistical Physics and Thermodynamics

Course code: BCSM-3395 (I)

After passing this programme the students will be able to:

- CO1: Understand the basic ideas and scope of probability as well as distribution of n particles in different compartments.
- CO2: Concept of different types of Statistics and the need for Quantum Statistics.
- CO3: Understand the concept of entropy, Laws of Thermodynamics and applications to thermoelectric effect.
- CO4: Understand the Maxwell Thermodynamics relations, Change of state and Claypron equation.

SEMESTER-III PHYSICS
Course code: BCSM-3395 (I)
PAPER-A
STATISTICAL PHYSICS & THERMODYNAMICS
(THEORY)

Time: 3 Hours

Marks: 30
Pass Marks: 11

Instructions for the Paper Setters:

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

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

UNIT-I

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

UNIT-II

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

UNIT-III

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

UNIT-IV

Derivation of Maxwell Thermodynamics relations, Cooling produced by adiabatic stretching, Adiabatic Compression, change of internal energy with volume, Specific heat and constant pressure and constant volume. Expression for $C_p - C_v$, Change of state and Clausius equation, Joule-Thomson effect.

Text Reference Books:

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

Course Outcomes: PHY-OPTICS

Course code: BCSM-3395 (II)

After passing this programme the students will be able to:

- CO1:** understand the concept of interference of waves by division of wave front and its different methods and concept of coherence.
- CO2:** understand the interference of waves by division of Amplitude and its methods and will have knowledge of interferometers
- CO3:** understand the Huygen's Fresnel theory and diffraction, Fraunhofer diffraction due to single slit, double slit and n slits, the concept of resolving power.
- CO4:** understand the concept the polarization of light and types of polarisers.

SEMESTER–III

PHYSICS

Course Code: BCSM-3395 (II)

PAPER–B: OPTICS

(THEORY)

Time: 3 Hours

Marks: 30

Pass Marks: 11

Instructions for the Paper Setters:

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

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

UNIT–I

Interference of Light:

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

UNIT–II

Interference by Division of Amplitude:

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

UNIT–III

Diffraction:

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

UNIT–IV

Polarization:

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

Text Reference Books:

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

Course Outcomes: SEMESTER–III PHYSICS (PRACTICAL)

Course code: BCSM-3395 (P)

After passing this programme the students will be able to:

- CO1: use spectrometer to determine the refractive index of different transparent materials wills dispersive power and resolving power of different transparent prisms and liquids using spectrometer.
- CO2: use diffraction grating and apply it to determine dispersive power, resolving power, the wavelengths of Hg source and the Cauchy's constants.
- CO3: to measure an accessible (Horizontal and vertical) and inaccessible heights using sextant.
- CO4: set up of Newton's rings to determine wavelength of sodium light.
- CO5: demonstrate the verification of laws of probability distribution.

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

Instructions to Practical Examiner

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

General Guidelines for Practical Examination

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

i) One experiment **7 Marks**

ii) Brief Theory **3 Marks**

iii) Viva–Voce **5 Marks**

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

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

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

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

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

List of Experiments

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

PERSONALITY DEVELOPMENT PROGRAMME

Course Title: Personality Development Programme

Nature of course: Audit Course (Skill Based)

Course duration: 30 hours

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

Course credits: 2

Course Code: SECP-3512

PURPOSE

To enhance holistic development of students and improve their employability skills.

INSTRUCTIONAL OBJECTIVES

- To re-engineer attitude and understand its influence on behaviour.
- To develop inter-personal skills and be an effective goal-oriented team player.
- To develop communication and problem solving skills.
- To develop professionals with idealistic, practical and moral values.

CURRICULUM

Course credits-2

Total Contact Hours-30

MODULE	TITLE	HOURS
1.	Positive Thinking & Attitude	2
2.	Self Analysis & Self Confidence	2
3.	Communication Skills	10
	<ul style="list-style-type: none">• Basic Communication Skills• Body Language• Interview Skills• Résumé Writing• Group Discussion• Telephone and E-mail etiquette• Public Speaking	
4.	Time Management	2
5.	Stress and Conflict Management	2
6.	Physical Fitness and Personal Grooming	2
7.	Appropriateness of Apparel	2
8.	Social Etiquette	2
9.	Decision Making process & Problem Solving Skills <ul style="list-style-type: none">• Leadership Skills• Goal Setting• Motivation	5
10.	Closure	1

SYLLABUS

MODULE 1: Positive Thinking & Attitude

- Factors Influencing Attitude
- Essentials to develop Positive Attitude
- Challenges & Lessons from Attitude

MODULE 2: Self Analysis & Self Confidence

- Who am I
- Importance of Self Confidence
- SWOT Analysis

MODULE 3: Communication Skills

(i) Basic Communication Skills

- Speaking Skills
- Listening Skills
- Presentation Skills

(ii) Body Language

- Forms of Non-Verbal Communication
- Interpreting Body Language clues
- Effective use of Body Language

(iii) Interview Skills

- Type of Interviews
- Ensuring success in job interviews
- Appropriate use of Non-verbal Communication

(iv) Résumé Writing

- Features
- Different types of Résumés for Different Posts

(v) Group Discussion

- Differences between Group Discussion and Debate
- Importance of Group Discussion
- Group Decision
- Ensuring Success in Group Discussions

(vi) Telephone & E-mail Etiquette

- Telephone etiquette
- E-mail etiquette

(vii) Public Speaking

- Introductory Speech
- Informative Speech
- Persuasive Speech
- Extempore Session

MODULE 4: Time Management

- Importance of Time Management
- Values & Beliefs
- Goals and Benchmarks – The Ladders of Success
- Managing Projects and Commitments
- Prioritizing your To-do's
- Getting the results you need

MODULE 5: Stress & Conflict Management

- Introduction to Stress
- Types of Stressors
- Small Changes and Large Rewards
- Stress Prevention
- Overcoming Unhealthy Worry
- Stress at Home and Workplace
- Dealing with Frustration and Anger
- Stress reducing Exercises
- Understanding Conflicts
- Violent and Non-violent Conflicts
- Source of Conflict
- Structural and Cultural Violence

MODULE 6: Physical Fitness and Personal Grooming

- Fitness and Exercise
- Balanced & Healthy Diet
- Skin Care & Hair Care
- Make-up Skills

MODULE 7: Appropriateness of Apparel

- Apparel & Personality
- Psycho-social aspects of Apparel
- Style-tips for smart dressing & effective use of design elements

MODULE 8: Social Etiquette

- Civic Sense
- Workplace Skills
- Meeting and greeting people

- Table Setting and Table Manners

MODULE 9: Decision Making Process and Problem Solving Skills

- Anatomy of a Decision
- How to use Problem solving steps and Problem solving tools
- How to distinguish root causes from symptoms to identify right solution for right problems
- How to improve Problem solving and Decision making by identifying individual problem solving styles
- The Creative process for making decisions
- Tools to improve creativity
- Implementing the Decision – Wrap up

(i) Leadership Skills

- Handling Peer Pressure and Bullies
- Team Work
- Decision Making
- Taking initiatives

(ii) Goal Setting

- Wish List
- SMART Goals
- Blueprint for Success
- Short-term, Long-term, Life-term Goals

(iii) Motivation

- Factors of motivation
- Self Talk
- Intrinsic & Extrinsic Motivators

Books Recommended

1. Everyday Etiquette: How to navigate 101 common and uncommon social situations by Patrica Rossi.
2. Building career success skills by Theodore Pietrzak, Mike Fraum.
3. Creative problem solving: An Introduction by Donald J Treffinger, Scott G.Isaksen, K. Brian.
4. Positive Psychology: The science of happiness and human strengths by Alan Carr
5. Speech craft: An Introduction to public speaking by Brent C Oberg.
6. Effective communication skills: The foundations for change by John Nielsen.
7. Conflict Resolution smarts: How to communicate, negotiate promise and more by Matt Doeden.
8. What you wear can change your life by Trinnywoodall, Susannah Constantine.
9. World Famous Personalities by Dr. B.R. Kishore.
10. Personality Development by John Aurther.
11. World Famous Leaders who reshaped the World! by Dr. Gagan Jain, D.Litt.
12. Personality Development by Elizabeth B. Hurlock
13. Personality Plus by Divya Chopra

Examination

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

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

Course Title: GENDER SENSITIZATION PROGRAMME

Course Duration: 30 hours

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

Course Credits: 2

Course Code: SECG 3531

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

INSTRUCTIONAL OBJECTIVES:

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

CURRICULUM

Course Code: SECG3531

Course Credits: 2

Total contact hours: 30

MODULE	TITLE	HOURS
1	Introduction and Initial Assessment	2 Hrs
2	Workshop in Self Defense Techniques	10 Hrs
3	Open House (An Inter-active Session)	2 Hrs
4 I	Cultural Roles and Gender Sensitivity	2 Hrs
4II	Gender Concerns in Leadership and Political Participation	2 Hrs
4 III	Gender Dimensions in Economic Participation and wage Gap	2 Hrs
4 IV	Gender Rights: Constitutional Rights & Legal Rights	2 Hrs
4 V	Social problems and Ethos : Gender Prospective	2 Hrs

	with focus on Indian Society	
4VI	Gender Issues and Health care system	2 Hrs
4VII	Champions of Gender Equality from Punjab Or Voices On Gender Equality From Punjab	2 Hrs
5	Final Assessment Feedback and Closure	2 Hrs

EXAMINATION

- **Total Marks: 25 (Workshop in Self Defense Techniques :10 marks ; Multiple Choice Quiz. / Project – 10 marks ; Internal Assessment: 5)**
- **Internal Assessment: 5 Marks (Assessment Feedback : 3 marks; Attendance : 2 marks)**
- **Total marks: 25 converted to grade for final result**
- **Grading system:**

90% marks & above: A grade

80% - 89% marks : B grade

70% - 79% marks : C grade

60% - 69% marks : D grade

50% - 59% marks : E grade

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

SEMESTER V

SESSION 2020-21

Semester V

PUNJABI (COMPULSORY)

COURSE CODE- BCSL -5421

COURSE OUTCOMES

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

CO2: ਨਾਵਲ ਏਹੁ ਹਮਾਰਾ ਜੀਵਣਾ (ਦਲੀਪ ਕੌਰ ਟਿਵਾਣਾ)ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਨਾਵਲ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਇਸ ਸਾਹਿਤ ਰੂਪ ਨਾਲ ਨਾਲ ਜੋੜਣਾ ਹੈ।

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

CO4: ਸਰਲ ਅੰਗਰੇਜ਼ੀ ਪੈਰ੍ਹੇ ਦਾ ਪੰਜਾਬੀ ਵਿਚ ਅਨੁਵਾਦ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨ੍ਹਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO5: ਪੰਜਾਬੀ ਧੁਨੀ ਵਿਉਂਤ, ਵਾਕਾਤਮਕ ਜੁਗਤਾਂ : ਮੇਲ ਤੇ ਅਧਿਕਾਰ,ਕਾਰਕ ਤੇ ਕਾਰਕੀ ਸੰਬੰਧ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ - ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

SESSION 2020-21

Semester V

PUNJABI (COMPULSORY)

COURSE CODE- BCSL -5421

ਸਮਾਂ : 3 ਘੰਟੇ

Maximum Marks: 50

Theory: 40

CA: 10

ਪਾਠ ਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਚੋਣਵੀਆਂ ਪੰਜਾਬੀ ਕਹਾਣੀਆਂ

(ਸੰਪਾ. ਡਾ. ਰਮਿੰਦਰ ਕੌਰ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ, 2018)

ਲੇਖਕ

ਕਹਾਣੀ

ਕਹਾਣੀ ਸੰਗ੍ਰਹਿ

ਅਜੀਤ ਕੌਰ

ਨਿਊ ਯੀਅਰ

ਮੌਤ ਅਲੀ ਬਾਬੇ ਦੀ

ਜਿੰਦਰ

ਸੌਰੀ

ਜਖ਼ਮ

ਸੁਖਜੀਤ

ਹਜ਼ਾਰ ਕਹਾਣੀਆਂ ਦਾ ਬਾਪ

ਮੈਂ ਇੰਜੁਆਏ ਕਰਦੀ ਹਾਂ

ਜਤਿੰਦਰ ਹਾਂਸ

ਰਾਹੂ ਕੇਤੂ

ਈਸ਼ਵਰ ਦਾ ਜਨਮ

ਪ੍ਰੇਮ ਪ੍ਰਕਾਸ਼

ਅਰਜਨ ਛੇੜ ਗਡੀਰਨਾ

ਕੁਝ ਅਣਕਿਹਾ ਵੀ

ਚੰਦਨ ਨੇਗੀ

ਹਰਖ ਸੋਗ

ਹਰਖ ਸੋਗ

ਜਸਵਿੰਦਰ ਸਿੰਘ

ਖੂਹ ਖਾਤੇ

ਖੂਹ ਖਾਤੇ

ਗੁਰਦੇਵ ਸਿੰਘ ਰੁਪਾਣਾ

ਸ਼ੀਸ਼ਾ

ਸ਼ੀਸ਼ਾ ਅਤੇ ਹੋਰ

ਕਹਾਣੀਆਂ

(ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ)

8 ਅੰਕ

ਯੂਨਿਟ-II

ਨਾਵਲ : ਏਹੁ ਹਮਾਰਾ ਜੀਵਣਾ (ਦਲੀਪ ਕੌਰ ਟਿਵਾਣਾ)

(ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ)

8 ਅੰਕ

ਯੂਨਿਟ-III

ਲਗਪਗ 200 ਸ਼ਬਦਾਂ ਵਿਚ ਪੈਰ੍ਹਾ ਰਚਨਾ

ਸਰਲ ਅੰਗਰੇਜ਼ੀ ਪੈਰ੍ਹੇ ਦਾ ਪੰਜਾਬੀ ਵਿਚ ਅਨੁਵਾਦ

8 ਅੰਕ

ਯੂਨਿਟ-IV

ਵਿਆਕਰਣ :

(ੳ) ਨਾਂਵ ਵਾਕੰਸ਼

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

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

SESSION 2020-21
SEMESTER-V

Basic Punjabi (In lieu of Punjabi Compulsory)

COURSE CODE- BCSL -5031

COURSE OUTCOMES

Co1: 'ਸਾਹਿਤ ਦੇ ਰੰਗ' ਪੁਸਤਕ ਦੇ ਕਵਿਤਾ ਭਾਗ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਵਿਤਾ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਤਾਂ ਕਿ ਉਹ ਆਧੁਨਿਕ ਦੌਰ ਵਿਚ ਚਲ ਰਹੀਆਂ ਕਾਵਿ ਧਾਰਾਵਾਂ ਅਤੇ ਕਵੀਆਂ ਬਾਰੇ ਗਿਆਨ ਹਾਸਲ 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: 'ਸਾਹਿਤ ਦੇ ਰੰਗ' ਪੁਸਤਕ ਦੇ ਕਹਾਣੀ ਭਾਗ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਹਾਣੀ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਕਹਾਣੀ ਜਗਤ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO3: ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਇਕ ਸ਼ਬਦ ਅਤੇ ਬਹੁਆਰਥਕ ਸ਼ਬਦ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਵਿਆਕਰਣ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ।

CO4: ਸਮਾਨਰਥਕ ਸ਼ਬਦ, ਵਿਰੋਧਾਰਥਕ ਸ਼ਬਦ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਵਿਆਕਰਣ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ।

SESSION 2020-21
SEMESTER-V

Basic Punjabi (In lieu of Punjabi Compulsory)

COURSE CODE- BCSL -5031

ਸਮਾਂ : 3 ਘੰਟੇ

Maximum Marks: 50

Theory: 40

CA: 10

ਪਾਠ ਕ੍ਰਮ

ਯੂਨਿਟ-I

ਸਾਹਿਤ ਦੇ ਰੰਗ (ਸੰਪਾ.ਡਾ ਮਹਿਲ ਸਿੰਘ), ਭਾਗ ਪਹਿਲਾ(ਕਵਿਤਾ), ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।
ਭਾਈ ਵੀਰ ਸਿੰਘ(ਸਮਾਂ, ਚਸਮਾ)
ਪ੍ਰੋ. ਪੂਰਨ ਸਿੰਘ(ਪੰਜਾਬ ਨੂੰ ਕੂਕਾਂ ਮੈਂ, ਹਲ ਵਾਹੁਣ ਵਾਲੇ)
ਪ੍ਰੋ. ਮੋਹਨ ਸਿੰਘ(ਮਾਂ, ਕੋਈ ਆਇਆ ਸਾਡੇ ਵਿਹੜੇ)
(ਕਵਿਤਾਵਾਂ ਸਿਲੇਬਸ ਦਾ ਹਿੱਸਾ ਹਨ)
(ਸਾਰ)

08 ਅੰਕ

ਯੂਨਿਟ-II

ਸਾਹਿਤ ਦੇ ਰੰਗ (ਸੰਪਾ.ਡਾ ਮਹਿਲ ਸਿੰਘ), ਭਾਗ ਪਹਿਲਾ(ਕਹਾਣੀ),
ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।
ਪੇਮੀ ਦੇ ਨਿਆਣੇ, ਕੁਲਫੀ, ਘੋਟਣਾ (ਕਹਾਣੀਆਂ ਸਿਲੇਬਸ ਦਾ ਹਿੱਸਾ ਹਨ)
(ਸਾਰ)

08 ਅੰਕ

ਯੂਨਿਟ-III

(ੳ) ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਇਕ ਸ਼ਬਦ
(ਅ) ਬਹੁਆਰਥਕ ਸ਼ਬਦ

08 ਅੰਕ

ਯੂਨਿਟ-IV

(ੳ) ਸਮਾਨਰਥਕ ਸ਼ਬਦ
(ਅ) ਵਿਰੋਧਾਰਥਕ ਸ਼ਬਦ

08 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

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

(Semester-V)
Session 2020-21
Course Title: Punjab History and Culture (From 1849-1947 A.D)
(Special paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)

COURSE CODE: BCSL-5431

COURSE OUTCOMES:-

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

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

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

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

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

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

(Semester-V)
Session 2020-21
Course Title: Punjab History & Culture (From 1849-1947 A.D.)
(Special paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)

COURSE CODE: BARLBCSL-5431

Examination Time: 3 Hours

Max. Marks: 50

Theory: 40

CA: 10

Instructions for the Paper Setters

9. Question paper shall consist of four Units
10. Examiner shall set 8 questions in **600 words** by selecting **Two Questions** of equal marks from each Unit.
11. Candidates shall attempt **5 questions** in all, by at least selecting **One Question** from each Unit and the **5th question** may be attempted from any of the **four Units**.
12. Each question will carry 8 marks

Unit- I

1. First Anglo-Sikh War.
2. Annexation of Punjab and Board of Administration

Unit-II

3. British Policy towards agriculture and industry
4. Spread of modern education

Unit-III

5. Socio- religious reform movements: Namdhari, Singh Sabha, AryaSamaj and Ad Dharm
6. Gadhar Movement

Unit-IV

7. Gurdwara Reform Movement
8. Contribution to freedom struggle: Jallianwala Bagh tragedy; Non-cooperation and Quit India Movement.

Suggested Readings

- Singh, Fauja, *History and Culture of the Punjab*, Part II, Publication Bureau, Punjabi University, Patiala, 1987.
- Singh, Fauja, *Freedom Struggle in the Punjab*, Publication Bureau, Punjabi University, Patiala, 1974.

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

Session 2020-21
ENGLISH (COMPULSORY)
Course Code: BCSL -5212

COURSE OUTCOMES

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

- CO 1:** widen their knowledge about various literary devices used in poetry such as tone, style, imagery, figures of speech, symbolism etc.
- CO 2:** develop power of imagination and appreciate the beauty, rhyme, and style of a poem
- CO 3:** analyze and appreciate the dramatic technique, plot development and art of characterisation in the prescribed play
- CO 4:** develop an understanding of the insights, genres, conventions and experimentations associated with English Drama
- CO 5:** develop the knowledge, skills and capabilities for effective business writing such as letter writing and resume writing

Semester V
Session 2020-21
ENGLISH (COMPULSORY)
Course Code: BCSL -5212

Examination Time: 3 Hrs

Max. Marks: 50

Theory: 40

CA: 10

Instructions for the Examiner:

Section A: Three questions from the play *All My Sons* from Unit I and three questions from *Poems of Nature and Culture* from Unit II requiring very short answers will be set. The students would be required to answer any five, each carrying two marks (50 words each).

(5x2=10)

Section B: Four questions requiring brief descriptive answers based on character, tone, plot and theme(s) in the play *All My Sons* from Unit I will be set and the students would be required to attempt any two, each carrying five marks (250 words each).

(2x5= 10)

Section C: Four questions based on the central idea, theme, tone or style etc. of the prescribed poems from the textbook, *Poems of Nature and Culture* from Unit II will be set for the students to attempt any two of these, each carrying five marks (250 words each). The questions can also be set based on stanzas with reference to context.

(2x5= 10)

Section D: Two questions with internal choice will be set based on (a) formal letter (b) Job application and Resume Writing, each carrying five marks.

(2x5=10)

Unit I

All My Sons by Arthur Miller

Unit II

Poems of Nature and Culture

William Wordsworth: The World is Too Much with Us

Gordon Lord Byron: She Walks in Beauty

P.B. Shelly: Ozymandias

Alfred Lord Tennyson: In Memoriam

Mathew Arnold: Dover Beach

Wilfred Owen: Strange Meeting

Robert Graves: The Portrait

W.H. Auden: The Unknown Citizen

Ted Hughes: The Thought-Fox

Sylvia Plath: Mirror

Rabindranath Tagore: False Religion

Nissim Ezekiel: Night of Scorpion

Unit III

Formal letter, Job Application and Resume Writing

Texts Prescribed:

1. *All My Sons* by Arthur Miller
2. *Poems of Nature and Culture*, Guru Nanak Dev University, Amritsar
3. *Oxford Guide to Effective Writing and Speaking* by John Seely.

Bachelor of Science (Computer Science) Semester–V

Session: 2020-21

Course Title: Mathematics (Dynamics)

Course Code: BCSM -5333(I)

Course Outcomes

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

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

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

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

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

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

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

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

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

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

Bachelor of Science (Computer Science)

Semester–V

Session: 2020 -21

Course Title: Mathematics (Dynamics)

Course Code: BCSM -5333(I)

Examination

Time:3

Hours

Max.Marks: 50

Theory:40

CA:10

Instructions for the paper setter:

Eight questions of equal marks (8 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section. 30% of the questions in the question paper must be theoretical (theorem based).

Unit-I

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

Unit-II

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

Unit-III

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

Unit-IV

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

Text Book:

S.R.Gupta: A text book of Dynamics

Reference Books:

1. F. Chorlton: Dynamics.

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

Bachelor of Science (Computer Science) Semester–V

Session: 2020-21

Course Title: Mathematics (Number Theory)

Course Code: BCSM -5333(II)

Course Outcomes

Successful completion of this course will enable the students to:

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

CO 2: Solve system of linear congruences.

CO 3: Find solutions of specified linear Diophantine equation.

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

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

CO 6: Solve system of equations using congruences.

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

CO 8: Understand application of important arithmetic functions.

Bachelor of Science (Computer Science) Semester–V

Session: 2020-21

Course Title: Mathematics (Number Theory)

Course Code: BCSM -5333(II)

Examination Time: 3 hrs.

Max.Marks: 50

Theory: 40

CA:10

Instructions for the Paper Setter:

Eight questions of equal marks (8 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section. 30% of the questions in the question paper must be theoretical (theorem based).

Unit-I

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

Unit-II

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

Unit-III

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

Unit-IV

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

Text Book:

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

Reference Book:

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

Bachelor of Science (Computer Science)
- Semester–V

Session 2020-21

COURSE CODE: BCSM-5134

COMPUTER SCIENCE
(DATA BASE MANAGEMENT SYSTEM & ORACLE)

Course Outcomes:

After passing course the student will be able to:

CO1: Understand data, database and database models.

CO2: Gain knowledge of normalization and transaction control.

CO3: Gain knowledge of core database language-SQL.

CO4: Have a basic understanding of concepts of PL/SQL.

Bachelor of Science (Computer Science)
- Semester-V

Session 2020-21

COURSE CODE: BCSM-5134

COMPUTER SCIENCE
(DATA BASE MANAGEMENT SYSTEM & ORACLE)
(THEORY)

Examination Time: (3+3) Hrs.

Max. Marks: 100

Theory: 50

Practical: 30

CA: 20

Instructions for Paper Setter -

Eight questions of equal marks (10 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 divided 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

UNIT-I

DBMS:

Introduction to database management system, Components of DBMS, Three Level Database system Architecture, ER. Diagrams.

Data Models, Hierarchical Model, Network Model and Relational Model, Relational Databases, Relational Algebra and Calculus.

UNIT-II

Normalisation: Introduction, Normal Forms: 1NF, 2NF, 3NF, BCNF, 4NF, 5NF.

Database Security: Protection, Integrity.

Recovery: Introduction, Recovery Techniques: Log Based Recovery and Shadow Paging.

Concurrency Control: Introduction, Concurrency control with locking methods, Two Phase locking, Precedence graph, Concurrency control based on timestamp ordering, Concurrency control based on optimistic scheduling.

UNIT-III

SQL * PLUS:

Introduction to Oracle 10g, Features of Oracle 10g.

SQL – DDL, DML, DCL,TCL,constraints, Join methods & Sub query, Union, Intersection,Built in Functions, View, and Security amongst users, Sequences, indexing object

UNIT-IV

PL/SQL:

Introduction to PL/SQL.

Cursors – Implicit & Explicit.

Procedures, Functions & Packages

Database Triggers.

References/Textbooks:

1. C. J. Date, An Introduction to Database Systems, Pearson Education 2000.
2. H. F. Korth & Silverschatz, A., Database System Concepts, Tata McGraw Hill, 2010.
3. Elmasri & Navathe, Fundamentals of Database Systems, Addison-Wesley, 2011.
4. B.C.Desai, An Introduction to Database Management System, Galgotia Publication, 1991.
5. Ivan Bayross, SQL, PL/SQL - The Programming Language of Oracle, BPB Publications, 2010.
6. Gurvinder Singh, Parteek Bhatia, Simplified Approach to DBMS, Kalyani Publishers, 2016.
7. Anshuman Sharma, Fundamentals of DBMS, Lakhanpal Publications, 4th Edition.

Note: The latest editions of the books should be followed.

**Bachelor of Science (Computer Science)
- Semester–V**

Session 2020-21

COURSE CODE: BCSM-5134

**COMPUTER SCIENCE
(DATA BASE MANAGEMENT SYSTEM & ORACLE)
(PRACTICAL)**

Examination Time: (3+3) Hrs.

Max. Marks: 100

Theory: 50

Practical: 30

CA: 20

Lab based on Oracle 10g.

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

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

Course Outcomes

After passing this course, students will be able to:

- CO 1. Understand basics about crystal structures in solids, various types of crystal structure, unit cells and symmetry operations.
- CO 2. Understand the experimental methods to determine crystal structures, reciprocal lattice, Brillouin zones and form factor.
- CO 3. Understand the concept of lattice vibrations and role of phonons in determining specific heat of solids at low temperatures and models of specific heat.
- CO 4. Build concept from free electron model to Kronig Penny model and its application to band theory to differentiate insulators, semiconductors and conductors.

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

**PHYSICS (CONDENSED MATTER PHYSICS)
(THEORY)**

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

Time: 3 Hours

Max. Marks: 30

Pass Marks: 11

Instructions for the Paper Setters:

Eight questions of equal marks are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section. Each question carries 6 marks.

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

UNIT–I

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

UNIT–II

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

UNIT–III

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

UNIT–IV

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

Books Suggested:

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

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

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

Course Outcomes

After passing this course, students will be able to:

- CO 1. Understand basic properties of nucleus and nuclear forces.
- CO 2. Understand about radioactivity, theories of alpha, beta and gamma decay, neutrino hypothesis.
- CO 3. Understand concepts and types about nuclear reactions, reactions cross section and compound nucleus.
- CO 4. Understand nuclear models (Liquid drop and Shell model) and their failures and successes.

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

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

Time: 3 Hours

Marks: 30

Pass Marks: 11

Instructions for the Paper Setters:

Eight questions of equal marks are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section. Each question carries 6 marks.

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

UNIT-I

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

UNIT-II

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

UNIT-III

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

UNIT-IV

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

Reference Books:

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

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

PHYSICS PRACTICAL

Course code: BCSM-5395 (P) for B.Sc. (Computer Science)

Course Outcomes : Physics Lab Sem V

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

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

PHYSICS PRACTICAL

Course code: BCSM-5395 (P) for B.Sc. (Computer Science)

Instructions to Practical Examiner

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

General Guidelines for Practical Examination

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

- i) One experiment **7 Marks**
- ii) Brief Theory **3 Marks**
- iii) Viva–Voce **5 Marks**
- iv) Record (Practical file) **5 Marks**

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

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

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

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

LIST OF EXPERIMENTS-

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