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8/5 Nov 12 Nov 22

Paper Code: 4105

Programme	Exam Code	Course Code
Bachelor of Arts	103204	AECE-4221
Bachelor of Arts (Journalism & Mass Communication)	108704	
Bachelor of Science (Fashion Designing)	108604	
Bachelor of Arts (Honours) English	107504	
Bachelor of Vocation (Retail Management)	111804	
Bachelor of Vocation (Management & Secretarial Practices)	111604	
Bachelor of Vocation (Animation)	112204	
Bachelor of Vocation (Textile Design & Apparel Technology)	111204	
Bachelor of Vocation (Nutrition Exercise & Health)	111404	
Bachelor of Vocation (Beauty & Wellness)	113804	
Bachelor of Vocation (Hospitality and Tourism)	113904	
Bachelor of Vocation (Artificial Intelligence and Data Science)	114004	

Course Title: Environmental Studies (Compulsory)

Semester-IV

(240)

Time Allowed: 3 Hours

Max Marks: 60

Candidates are required to attempt five questions from Part- A each question will carry 4 marks. Each Answer to each question should not exceed 2 pages. Attempt five questions from Part-B each question will carry 8 marks Answer to each question should not exceed 5 pages.

#### Section-A

1. (a) Discuss scope and need of public awareness in relation to environmental studies. (4)
- (b) Write in detail about use and over-utilization of surface and ground water resources. (4)
- (c) Explain various functions of ecosystems in detail from food chain and food web point of view. (4)
- (d) What are Biodiversity hotspots? Discuss in detail about importance and conservation of biodiversity. (4)
- (e) Discuss heavy metal pollution in aquatic ecosystems and its control measures. (4)
- (f) Discuss sustainable development and impact of climate change on it. (4)
- (g) What is population explosion? Discuss various family welfare programmes in India. (4)

#### Section-B

2. Discuss forest resources in relation to use and over exploitation, deforestation, dams and their effects on forest and tribal people. (8)

3. Why need of energy is growing? Discuss various renewable and non-renewable energy resources. (8)
4. What is concept of an ecosystem? Discuss structure and function of an ecosystem in detail. (8)
5. Discuss India is a mega diversity nation and various threats to biodiversity in detail. (8)
6. Discuss different types of pollution, effects and their control measures. (8)
7. Describe Environment Protection Act, 1986 in detail and why there was need felt to enact this act. (8)
8. Discuss Water (Prevention and Control of Pollution) Act, 1974 in detail. (8)
9. Discuss role of information Technology in Environment and Human Health in detail. (8)

खंड-क

1. a. पर्यावरण अध्ययन के संबंध में जन जागरूकता के दयारे और आवश्यकता पर चर्चा करें। 4
- b. सतही एवं भूमिगत जल संसाधनों के उपयोग एवं अधिक उपयोग के बारे में विस्तार से लिखिए। 4
- c. खाद्य श्रृंखला एवं खाद्य वेब बिन्दु से पारितंत्र के विभिन्न कार्यों की विस्तार से व्याख्या कीजिए। 4
- d. जैव विविधता हॉटस्पॉट क्या हैं? जैव विविधता की महत्व एवं संरक्षण पर विस्तार से चर्चा कीजिए। 4
- e. जलीय पारिस्थितिक तंत्र में भारी धातु प्रदूषण और उसके नियंत्रण उपायों पर चर्चा करें। 4
- f. सतत विकास और उस पर जलवायु परिवर्तन के प्रभाव पर चर्चा करें। 4
- g. जनसंख्या विस्फोट क्या है? भारत में विभिन्न परिवार कल्याण कार्यक्रमों की चर्चा कीजिए। 4

खंड-ख

2. वन संसाधनों के उपयोग और अतिदोहन, वनों की कटाई, बांधों के वन और जनजातीय लोगों पर उनके प्रभावों के संबंध में चर्चा करें। 8
3. ऊर्जा की आवश्यकता क्यों बढ़ रही है? विभिन्न नवीकरणीय और गैर-नवीकरणीय ऊर्जा संसाधन पर चर्चा करें। 8

4. परिस्थितिकी तंत्र की अवधारणा क्या है? पारिस्थितिकी तंत्र की संरचना और कार्य पर विस्तार से चर्चा करें। 8
5. भारत एक विशाल विविधता वाला देश है और जैव विविधता के लिए विभिन्न खतरों पर विस्तार से चर्चा करें। 8
6. विभिन्न प्रकार के प्रदूषण, प्रभावों और उनके नियंत्रण के उपायों पर चर्चा करें। 8
7. पर्यावरण संरक्षण अधिनियम, 1986 का विस्तार से वर्णन करें और इस अधिनियम को लागू करने की आवश्यकता क्यों महसूस की गई। 8
8. जल प्रदूषण की रोकथाम और नियंत्रण अधिनियम, 1974 पर विस्तार से चर्चा करें। 8
9. पर्यावरण और मानव स्वास्थ्य में सूचना प्रौद्योगिकी की भूमिका पर विस्तार से चर्चा करें। 8

**ਸੈਕਸ਼ਨ-ਏ**

1. a. ਵਾਤਾਵਰਣ ਅਧਿਐਨ ਦੇ ਸੰਬੰਧ ਵਿੱਚ ਜਨਤਕ ਜਾਗਰੂਕਤਾ ਦੇ ਘੇਰੇ ਅਤੇ ਲੋੜ ਦੀ ਚਰਚਾ ਕਰੋ। 4
- b. ਸਤਹ ਅਤੇ ਭੂਮੀਗਤ ਜਲ ਸਰੋਤਾਂ ਦੀ ਵਰਤੋਂ ਅਤੇ ਜ਼ਿਆਦਾ ਵਰਤੋਂ ਬਾਰੇ ਵਿਸਥਾਰ ਵਿੱਚ ਲਿਖੋ। 4
- c. ਫੂਡ ਚੇਨ ਅਤੇ ਫੂਡ ਵੈਬ ਦੇ ਦਿਸ਼ਟੀਕੋਣ ਤੋਂ ਈਕੋਸਿਸਟਮ ਦੇ ਵੱਖ-ਵੱਖ ਕਾਰਜਾਂ ਦੀ ਵਿਸਥਾਰ ਵਿੱਚ ਵਿਆਖਿਆ ਕਰੋ। 4
- d. ਜੈਵਿਕ ਵਿਭਿੰਨਤਾ ਦੇ ਹੋਟਸਪੋਟਸ ਕੀ ਹਨ? ਜੈਵ ਵਿਭਿੰਨਤਾ ਦੀ ਮਹੱਤਤਾ ਅਤੇ ਸੰਭਾਲ ਬਾਰੇ ਵਿਸਥਾਰ ਵਿੱਚ ਚਰਚਾ ਕਰੋ। 4
- e. ਜਲ ਪਰਿਆਵਰਣ ਪ੍ਰਣਾਲੀਆਂ ਵਿੱਚ ਭਾਰੀ ਧਾਤੂ ਪ੍ਰਦੂਸ਼ਣ ਅਤੇ ਇਸਦੇ ਨਿਯੰਤਰਣ ਉਪਾਵਾਂ ਬਾਰੇ ਚਰਚਾ ਕਰੋ। 4
- f. ਟਿਕਾਊ ਵਿਕਾਸ ਅਤੇ ਇਸ 'ਤੇ ਜਲਵਾਯੂ ਪਰਿਵਰਤਨ ਦੇ ਪ੍ਰਭਾਵ ਬਾਰੇ ਚਰਚਾ ਕਰੋ। 4
- g. ਆਬਾਦੀ ਵਿਸਫੋਟ ਕੀ ਹੈ? ਭਾਰਤ ਵਿੱਚ ਵੱਖ-ਵੱਖ ਪਰਿਵਾਰ ਭਲਾਈ ਪ੍ਰੋਗਰਾਮਾਂ ਦੀ ਚਰਚਾ ਕਰੋ। 4

**ਸੈਕਸ਼ਨ-ਬੀ**

2. ਜੰਗਲਾਤ ਸਰੋਤਾਂ ਦੀ ਵਰਤੋਂ ਅਤੇ ਜ਼ਿਆਦਾ ਸ਼ੋਸ਼ਣ, ਜੰਗਲਾਂ ਦੀ ਕਟਾਈ, ਡੈਮ ਜੰਗਲਾਂ ਅਤੇ ਆਦਿਵਾਸੀ ਲੋਕਾਂ 'ਤੇ ਇਨ੍ਹਾਂ ਦੇ ਪ੍ਰਭਾਵਾਂ ਬਾਰੇ ਚਰਚਾ ਕਰੋ। 8
3. ਊਰਜਾ ਦੀ ਲੋੜ ਕਿਉਂ ਵਧ ਰਹੀ ਹੈ? ਕਈ ਨਵਿਆਉਣਯੋਗ ਅਤੇ ਗੈਰ-ਨਵਿਆਉਣਯੋਗ ਊਰਜਾ ਸਰੋਤ 'ਤੇ ਚਰਚਾ ਕਰੋ। 8

4. ਈਕੋਸਿਸਟਮ ਦੀ ਧਾਰਨਾ ਕੀ ਹੈ? ਈਕੋਸਿਸਟਮ ਦੀ ਬਣਤਰ ਅਤੇ ਕਾਰਜ ਬਾਰੇ ਵਿਸਥਾਰ ਵਿੱਚ ਚਰਚਾ ਕਰੋ। 8
5. ਵਿਸਤਾਰ ਵਿੱਚ ਚਰਚਾ ਕਰੋ ਭਾਰਤ ਇੱਕ ਅਜਿਹਾ ਦੇਸ਼ ਹੈ ਜਿਸ ਵਿੱਚ ਬਹੁਤ ਵਿਭਿੰਨਤਾ ਹੈ ਅਤੇ ਜੈਵ ਵਿਭਿੰਨਤਾ ਲਈ ਕਈ ਖਤਰੇ ਹਨ। 8
6. ਪ੍ਰਦੂਸ਼ਣ ਦੀਆਂ ਵੱਖ-ਵੱਖ ਕਿਸਮਾਂ, ਪ੍ਰਭਾਵਾਂ ਅਤੇ ਉਹਨਾਂ ਨੂੰ ਕੰਟਰੋਲ ਕਰਨ ਦੇ ਉਪਾਵਾਂ ਬਾਰੇ ਚਰਚਾ ਕਰੋ। 8
7. ਵਾਤਾਵਰਣ ਸੁਰੱਖਿਆ ਐਕਟ, 1986 ਬਾਰੇ ਵਿਸਥਾਰ ਵਿੱਚ ਵਰਣਨ ਕਰੋ ਅਤੇ ਇਸ ਐਕਟ ਨੂੰ ਲਾਗੂ ਕਰਨ ਦੀ ਲੋੜ ਕਿਉਂ ਮਹਿਸੂਸ ਕੀਤੀ ਗਈ ਸੀ। 8
8. ਜਲ (ਪ੍ਰਦੂਸ਼ਣ ਦੀ ਰੋਕਥਾਮ ਅਤੇ ਨਿਯੰਤਰਣ) ਐਕਟ, 1974 ਬਾਰੇ ਵਿਸਥਾਰ ਵਿੱਚ ਚਰਚਾ ਕਰੋ। 8
9. ਵਾਤਾਵਰਣ ਅਤੇ ਮਨੁੱਖੀ ਸਿਹਤ ਵਿੱਚ ਸੂਚਨਾ ਤਕਨਾਲੋਜੀ ਦੀ ਭੂਮਿਕਾ ਬਾਰੇ ਵਿਸਥਾਰ ਵਿੱਚ ਚਰਚਾ ਕਰੋ। 8



Course Title	Exam Code	Course Code
Bachelor of Arts	103204	BARL-4026 ✓
Bachelor of Science (Economics)	103304	BECL-4026 ✓

(20)

Semester: IV

Course Title: Banking (Financial Markets and Institutions)

Time Allowed: 2 Hours

Maximum marks: 80

Note: The paper consists of four sections –A, B, C and D. Candidates are required to attempt 40 MCQs selecting at least 8 MCQs from each section. The remaining 8 MCQs may be attempted from any section. Each question carries 2 marks.

## Section-A

- In which year did the Reserve Bank of India introduce the concept of classification of money into M1, M2, M3 and so on?
  - 1956
  - 1961
  - 1977
  - 1998
- Which one out of the following is also known as Reserve Money or High-Powered money or base money?
  - M0
  - M1
  - M2
  - M3
- Commercial paper can be issued by
  - By all corporates
  - By all corporates with the net worth of at least 5 cr.
  - Can be issued by banks only
  - All of the above



4. Interest is usually paid on money market instrument

- a) At maturity
- b) On request
- c) Twice a year
- d) Annually

5. The treasury bills issued as a

- a) Discount
- b) Premium
- c) Both a) and b)
- d) Face value

6. \_\_\_\_\_ is a market for lending & borrowing of short term funds.

- a) Money market
- b) Primary market
- c) Capital market
- d) All of the above

7. Certificate of deposits were introduced in the Indian market in

- \_\_\_\_\_
- a) 1989
  - b) 1990
  - c) 1991
  - d) 1988

8. When was LAF introduced?

- a) 1998
- b) 1997
- c) 1990
- d) 2001

9. On the basis of which recommendations LAF was introduced?

- a) Narsimma first committee
- b) Narsimma second committee
- c) Pradhan Mantri mudra yojana
- d) None of the above

10. Which of the following is owned by the RBI and is operated by CCIL on behalf of the RBI ?

- a) RTGS
- b) SSS
- c) NDS-OM
- d) All of these

**11. Continues Linked Settlement (CLS)**

Bank offers settlement in \_\_\_\_\_ currencies.

- a) 16
- b) 17
- c) 24
- d) 18

**12. DFHI stands for.....**

- a) Discount and Finance house of India
- b) Daily financial house of India
- c) Discount financial house institution
- d) None of the above

**13. DFHI was incorporated in.....**

- a) 1988
- b) 1991
- c) 1990
- d) 1987

**14. Money market mutual fund deals with.....**

- a) Commercial paper
- b) US Treasury bills
- c) Both of above
- d) None of the above

**15. A repurchase agreement, the repurchase price will be greater than the original sale price, the difference effectively representing interest, known as**

- 
- a) Interest rate
  - b) Repo rate
  - c) Repo charge
  - d) Repo commission

Section-B

16. \_\_\_\_\_ is a link between savers & borrowers, helps to establish a link between savers & investors

- a) Marketing
- b) Financial market
- c) Money market
- d) None of these

17. \_\_\_\_\_ is the organisation, institution that provide long term funds.

- a) Capital market
- b) Money market
- c) Primary market
- d) Secondary market

18. Stock exchange is known as \_\_\_\_\_ market for securities.

- a) Primary market
- b) Secondary market
- c) Capital market
- d) None of the above

19. IPO stands for \_\_\_\_\_.

- a) Initial Public Offer
- b) Initial Public Offering
- c) Individual Public offer
- d) none of these

20. An instrument which derives its value from an asset backing it is called \_\_\_\_\_.

- a) Derivatives
- b) Depository
- c) Documentation
- d) None of these

21. Which of the following is a reason to hedge a portfolio?

- a) To increase the probability of gains.
- b) To limit exposure to risk.
- c) To profit from capital gains when interest rates fall.
- d) All of the above.
- e) Both (a) and (c) of the above.

22. A short contract requires that the investor

- (a) sell securities in the future.
- (b) buy securities in the future.
- (c) hedge in the future.
- (d) close out his position in the future.

23. If you bought a long futures contract you hope that bond prices

- a) rise.
- b) fall.
- c) are stable.
- d) fluctuate.

24. The seller of an option has the

- (a) right to buy or sell the underlying asset.
- (b) the obligation to buy or sell the underlying asset.
- (c) ability to reduce transaction risk.
- (d) right to exchange one payment stream for another.

25. The most common type of interest rate swap is

- (a) the plain vanilla swap.
- (b) the basic swap.
- (c) the swaption.
- (d) the notional swap.

26. ————— mutual fund investment instruments deal with units that are purchased or redeemed throughout the year.

- (a) Open ended
- (b) Close ended
- (c) Income fund
- (d) Growth fund

27. What is the full form of NAV?

- a) Net Assessment Value
- b) National Asset Value
- c) Net Asset value
- d) National Asset Variation

28. The first introduction of Mutual Funds in India occurred in which of the following years?

- a). 1964
- b). 1963
- c). 1987
- d). 1999

29. Mutual funds in India are permitted to invest in

- a) Securities
- b) Securities and gold
- c) Securities other than real estate
- d) Securities , gold and real estate

30. Which of the following mutual funds solely invests in stocks?

- a) Bond Fund
- b) Fixed Income Fund
- c) Money Market Mutual Fund
- d) Equity Fund

Section-C

31. A speculator expert's rise in price of a share is called \_\_\_\_\_.

- a) Bull
- b) Bear
- c) Stag
- d) Lame duck

32. Equity shares and preference shares are ownership securities, also known as \_\_\_\_\_.

- a) Debt capital
- b) Capital stock
- c) Fixed capital
- d) Capital issue

33. Bonds, debentures etc. are creditor ship securities, also known as \_\_\_\_\_.

- a) Debt capital
- b) Capital stock
- c) Working capital
- d) Capital issue

34. \_\_\_\_\_ are equity shares issued by the company to employees or directors at a discount or for consideration other than cash.

- a) Derivatives
- b) Securitized instruments
- c) Sweat equity shares
- d) detachable warrants

35. Debenture holders are

- a) Debtors of the Company
- b) Creditors of the Company
- c) External users
- d) Owners of the Company

36. Bonds issue at a discount and redeemed prior to its maturity is called \_\_\_\_\_.

- a) Mortgage bonds
- b) Zero coupon bonds
- c) Convertible bonds
- d) None of these

37. When was the NSE established?

- a) 1990
- b) 1992
- c) 1980
- d) 1995

38. Who is the chairman of NSE?

- a) Bimal Jalan
- b) Chitra Ramkrishna
- c) Vikram Limaye
- d) Girish Chandra Chaturvedi

39. Bulls and bears are \_\_\_\_\_.

- a) Ordinary investors
- b) Government agencies
- c) Speculators
- d) Money lenders

40. The base year of BSE Sensex is \_\_\_\_\_.

- a) 1978-79
- b) 1979-80
- c) 1977-78
- d) None of these

41. OTCEI stands for Over the Counter \_\_\_\_\_ of India.

- a) Exchange
- b) Expand
- c) Extent
- d) None of these

42. OTCEI was incorporated in \_\_\_\_\_.

- a) 1990
- b) 1991
- c) 1992
- d) 1993

43. SEBI was established in the year \_\_\_\_\_.

- a) 1992
- b) 1988
- c) 1990
- d) 1989



**44. Who appoints the chairman of SEBI?**

- a) Central government
- b) Stock exchanges
- c) Brokers
- d) Investors

**45. The objectives of SEBI include -----,**

- a) To protect interests of investors
- b) To regulate securities market
- c) To promote the development of the market
- d) All of the above

Section-D

46. Bank deposit refers to

- a. The amount of money standing to the credit of a customer of a bank
- b. A term used by the Federal Reserve to refer to the total deposits of member banks
- c. The amount of money standing to the debit as a customer of a bank
- d. All of the above

47. Which one of the following is the apex institution in finance sector of India?

- a. IDBI
- b. NABARD
- c. NHB
- d. RBI

48. Oudh Commercial Bank was founded in \_\_\_\_\_.

- a) 1913
- b) 1917
- c) 1894
- d) 1881

49. The main objective of the Regional rural bank is to provide credit to \_\_\_\_\_.

- (a) weaker section of society
- (b) weaker section of rural population
- (c) all the above of the society
- (d) Rural people

50. \_\_\_\_\_ is the apex institution in the country which looks after the development of the cottage industry, small industries, village industries and other rural industries:

- a) NABARD
- b) SEBI
- c) SIDBI
- d) None of The Above

51. When was SIDBI established?

- a) 12 July, 1982
- b) 2nd April, 1990
- c) 9th July, 1988
- d) 1st January, 1982

**52. What are the main objectives of IFCI?**

- a) To provide medium and long term financial assistance to large scale industrial undertakings.
- b) To provide funds particularly when ordinary bank accommodation doesn't suit undertaking or finance cannot be profitably raised by it from the issue of shares.
- c) All of above
- d) None of above

**53. Where is the headquarters of IDBI in India?**

- a) Mumbai
- b) Delhi
- c) Hyderabad
- d) None of The Above

**54. Land Development Banks form part of**

- a) Commercial Banks
- b) IDBI
- c) FCI
- d) Co operative Credit Structure

**55. Interest Rate of Deposits of a Co-operative Credit Societies are fixed by**

- a) Registrar
- b) Government
- c) RBI
- d) General Body

**56. In 2000 ICICI bank announces merger with:**

- a) Bank of Bengal
- b) Bank of Madras
- c) Bank of Jaipur
- d) None of These

**57. Export-Import Bank of India (EXIM Bank) is a specialized financial institution, wholly owned by Government of India, set up in**

- a. 1982
- b. 1983
- c. 1990
- d. 1992

**58. A Non-Banking Financial Company (NBFC) is a company registered under the**

- a) Reserve Bank of India Act, 1934
- b) Banking Regulation Act, 1949
- c) Companies Act, 1956
- d) Payment and Settlement Systems Act, 2007

59. For a company to register as a NBFC it should have a minimum net owned fund of \_\_\_\_\_.

- a) Rs 25 lakh
- b) Rs 1 crores
- c) Rs 2 crores
- d) Rs 5 crores

60. NBFCs stands for \_\_\_\_\_.

- a) Non Banking Fund Company
- b) Non-Banking Financial Companies
- c) Non Banking Finance Council
- d) None of these

Paper Code: 4102

Exam Code	Course Code
103204	BARL-4031
103304	BSNL-4031
	BSML-4031
	BECL-4031 ✓
	BCSL-4031
108504	BCRL-4031 ✓
105404	BBRL-4031 ✓

Subject: Basic Punjabi

Semester-IV

(40)

Max Marks: 40

ਸ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ  
ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ  
ਅੰਕ 08 ਹਨ।

ਸੈਕਸ਼ਨ-1

ਦੀ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ ਕਰੋ।

ਕੀ ਲੋਚਦੀਏ?

ਤੇ?

ਯਾ ਸਖਣੀ ਤੇਰੀ ਝੋਲ ਕੁੜੇ?  
 ਯਾ ਸਰਖੀ ਵੇਲੇ ਤੱਕਿਆ ਈ  
 ਕੋਈ ਡਾਹੜਾ ਭੈੜਾ ਸੁਫਨਾ ਨੀ?

2. ਮੇਰੇ ਤੋਂ ਆਸ ਨਾ ਕਰਿਓ ਕਿ ਮੈਂ ਖੇਤਾਂ ਦਾ ਪੁੱਤ ਹੋ ਕੇ  
 ਤੁਹਾਡੇ ਚਗਲੇ ਹੋਏ ਸਵਾਦਾਂ ਦੀ ਗੱਲ ਕਰਾਂਗਾ  
 ਜਿਨ੍ਹਾਂ ਦੇ ਹੜ੍ਹ 'ਚ ਹੜ੍ਹ ਜਾਂਦੀ ਹੈ  
 ਸਾਡੇ ਬੱਚਿਆਂ ਦੀ ਤੋਤਲੀ ਕਵਿਤਾ  
 ਤੇ ਸਾਡੀਆਂ ਧੀਆਂ ਦਾ ਕੰਜਕ ਜਿਹਾ ਹਾਸਾ  
 ਮੈਂ ਤਾਂ ਜਦ ਵੀ ਕੀਤੀ ਖਾਦ ਦੇ ਘਾਟੇ ਕਿਸੇ ਗੁਰੀਬਤੀ ਤੇ ਹਿੱਕ ਵਾਂਗੂੰ  
 ਪਿਚਕ ਗਏ  
 ਗੰਨਿਆਂ ਦੀ ਹੀ ਗੱਲ ਕਰਾਂਗਾ। 8

#### ਸੈਕਸ਼ਨ-2

3. ਸੈਦਾ ਤੇ ਸਬਜ਼ਾਂ ਕਵਿਤਾ ਦਾ ਸਾਰ ਲਿਖੋ। 8  
 4. ਸਭ ਤੋਂ ਖਤਰਨਾਕ ਕਵਿਤਾ ਦੇ ਸਾਰ ਬਾਰੇ ਚਰਚਾ ਕਰੋ। 8

#### ਸੈਕਸ਼ਨ-3

5. ਸੁਰਜੀਤ ਪਾਤਰ ਦੇ ਜੀਵਨ ਅਤੇ ਰਚਨਾ ਬਾਰੇ ਮੁੱਢਲੀ ਜਾਣਕਾਰੀ  
 ਦਿਓ। 8  
 6. ਪ੍ਰੋ ਮੋਹਨ ਸਿੰਘ ਦੇ ਜੀਵਨ ਅਤੇ ਰਚਨਾ ਬਾਰੇ ਚਰਚਾ ਕਰੋ। 8

#### ਸੈਕਸ਼ਨ-4

7. ਹੇਠ ਲਿਖੇ ਵਿਸ਼ਿਆਂ ਵਿੱਚੋਂ ਕਿਸੇ ਇੱਕ ਵਿਸ਼ੇ ਤੇ ਲੇਖ ਲਿਖੋ।  
 (ੳ) ਕੰਪਿਊਟਰ ਦੇ ਲਾਭ ਅਤੇ ਹਾਨੀਆਂ  
 (ਅ) ਲਾਇਬਰੇਰੀ ਦੀ ਮਹੱਤਤਾ  
 8. ਅਸ਼ੁੱਧ ਸ਼ਬਦਾਂ ਨੂੰ ਸੁੱਧ ਕਰਕੇ ਲਿਖੋ।  
 ਉਖਾ, ਆਸਮਾਨ, ਇਰਖਾ, ਸੋਹਰਾ, ਹਲਵਾਏ, ਕੱਨ, ਖਰਗੋਛ,  
 ਗਿਹਣਾ। 8

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13/5 MOR

Paper Code: 4110

Programme	Exam Code	Course Code
Bachelor of Arts	103204	BARL-4175 ✓
Bachelor of Science (Economics)	103304	BECL-4175 ✓

**Course Title: Economics (International Economics and  
Public Finance) Semester-IV  
(40)**

**Time Allowed: 3 Hours**

**Max Marks: 80**

**Note: 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 16 marks.**

**Section A**

1. Critically examine the classical theory of international trade.
2. Explain terms of trade. Discuss various concepts of terms of trade



### **Section B**

3. Explain in detail Purchasing Power Parity (PPP) theory for determination of exchange rate.
4. Define the main causes of adverse balance of payment? What are the methods to correct it?

### **Section C**

5. Define public expenditure. Explain in detail effects of public expenditure on production and distribution.
6. Discuss the nature, scope and importance of public finance.

### **Section D**

7. Explain cannons of taxation in an underdeveloped economy.
8. Define tax. What are the merits and demerits of direct and indirect tax?

Exam Code: 103204  
(40)

Paper Code: 4130

Programme: Bachelor of Arts  
Semester-IV

Course Title: English (Elective)

Course Code: BARL-4198 ✓

Time Allowed: 3 Hours

Max Marks: 80

**Section-A**

1. Attempt any three literary terms (each to be answered in 100 words approximately) out of the given five.
- a. Fiction
  - b. Climax
  - c. Flat Character
  - d. Characterization
  - e. Antagonist
- (3x4=12)

**Section-B**

2. Write phonetic transcription of any 12 words out of the given 16 words.
- a. Accommodation
  - b. maternal
  - c. capability
  - d. negation
  - e. examination

- f. ornament
- g. university
- h. pacific
- i. utility
- j. rationality
- k. objectionable
- l. sample
- m. testimonial
- n. thirsty
- o. superintendent
- p. venom

(12x1=12)

#### Section-C

3. **Attempt any one Reference to Context in about 300 words approximately.**
- a. Thus I am a Marxist without being a member of any communist party. Alongwith I am a Sikh who does not believe in God and most of the constraints of the Sikh faith and a Hindu without belief in Divine Incarnation, in the caste system and in the sanctity of the cow.
  - b. Well, what is one to do? There are two solutions. One of them is a Nazi solution. If you don't like people, kill them, banish them, segregate them, and then strut up and down proclaiming that you are the salt of the earth. The other way is much less thrilling, but it is on the whole the way of the democracies, and I prefer it. If you

don't like people, put up with them as well as you can.

(1x8=8)

4. Attempt any two questions (each to be answered in 500 words approximately) out of the given three.
- Sum up the ideas contained in the essay 'The Sporting Spirit'.
  - Give a detailed account of S. Gopal's views on English in India.
  - Write in your own words the assessment of Hindi films as forwarded by Balraj Sahni in his convocation Address?
- (2x10=20)

#### SECTION D

5. Attempt any one Reference to Context in about 300 words approximately.
- 'It has come!' sobbed Adele as she sank on her knees beside the table. 'There is only one thing to do,' said Philippe after some hours of silence. 'It is hard but there is only one thing to do'. 'We must cut ourselves off; we must be the last of our race.'
  - "Ask me no questions, and I will tell you no lies." The boy of seven who is listening to a fairy story understands that perfectly well; but he withholds his questions, while the story is being told.

(1x8=8)

6. Attempt any two questions (each to be answered in 500 words approximately) out of the given three.

a. Draw the portrait of Mangal Singh.

b. How does the story 'The Bath' capture the loneliness of a person in old age?

c. What is the relationship between the mother, the children and the dog in the story 'The Drover's Wife'?

(2x10=20)

Exam Code: 103204

Paper Code: 9407

Programme: Bachelor of Arts (Semester - IV)

Course Title: English (Elective)

Course Code: BARI-4198 ✓

Time- 3 Hrs.

Max. Marks- 80

**SECTION-A**

1. Attempt any three literary terms approximately in about 100 words each.

a. Character

b. Fable

c. Plot

d. Climax

e. Antagonist

(3×4=12)

2. Write phonetic transcription of any 12 words out of the given 16 words:

a. Healthy

b. Nationality

c. Wealthy

d. Lavish

e. Accommodation

f. Theatre

g. Dictionary

h. Interference

i. Capability

j. Rationality

k. Money

l. Legal

m. Sandwich

n. Vitamin

o. Pavilion

p. tranquillity

(12×1=12)

**SECTION-B**

3. Write explanation of the stanza with reference to context approximately in about 300 words.

a. Respectfully but firmly, I disagree. Love is a great force in private life; it is indeed the greatest of all things, but love in public affairs does not work. It has been tried again and again; by the Christian civilizations of the middle Ages, and also by the French Revolution, a secular movement which reasserted the Brotherhood of Man. And it has always failed.

**Or**

b. Serious sport has nothing to do with fair play. It is bound up with hatred, jealousy, boastfulness, disregard of all rules and sadistic pleasure in witnessing violence; in other words it is war minus the shooting.

(1×8=8)



4. Attempt any two questions approximately in about 500 words each.
- Sum up the ideas contained in the essay 'State and Society' by Rabindranath Tagore.
  - Write in your own words the ideas contained in the essay 'Tolerance' by EM Forster.
  - Give a detailed account of S. Gopal's views on 'English in India'.
- (2×10=20)

### SECTION-C

5. Write explanation of the stanza with reference to context approximately in about 300 words.
- "I had always thought that marriage for my only child Jasmine was a given. As with all my other siblings, marriage was not only to ensure one's continued progeny, it was protection against censure and unwanted speculation."
- Or
- 'Oh, forgive, Sarkar, it is not my fault, the man shouted in an angry, indignant voice while he rubbed his limbs and spread his off more blows.  
'You, son of a dog,' hissed Mangal as he struck again and again, harder and harder as if he had gone mad, till his stave seemed to ring as the bamboo stick does when it is splitting into shreds.
- (1×8=8)

6. Attempt any two questions approximately in about 500 words each.
- Give the summary of the story 'The Drover's Wife' by Henry Lawson.
  - Draw the portrait of Mangal Singh in Duty by Mulk Rah Anand.
  - Recapture the background and the customs that Achebe picturizes in the story 'The Sacrificial Egg'. Explain how he visualizes the story of Julius against this background.
- (2×10=20)



Exam Code: 103204  
(30)

Paper Code: 4131

Programme: Bachelor of Arts  
Semester-IV

Course Title: Punjabi (Elective)

Course Code: BARL-4208 ✓

Time Allowed: 3 Hours

Max Marks: 80

ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ 5 ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ। ਹਰ ਪ੍ਰਸ਼ਨ ਦੇ ਅੰਕ 16 ਹਨ।

ਸੈਕਸ਼ਨ-1

1. 'ਪੰਜਾਬ ਦੇ ਜੰਮਿਆਂ ਨੂੰ ਨਿੱਤ ਮੁਹਿੰਮਾਂ' ਨਿਬੰਧ ਦਾ ਸਾਰ ਲਿਖੋ? 16
2. 'ਪੰਜਾਬੀ ਲੋਕ ਕਾਵਿ ਅਤੇ ਸੱਭਿਆਚਾਰ' ਨਿਬੰਧ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ ਲਿਖੋ? 16

ਸੈਕਸ਼ਨ-2

3. 1701 ਈ. ਤੋਂ 1900 ਈ. ਤਕ ਵੀਰ ਕਾਵਿ ਧਾਰਾ ਤੇ ਨੋਟ ਲਿਖੋ? 16
4. 1701 ਈ. ਤੋਂ 1900 ਈ. ਤੱਕ ਦੀ ਸੁਫੀ ਕਾਵਿ ਧਾਰਾ ਤੇ ਨੋਟ ਲਿਖੋ? 16

### ਸੈਕਸ਼ਨ-3

5. ਪਾਤਰ ਉਸਾਰੀ ਅਤੇ ਬੁਣਤੀ ਤੇ ਬਣਤਰ ਤੇ ਨੋਟ ਲਿਖੋ। 16
6. ਪ੍ਰਤੀਕ ਅਤੇ ਬਿੰਬ ਦੇ ਬਾਰੇ ਜਾਣਕਾਰੀ ਦਿਓ। 16

### ਸੈਕਸ਼ਨ-4

7. ਕਿੱਸਾ ਦੀ ਪਰਿਭਾਸ਼ਾ ਦਿੰਦੀਆਂ ਇਸ ਦੇ ਤੱਤਾਂ ਬਾਰੇ ਲਿਖੋ? 16
8. ਜੰਗਨਾਮਾ ਸਾਹਿਤ ਰੂਪ ਉੱਤੇ ਵਿਸਥਾਰਪੂਰਵਕ ਨੋਟ ਲਿਖੋ? 16

Programme: Bachelor of Arts (Semester-IV)

Course Code: BARL-4212 ✓

Course Title: English (Compulsory)

Time Allowed: 3 Hours

Max. Marks: 40

SECTION - A

I. Attempt any fourteen of the following questions.

(1x14=14)

Put in **can** or **could**.

- i.) This is a wonderful place. I \_\_\_\_\_ stay here forever.  
ii.) It's so nice here. I \_\_\_\_\_ sit here all day but unfortunately I have to go.

Put in **must** or **can't**.

- iii.) You've been travelling all day. You \_\_\_\_\_ be tired.  
iv.) That restaurant \_\_\_\_\_ be very good. It's always full of people.  
v.) That restaurant \_\_\_\_\_ be very good. It's always empty.

Complete each sentence using the verb in brackets.

- vi.) Where's Emma? What's she doing?  
I'm not sure. She might \_\_\_\_\_ TV. (watch)  
vii.) I can't find my umbrella. Have you seen it?  
You may \_\_\_\_\_ it in the restaurant last night. (leave)

Complete the sentences with **say** or **tell** (in the correct form). Use only one word each time.

- viii.) I wonder where Sue is. She \_\_\_\_\_ she would be here at 8 o'clock.  
ix.) Dan \_\_\_\_\_ me that he was bored with his job.  
x.) The doctor \_\_\_\_\_ that I should rest for at least a week.

Put in **in case** or **if**.

- xi.) I'll draw a map for you \_\_\_\_\_ you have a problem finding our house.  
xii.) You should tell the police \_\_\_\_\_ you have any information about the crime.  
xiii.) Write your name and phone number on your bag \_\_\_\_\_ you lose it.  
xiv.) Go to the lost property office \_\_\_\_\_ you lose your bag.

Put in **like** or **as**. Sometimes either word is possible.

- xv.) Hannah has been working \_\_\_\_\_ a waitress for the last two months.  
xvi.) Tom showed me some photos of the city \_\_\_\_\_ it was thirty years ago.  
xvii.) My neighbour's house is full of interesting things. It's \_\_\_\_\_ a museum.

Put in **for** or **during**.

- viii.) It rained \_\_\_\_\_ three days without stopping.  
xix.) I fell asleep \_\_\_\_\_ the movie.  
xx.) I went to the theatre last night. I met Sue \_\_\_\_\_ the interval.

SECTION - B

II. Attempt the following questions.

(2x5=10)

A. Write synonyms for any five of the following words:



- iii. the dirt or earth in which plants grow
- iv. not well protected against danger or injury
- v. the process of bringing water to agricultural land
- vi. to watch closely and carefully
- vii. suitable for official, public situations
- viii. a different form of same thing
- ix. a person whose position or status is lower
- x. a person of the same age or the same status in the group

**B. In the following sentences, circle any Problem markers, highlight the Solution Markers, and underline any actual solutions. Attempt any five.**

- i. The Cuban missile crisis of 1962 was settled when each side agreed to move its weapons from the other's borders.
- ii. One way to alleviate the burden of having large number of immigrants settle in one area of the country is to offer immigrants incentives to live elsewhere.
- iii. Increased support from the federal government would relieve some of the difficulty of providing services to large numbers of immigrants.
- iv. Ethnic communities have been a source of support for new immigrants as they learn to cope with the challenges and hardships of life in the United States.
- v. The United Nations is attempting to persuade the two countries to begin talking about a resolution of the conflict between them.
- vi. For more than a century, the United States has tended to deal with labor shortages by encouraging suitably qualified workers to immigrate.
- vii. For decades, no British government attempted to address the fundamental issue in health care in the United Kingdom, namely, its chronic underfunding.
- viii. The U.S. government uses a number of strategies to remedy the injustices that remain from the nation's racist past.
- ix. Debt relief must be a component of any comprehensive international effort to tackle the problems of underdevelopment and poverty.
- x. In 2003, the major obstacle to organizing a fully effective response to the AIDS crisis was the lack of a vaccine.

**III. Write explanation of the stanza with reference to context:**

**(1X4=4)**

Because I could not stop for Death—  
 He kindly stopped for me—  
 The Carriage held but just Ourselves—  
 And Immortality.

**OR**

He gives his harness bells a shake  
 To ask if there has been a mistake  
 The only other sound's the sweep  
 Of easy wind and downy flake.

### **SECTION-C**

**IV. Attempt any two questions.**

**(2X3=6)**

- 1) Who are the three persons that the speaker thinks might be digging on her grave?
- 2) What is the significance of Death and Immortality riding together?
- 3) Describe the entry of Porphyria and its effect on the speaker.

**V. Write an essay on any one of the following topics.**

**(1X6=6)**

A journey by train

**Or**

Use of Technology in the modern world

Paper Code: 4104

Programme	Exam Code	Course Code
Bachelor of Arts	103204	BARL-4212 ✓
Bachelor of Science (Non-Medical)	103304	BSNL-4212 ✓
Bachelor of Science (Medical)		BSML-4212 ✓
Bachelor of Science (Economics)		BECL-4212 ✓
Bachelor of Science (Computer Science)		BCSL-4212 ✓
Bachelor of Commerce		108504
Bachelor of Business Administration	105404	BBRL-4212

## Semester- IV

Course Title: English (Compulsory)  
(200)

Time Allowed: 3 Hours

Max Marks: 40

## Section A

### 1. Attempt any ten sentences out of given fifteen:

**Put in the correct preposition:**

- i) What was Sarah's reaction..... the news?
- ii) There are many advantages ..... being able to speak a foreign language.
- iii) They were delighted ..... the present I gave them.

**Complete the sentences using these verbs (in the correct form) + a preposition**

Remind Warn Think Hear
------------------------

- iv) It was my idea. I ..... it first.
- v) I would have forgotten my appointment if Jane hadn't ..... me ..... it.
- vi) Before you go into the house, I must ..... you..... the dog. He's bitten people before, so be careful.

**Complete each sentence using a verb + on or off.**

- vii) Peter is always trying to impress people. He's always.....

viii) I'm not ready to go home yet. I have a few things to .....

ix) I ..... making the same mistake. It's very frustrating.

**Complete each sentence using a verb (in the correct form) + down.**

x) The train ..... as it approached the station".

xi) I was really angry. It took me a long time to .....

xii) The shop ..... because it was losing money.

**Complete the sentences. Use the following verbs + up (with any other necessary words)**

Tidy   Keep   Go   Catch
--------------------------

xiii) I'm not ready yet. You go on and I'll ..... you.

xiv) I saw Mike at the party, so I ..... him and said hello.

xv) Our team started the game well, but we couldn't ..... .. and in the end we lost.

(1x10=10)

**2. Write an essay in about 300 words:**

i) Role of media in society



OR

ii) Online teaching: Student's perspective (1X6=6)

**SECTION - B**

**3. Write any four out of given six phrases:**

- 1) Government of the people, for the people and by the people
- 2) Legal dissolution of the marriage of husband and wife
- 3) To run away with a lover in order to get married secretly
- 4) Unable to read
- 5) That which cannot be passed
- 6) Sweeping government changes

(1X4=4)

**SECTION - C**

**4. Attempt any five out of given six:**

**Circle the verbs with -ing endings that express a result.  
Then highlight the complete result.**

- 1) The forests on either side of the Amu Darya river have dried up, leading to the loss of about half the region's bird and mammal species.

2) Water containing dangerous levels of chemicals drains into the rivers, making the region's fish unfit to eat and undermining its fishing industry.

3) Winters in the region surrounding the Aral Sea have become colder and longer, making cotton growing impossible in many areas.

4) Poorly planned economic development can frequently damage the ecology of a region, negating any benefits that the development might have provided.

5) International organizations have provided funding for family-planning programs, enabling a number of countries to lower their birthrates significantly.

6) Unemployment and poverty have greatly increased in the last few years, forcing more and more people to move into the cities. (1X5=5)

**5. Write any five Synonyms for the following :**

1) To stop changing

2) To use up something completely

3) Impossible to continue doing

4) To use

5) To produce

6) Finally

(1x5=5)

#### SECTION-D

**6. Attempt any two questions (In 200 words)**

a) Describe why the lover strangulates his beloved Porphyria.

b) Who are the three persons that the speaker thinks might be digging on her grave?

c) When did the poet first see the swans? Why does he still remember that day? (2X3=6)

d)

**7. Write explanation of the stanza with reference to context:**

The woods are lovely, dark and deep.

But I have promises to keep,

And miles to go before I sleep,

And miles to go before I sleep.

OR

Call the roller of big cigars,

The muscular one, and bid him whip

In kitchen cups concupiscent curds.  
Let the wenches dawdle in such dress  
As they are used to wear, and let the boys  
Bring flowers in last month's newspapers.  
Let be be finale of seem.

(1X4=4)

(Old Syllabus (2019-20))

Exam Code: 103204

Paper Code: 9405

Bachelor of Arts (Semester-IV)

Course Title: History (History of the Punjab (AD 1469-1799))

Course Code - BARL-4273

Examination Time: 3 Hours

Theory: 80

Attempt three questions, selecting at least one question from first three Units. Attempt both questions from Unit IV (Compulsory Unit). Each question carries 16 marks.

UNIT I

1. Describe the physical features of Punjab?
2. Discuss the life and teachings of Guru Nanak Dev ji.

UNIT II

3. Write a detailed note on the development of Sikhism under Guru Angad dev ji.
4. What was the New Policy of Guru Har Gobind Singh Ji? What were the causes of adoption of New Policy?

UNIT-III

5. Discuss the causes and importance of creation of Khalsa.
6. Briefly describe the relations of Zakariya Khan with the Sikhs.

UNIT IV (COMPULSORY UNIT / ATTEMPT BOTH QUESTIONS)

7. Discuss the circumstances leading to the establishment of Dal Khalsa
8. Put mark on any four places on the political map of PUNJAB and explain their importance

Nankana Sahib, Muktsar, Dam Dama Sahib, Anadpur Sahib, Dera Baba Nanak, Chamkaur, Sirhind, Kahnuwan, Emnabad, Paonta Sahib

Hindi Version

पहली तीन इकाइयों में से कम से कम एक प्रश्न का चयन करते हुए तीन प्रश्नों के उत्तर दीजिए। इकाई IV से दोनों प्रश्नों के उत्तर दीजिए। प्रत्येक प्रश्न 16 अंकों का है।

यूनिट I

1. पंजाब की भौतिक विशेषताओं का वर्णन कीजिए।
2. गुरु नानक देव जी के जीवन और उनकी शिक्षाओं की चर्चा कीजिए।

यूनिट II

3. गुरु अंगद देव जी के सान्निध्य में सिख धर्म के विकास पर एक विस्तृत टिप्पणी लिखिए।



4. ਗੁਰੂ ਹਰ ਗੋਬਿੰਦ ਸਿੰਘ ਜੀ ਦੀ ਨਵੀਂ ਨੀਤੀ ਕੀਤੀ? ਨਵੀਂ ਨੀਤੀ ਅਪਣਾਉਣ ਦੇ ਕੀ ਕਾਰਨ ਸਨ?

#### ਯੂਨਿਟ-III

5. ਖਾਲਸਾ ਦੀ ਸਥਾਪਨਾ ਦੇ ਕਾਰਨਾਂ ਅਤੇ ਮਹੱਤਵ ਦੀ ਚਰਚਾ ਕੀਤੀਓ।  
6. ਜਕਾਰਿਆ ਖਾਨ ਦੇ ਸਿਕੰਦਰਾਂ ਦੇ ਸਾਥ ਸੰਬੰਧਾਂ ਦਾ ਸੰਖੇਪ ਮੈਂ ਵਰਣਨ ਕੀਤੀਓ।

#### ਯੂਨਿਟ IV (ਅਨਿਵਾਰੀ ਝੁਕਾਉ / ਦੋਨਾਂ ਪ੍ਰਸ਼ੰਸਾਂ ਦੇ ਉੱਤਰ ਦੇ)

7. ਦਲ ਖਾਲਸਾ ਦੀ ਸਥਾਪਨਾ ਦੀ ਪਰਿਸਥਿਤੀਆਂ ਦੀ ਚਰਚਾ ਕੀਤੀਓ।  
8. ਪੰਜਾਬ ਦੇ ਰਾਜਨੀਤਿਕ ਸ਼ਾਸਤਰਾਂ ਅਤੇ ਕਿਹੜੀਆਂ ਚਾਰ ਸ਼ਾਖਾਵਾਂ 'ਤੇ ਨਿਰਧਾਰਨ ਲਗਾਓ ਅਤੇ ਉਨ੍ਹਾਂ ਦੇ ਮਹੱਤਵ ਦੀ ਵਿਆਖਿਆ ਕੀਤੀਓ।

ਨਨਕਾਣਾ ਸਾਹਿਬ, ਮੁਕਤਸਰ, ਬਾਂਧ ਟਾਸਾ ਸਾਹਿਬ, ਆਨੰਦਪੁਰ ਸਾਹਿਬ, ਡੇਰਾ ਬਾਬਾ ਨਾਨਕ, ਚਮਕੌਰ, ਸਰਹਿੰਦ, ਕਾਹਨੂਵਾਂ, ਏਮਨਾਬਾਦ, ਪਾਂਧਣਾ ਸਾਹਿਬ

#### Punjabi version

ਪਹਿਲੀਆਂ ਤਿੰਨ ਵਿਕਾਸੀਆਂ ਵਿੱਚੋਂ ਖੋਟੇ-ਖੋਟੇ ਇੱਕ ਨੂੰ ਚੁਣ ਕੇ ਤਿੰਨ ਪ੍ਰਸ਼ੰਸਾ ਦੀ ਕੋਸ਼ਿਸ਼ ਕਰੋ। ਯੂਨਿਟ IV ਲਾਜ਼ਮੀ ਹੈ। ਦੋਨਾਂ ਸਵਾਲਾਂ ਦੀ ਕੋਸ਼ਿਸ਼ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੈ। ਹਰ ਸਵਾਲ 16 ਅੰਕਾਂ ਦਾ ਹੈ।

#### ਯੂਨਿਟ I

1. ਪੰਜਾਬ ਦੀਆਂ ਭੌਤਿਕ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਦਾ ਵਰਣਨ ਕਰੋ।  
2. ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਜੀ ਦੇ ਜੀਵਨ ਅਤੇ ਸਿੱਖਿਆਵਾਂ ਬਾਰੇ ਚਰਚਾ ਕਰੋ।

#### ਯੂਨਿਟ II

3. ਗੁਰੂ ਅੰਗਦ ਦੇਵ ਜੀ ਦੇ ਅਧੀਨ ਸਿੱਖ ਧਰਮ ਦੇ ਵਿਕਾਸ ਬਾਰੇ ਵਿਸਤ੍ਰਿਤ ਨੋਟ ਲਿਖੋ।  
4. ਗੁਰੂ ਹਰਿ ਗੋਬਿੰਦ ਸਿੰਘ ਜੀ ਦੀ ਨਵੀਂ ਨੀਤੀ ਅਤੇ ਸੀ? ਨਵੀਂ ਨੀਤੀ ਅਪਣਾਉਣ ਦੇ ਕੌ ਕਾਰਨ ਸਨ?

#### ਯੂਨਿਟ III

5. ਖਾਲਸੇ ਦੀ ਸਿਰਜਣਾ ਦੇ ਕਾਰਨਾਂ ਅਤੇ ਮਹੱਤਵ ਬਾਰੇ ਚਰਚਾ ਕਰੋ।  
6. ਜਕਾਰੀਆ ਖਾਨ ਦੇ ਸਿੱਖਾਂ ਨਾਲ ਸੰਬੰਧਾਂ ਦਾ ਸੰਖੇਪ ਵਰਣਨ ਕਰੋ।

#### ਯੂਨਿਟ IV (ਲਾਜ਼ਮੀ ਯੂਨਿਟ / ਦੋਨਾਂ ਸਵਾਲਾਂ ਦੀ ਕੋਸ਼ਿਸ਼ ਕਰੋ)

7. ਦਲ ਖਾਲਸਾ ਦੀ ਸਥਾਪਨਾ ਵੱਲ ਅਗਵਾਈ ਕਰਨ ਵਾਲੇ ਹਾਲਾਤਾਂ ਦੀ ਚਰਚਾ ਕਰੋ।  
8. ਪੰਜਾਬ ਦੇ ਰਾਜਨੀਤਿਕ ਨਕਸ਼ੇ 'ਤੇ ਕੋਈ ਵੀ ਚਾਰ ਸਥਾਨ 'ਤੇ ਨਿਰਧਾਰਨ ਲਗਾਓ ਅਤੇ ਉਨ੍ਹਾਂ ਦੀ ਮਹੱਤਤਾ ਨੂੰ ਸਮਝਾਓ।

ਨਨਕਾਣਾ ਸਾਹਿਬ, ਮੁਕਤਸਰ, ਏਮਨਾਬਾਦ ਸਾਹਿਬ, ਆਨੰਦਪੁਰ ਸਾਹਿਬ, ਡੇਰਾ ਬਾਬਾ ਨਾਨਕ, ਚਮਕੌਰ, ਸਰਹਿੰਦ, ਕਾਹਨੂਵਾਂ, ਏਮਨਾਬਾਦ, ਪਾਂਧਣਾ ਸਾਹਿਬ

Exam Code: 103204  
(60)

Paper Code: 4113

Programme: Bachelor of Arts  
Semester-IV

Course Title: History (History of the Punjab (AD 1469-  
1799)

Course Code: BARL-4273



Time Allowed: 3 Hours

Max Marks: 80

Attempt one question each from sections A, B and C ,  
Answer to each question should be given in about 1200  
words. Each question will carry 16 marks.

**Section-A**

1. Discuss the Socio Religious condition of Punjab in 1500 AD?
2. Discuss the Teaching of Sri Guru Nanak Dev ji?

**Section-B**

3. Discuss the causes for the Martyrdom of Sri Guru Arjun Dev ji?
4. Discuss the New Policy of Sri Guru Hargobind ji?

**Section-C**

5. Discuss the circumstances Leading to the Creation of Khalsa?
6. Describe the achievements of Banda Bahadur?



Section-D

(Compulsory unit/Attempt both question)

7. Answer any Eight short answer questions in 20 to 25 words. Each question will carry 2 marks.
- Write a note on Sangat?
  - Manji system?
  - Write a note on Harminder Sahib?
  - Two Difficulties faced by Sri Guru Arjun Dev ji for his Guruship?
  - Who started the Masand System?
  - Who was Prithi chand?
  - Give two results of Sri Guru Arjun Dev's Martyrdom?
  - What is Miri and piri?
  - Give two results of the new policy of Sri Guru Hargobind ji?
  - Give two causes for the Martyrdom of Sri Guru Teg Bahadur?
  - What are Battle of Lahira?
  - What is the importance of Adi Granth?
8. Locate any four places on the political map of India and explain their importance in 5 lines (Each correct answer with explanation will carry 4 marks)
- Nankana Sahib, Mukatsar, Ponta Sahib, Chamkor, Dera baba nanak, Dam Dama Sahib, Kanhua, Anandpur Sahib, Sirhind

16

Hindi version

खंड 1, 2 और 3 से एक-एक प्रश्न का उत्तर दें। प्रत्येक प्रश्न का उत्तर लगभग 1200 शब्दों में दें। प्रत्येक प्रश्न के 16 अंक हैं।

खंड 1

1. 1500 ई. में पंजाब की सामाजिक-धार्मिक स्थिति की विवेचना कीजिए?
2. गुरु नानक देव जी की शिक्षाओं पर चर्चा करें?

खंड 2

3. गुरु अर्जुन देव जी की शहादत के कारणों पर चर्चा करें?
4. गुरु हरगोविंद जी की नई नीति पर चर्चा करें?

खंड 3

5. खालसा के निर्माण के लिए अग्रणी परिस्थितियों की चर्चा करें?
6. बंदा बहादुर की उपलब्धियों का वर्णन कीजिए?

खंड 4

(दोनों प्रश्न करें )

7. किन्हीं आठ लघु उत्तरीय प्रश्नों के उत्तर दें, प्रत्येक प्रश्न 2 अंक का होगा।
  - a. संगत पर एक टिप्पणी लिखिए?
  - b. मांजी प्रणाली?
  - c. हरिमंदिर साहिब पर एक नोट लिखें?

- d. गुरु अर्जुन देव जी को गुरु पद के लिए किन दो कठिनाइयों का सामना करना पड़ा?
- e. मराठों की प्रणाली की शुरुआत किसने की?
- f. पृथ्वी चंद कौन थे?
- g. गुरु अर्जुन देव की शहादत के दो परिणाम बताइए?
- h. मिरी और पिरि क्या है?
- i. गुरु हरगोबिंद जी की नई नीति के दो परिणाम बताइए?
- j. गुरु तेग बहादुर की शहादत के दो कारण बताइए?
- k. लाहौरा का युद्ध क्या था?
- l. आदि ग्रंथ का क्या महत्व है?
8. भारत के राजनीतिक मानचित्र पर किन्हीं चार स्थानों का पता लगाएँ और 5 पंक्तियों में उनके महत्व की व्याख्या करें स्पष्टीकरण के साथ प्रत्येक सही उत्तर के 4 अंक होंगे।  
नानकाना साहिब, मुक्तसर, पौंटा साहिब, चमकोर, डेरा बाबा नानक, दमदमा साहिब, कहनुवां, आनंदपुर साहिब, सरहिन्द,।

**Bachelor of Arts (Semester-IV)****Course Title: Human Rights (Environment and Human Rights)**

Course Code: BARL-4295 ✓

Time Allowed: 3 Hours

Max Marks: 80

**Note:** Candidates are required to attempt five questions in all, selecting at least one question from each section. The fifth question can be attempted from any Section. Each question carries equal (16) marks.

**Section A**

1. Define environment. Elaborate in detail the components of environment.  
पर्यावरण को परिभाषित कीजिए। पर्यावरण के घटकों का विस्तार से वर्णन कीजिए।
2. Analyze the major concerns for environment.  
पर्यावरण के लिए प्रमुख चिंताओं का विश्लेषण करें।

**Section B**

3. Describe the Air Pollution. Also discuss its effects on human body and environment.  
वायु प्रदूषण का वर्णन करें। मानव शरीर और पर्यावरण पर इसके प्रभावों की भी चर्चा कीजिए।
4. Examine the various categories of pollution along with its effects on life on earth and environment.  
पृथ्वी और पर्यावरण पर जीवन पर पड़ने वाले प्रभावों के साथ-साथ प्रदूषण की विभिन्न श्रेणियों का परीक्षण कीजिए।

**Section C**

5. What do you mean by the term clean environment and Sustainable Development? Give your arguments by focusing on its goals and principles.  
स्वच्छ पर्यावरण और सतत विकास शब्द से आप क्या समझते हैं? इसके लक्ष्यों और सिद्धान्तों पर ध्यान केन्द्रित करते हुए अपने तर्क दीजिए।
6. Do you think the Right to environment is necessary precondition for the survival of human civilization? Give you opinion.  
क्या आपको लगता है कि मानव सभ्यता के जीवित रहने के लिए पर्यावरण का अधिकार आवश्यक पूर्व शर्त है? आप राय दें।

**Section D**

7. How far the Government of India is sincere for the protection of environment? Give you arguments.  
भारत सरकार पर्यावरण की सुरक्षा के लिए कहीं तक गंभीर है? आप तर्क दीजिए।
8. Define the term Globalization. Discuss its overall impact on environment and possible safeguards.  
वैश्वीकरण शब्द को परिभाषित कीजिए। पर्यावरण पर इसके समग्र प्रभाव और संभावित सुरक्षा उपायों पर चर्चा करें।



Exam Code: 103204

Lib KMU=II 6/5/23 (M)  
Paper Code: 4122

Programme: Bachelor of Arts (Semester – IV)

Course Title: Political Science (Indian Political System)

Course Code: BARL-4406 ✓

Time Allowed: 3 Hours

Maximum Marks: 80

Attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any Section. Each question carries sixteen marks.

**Section A**

1. Elaborate the features of state politics in India since independence.
2. How India has paved the way for the reorganization of states? Also discuss the emerging challenges.

**Section B**

3. Examine the ideology, social base, policies and programme of Congress party.
4. Write down the ideology, support base and performance of National Conference.

**Section C**

5. Write down the relations between Religion and Politics in India.
6. Explain the emerging trends in Indian politics.

**Section D**

7. Give your analytical view of the Election Commission of India and its contribution in electoral reforms in India.
8. What do you mean by Voting Behaviour? Discuss the factors which determine the Voting Behaviour in India.

नोट: उम्मीदवारों को प्रत्येक खण्ड से कम से कम एक प्रश्न का चयन करते हुए पाँच प्रश्न करने हैं। पाँचवां प्रश्न किसी भी खण्ड से किया जा सकता है। प्रत्येक प्रश्न सोलह अंकों का होगा।

खंड- ए

1. स्वतंत्रता के बाद से भारत में राजनीय राजनीति की विशेषताओं का वर्णन कीजिए।
2. भारत ने किस प्रकार राज्यों के पुनर्गठन का मार्ग प्रशस्त किया है? उभरती चुनौतियों पर भी चर्चा करें।

खंड बी

3. कांग्रेस पार्टी की विचारधारा, सामाजिक आधार, नीतियों और कार्यक्रम का परीक्षण कीजिए।
4. नेशनल कांग्रेस की विचारधारा, समर्थन आधार और प्रदर्शन को लिखिए।

खंड सी

5. भारत में धर्म और राजनीति के बीच संबंधों को लिखिए।
6. भारतीय राजनीति में उभरती प्रवृत्तियों की व्याख्या कीजिए।

खंड डी

7. भारत के चुनाव आयोग और भारत में चुनाव सुधारों में इसके योगदान के बारे में अपना विश्लेषणात्मक दृष्टिकोण दें।
8. मतदान व्यवहार से आप क्या समझते हैं? उन कारकों पर चर्चा करें जो भारत में मतदान व्यवहार को निर्धारित करते हैं।

Exam Code: 103204  
(20)

Paper Code: 4116

Programme: Bachelor of Arts  
Semester-IV

Course Title: Public Administration (Financial  
Administration)

Course Code: BARL-4414 ✓

Time Allowed: 3 Hours

Max Marks: 80

Note: Candidates are required to attempt 5 questions, selecting at least one question from each section. The fifth question may be attempted from any Section. Each question will carry sixteen marks.

Section A

1. Discuss the nature and scope of Financial Administration
2. Examine scope and functions of Finance Commission.

Section B

3. Explain the purpose and principles of Budget.
4. Discuss the features, merits and demerits of Zero Base Budgeting



### Section C

5. Throw the light on methods of legislative control over Finance.
6. Describe the composition and functions of Public Accounts Committee

### Section D

7. Discuss the organization, functions and role of Ministry of Finance.
8. Elucidate method of selection and removal of CAG, also discuss its functions.

## Hindi version

उम्मीदवारों को प्रत्येक खंड से कम से कम एक प्रश्न का चयन करते हुए, किन्हीं पांच प्रश्नों का प्रयास करना आवश्यक है। पांचवां प्रश्न किसी भी खंड से हल किया जा सकता है। प्रत्येक प्रश्न सोलह अंक का होगा।

### खंड-एक

1. वित्तीय प्रशासन की प्रकृति और कार्यक्षेत्र की विवेचना कीजिए।
2. वित्त आयोग के कार्यक्षेत्र और कार्यों का परीक्षण कीजिए।

### खंड-बी

3. बजट के उद्देश्य और सिद्धांतों की व्याख्या करें।
4. जीरो बेस बजटिंग की विशेषताओं, गुणों और दोषों की चर्चा कीजिए।

### खंड-सी

5. वित्त पर विधायी नियंत्रण की विधियों पर प्रकाश डालिए।
6. लोक लेखा समिति की संरचना और कार्यों का वर्णन कीजिए।

### खंड-डी

7. वित्त मंत्रालय के संगठन, कार्यों और भूमिका की चर्चा करें।
8. सीएजी के चयन और हटाने की विधि को स्पष्ट कीजिए, इसके कार्यों की भी चर्चा कीजिए।

Programme	Exam Code	Course Code
Bachelor of Arts	103204	BARL-4421
Bachelor of Science (Non-Medical)	103304	BSNL-4421
Bachelor of Science (Medical)		BSML-4421
Bachelor of Science (Economics)		BECL-4421
Bachelor of Science (Computer Science)		BCSL-4421
Bachelor of Commerce	108504	BCRL-4421
Bachelor of Business Administration	105404	BBRL-4421

**Course Title: Punjabi (Compulsory)**

**Semester-IV**

**(200)**

**Time Allowed: 3 Hours**

**Max Marks: 40**

ਨੋਟ: ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹਨ। ਹਰੇਕ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 8 ਅੰਕ ਹਨ।

**ਸੈਕਸ਼ਨ-1**

1. ਬਚਿੱਤ ਕੋਰ ਰਚਿਤ ਪਗਛੱਡੀਆਂ ਸਵੈਜੀਵਨੀ ਦਾ ਸਾਰ ਲਿਖੋ।

8

2. ਬਚਿੰਤ ਕੋਰ ਰਚਿਤ ਪਗਡੰਡੀਆਂ ਸਵੈਜੀਵਨੀ ਦਾ ਵਿਸ਼ਾ ਵਸਤੂ ਲਿਖੋ। 8

#### ਸੈਕਸ਼ਨ-2

3. ਜਤਿੰਦਰ ਬਰਾਡ ਰਚਿਤ ਫਾਸਲੇ ਨਾਟਕ ਦਾ ਸਾਰ ਲਿਖੋ। 8  
4. ਜਤਿੰਦਰ ਬਰਾਡ ਰਚਿਤ ਫਾਸਲੇ ਨਾਟਕ ਦਾ ਵਿਸ਼ਾ ਵਸਤੂ ਲਿਖੋ। 8

#### ਸੈਕਸ਼ਨ-3

5. ਕਿਸੇ ਦਫ਼ਤਰ ਦੇ ਮੁਖੀ ਨੂੰ ਕਲਰਕ ਦੀ ਅਸਾਮੀ ਪ੍ਰਾਪਤ ਕਰਨ ਲਈ ਪ੍ਰਾਰਥਨਾ ਪੱਤਰ ਲਿਖੋ। 8  
6. ਨਗਰ ਨਿਗਮ ਦੇ ਪ੍ਰਧਾਨ ਵੱਲ ਇੱਕ ਪੱਤਰ ਲਿਖੋ। ਜਿਸ ਵਿਚ ਆਪਣੇ ਇਲਾਕੇ ਦੀ ਸਫ਼ਾਈ ਦੀ ਭੈੜੀ ਹਾਲਤ ਵੱਲ ਧਿਆਨ ਦਿਵਾਉਂਦੇ ਹੋਏ ਇਸਦੇ ਫੇਰੀ ਸੁਧਾਰ ਲਈ ਪ੍ਰਾਰਥਨਾ ਕਰੋ। 8

#### ਸੈਕਸ਼ਨ-4

7. ਪੰਜਾਬੀ ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮ ਲਿਖੋ। 8  
8. ਗੁਰਮੁਖੀ ਲਿਪੀ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਲਿਖੋ। 8

Programme	Exam Code	Course Code
Bachelor of Arts	103204	BARL-4431
Bachelor of Science (Non-Medical)	103304	BSNL-4431
Bachelor of Science (Medical)		BSML-4431
Bachelor of Science (Economics)		BECL-4431
Bachelor of Science (Computer Science)		BCSL-4431
Bachelor of Commerce	108504	BCRL-4431
Bachelor of Business Administration	105404	BBRL-4431

**Course Title: Punjab History and Culture**  
**Semester-IV**  
**(50)**

**Time Allowed: 3 Hours**

**Max Marks: 40**

**Attempt one question from each sections and the fifth question can be attempted from any of the four sections in 600 words. Each question carries equal marks. 8 marks**

**Section-A**

1. Briefly describe politicization of Sikhism under Sri Guru Hargobind.



2. Describe the martyrdom of Sri Guru Teg Bahadur and its significance.

#### **Section-B**

3. What were the factors which compelled Sri Guru Gobind Singh ji to create Khalsa?
4. What was impact of creation of Khalsa Panth?

#### **Section-C**

5. Describe the rise and military exploits of Banda Bahadur against Mughals in Punjab.
6. Describe the origin and organization of sikh Misl.

#### **Section-D**

7. Give a brief account of civil administration of Maharaja Ranjit Singh.
8. Write a note on
  - (i) Baisakhi
  - (ii) Diwali

खंड-1

1. श्री गुरु हरगोबिंद के अधीन सिख धर्म के राजनीतिकरण का संक्षेप में वर्णन करें।
2. श्री गुरु तेग बहादुर की शहादत और उसके महत्व का वर्णन करें।

खंड-2

3. वे कौन से कारक थे जिन्होंने श्री गुरु गोबिंद सिंह जी को खालसा बनाने के लिए मजबूर किया?
4. खालसा पंथ के निर्माण का क्या प्रभाव पड़ा?

खंड-3

5. पंजाब में मुगलों के खिलाफ बंदा बहादुर के उदय और सैन्य कारनामों का वर्णन करें।
6. सिख मिरतियों की उत्पत्ति और संगठन का वर्णन करें।

खंड-4

7. महाराजा रणजीत सिंह के नागरिक प्रशासन का संक्षिप्त विवरण दें।
8. 1. बैसाखी 2. दीपावली पर एक नोट लिखें

Exam Code: 103204  
(30)

Paper Code: 4119

Programme: Bachelor of Arts  
Semester-IV

Course Title: Sociology (Social Change in India)

Course Code: BARL-4475 ✓

Time Allowed: 3 Hours

Max Marks: 80

Note: Students are required to attempt 5 questions out of 8 by selecting one from each section. The fifth question can be attempted from any section. All question carry equal marks.

**Section-A**

1. What is Social Change. Explain its forms and processes?
2. Discuss Progress as a factor of social change?

**Section-B**

3. Discuss in detail the effects of Social Legislation?
4. Technology as a factor of Social Change?

**Section-C**

5. Discuss Marxian's Conflict theory of social change?
6. Describe Spengler's theory?

## Section-D

7. Discuss the causes and effects of Secularization?
8. How does Westernization affects other social institutions?

5\*16=80

## Punjabi version

## ਸੈਕਸ਼ਨ-ਏ

1. ਸਮਾਜਿਕ ਤਬਦੀਲੀ ਕੀ ਹੈ। ਇਸਦੇ ਰੂਪਾਂ ਅਤੇ ਪ੍ਰਕਿਰਿਆਵਾਂ ਦੀ ਵਿਆਖਿਆ ਕਰੋ?
2. ਸਮਾਜਿਕ ਤਬਦੀਲੀ ਦੇ ਕਾਰਕ ਵਜੋਂ ਪ੍ਰਗਤੀ ਬਾਰੇ ਚਰਚਾ ਕਰੋ?

## ਸੈਕਸ਼ਨ-ਬੀ

3. ਸਮਾਜਿਕ ਕਾਨੂੰਨ ਦੇ ਪ੍ਰਭਾਵਾਂ ਬਾਰੇ ਵਿਸਥਾਰ ਵਿੱਚ ਚਰਚਾ ਕਰੋ?
4. ਸਮਾਜਿਕ ਤਬਦੀਲੀ ਦੇ ਕਾਰਕ ਵਜੋਂ ਤਕਨਾਲੋਜੀ?

## ਸੈਕਸ਼ਨ-ਸੀ

5. ਮਾਰਕਸੀਅਨ ਦੇ ਸਮਾਜਿਕ ਪਰਿਵਰਤਨ ਦੇ ਸੰਘਰਸ਼ ਸਿਧਾਂਤ ਦੀ ਚਰਚਾ ਕਰੋ?
6. ਸਪੈਗਲਰ ਦੇ ਸਿਧਾਂਤ ਦਾ ਵਰਣਨ ਕਰੋ?

## ਸੈਕਸ਼ਨ-ਡੀ

7. ਧਰਮ ਨਿਰਪੱਖਤਾ ਦੇ ਕਾਰਨਾਂ ਅਤੇ ਪ੍ਰਭਾਵਾਂ ਬਾਰੇ ਚਰਚਾ ਕਰੋ?
8. ਪੱਛਮੀਕਰਨ ਹੋਰ ਸਮਾਜਿਕ ਸੰਸਥਾਵਾਂ ਨੂੰ ਕਿਵੇਂ ਪ੍ਰਭਾਵਿਤ ਕਰਦਾ ਹੈ?

5\*16=80

Programme: Bachelor of Arts (Semester – IV)

Course Title: English (Honours): English Poetry

Course Code: BARL-4559 ✓

Time Allowed: 3 Hours

Maximum Marks: 80

Attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any Section. Each question carries sixteen marks. (5 x 16 = 80)

**Section - A**

1. Write a note on Shakespearean Sonnets. Illustrate the thematic concerns with special reference to the sonnets prescribed to you.
2. How is John Donne a metaphysical poet? Explain the conceits used by him in his poems.

**Section - B**

3. The beauty of "The World is Too Much With Us" lies in suggesting a contrast between civilizations. Discuss and critically analyse the poem.
4. "Kubla Khan" is about the mystery of life and death. Elaborate. Also attempt a critical appreciation of the poem.

**Section - C**

5. Critically analyse and summarize the poem "My Last Duchess" by Robert Browning.
6. Give a detailed summary, interpretation and development of thought of the poem "Tithonus".

**Section - D**

7. Discuss the theme of "Adam's Curse" by W. B. Yeats. Also critically appreciate the poem by emphasizing on the concept of struggle in the poem.
8. Give a critical analysis of the poem "The Unknown Citizen". What does the poet want to convey about the modern society through the poem?



Exam Code: 103204  
(20)

Paper Code: 4134

Programme: Bachelor of Arts  
Semester-IV

Course Title: Hindi (Honours): Gdhya Sahitya: Nibhandh,  
Sansmaran Tatha Anuwad

Course Code: BARL-4569 ✓

Time Allowed: 3 Hours

Max Marks: 80

नोट: यह प्रश्न पत्र चार भागों में विभाजित है। पहला भाग अनिवार्य है। शेष भागों कमशः दो, तीन और चार में से एक-एक प्रश्न करना अनिवार्य है। पांचवां प्रश्न किसी भी भाग में से कर सकते हैं। कुल पांच प्रश्नों का उत्तर दें।

भाग-एक

1. निम्नलिखित गद्यांशों में से किन्हीं चार की सप्रसंग व्याख्या करें।  
1.आओ यदि हो सके तो टोकरी उठाकर कुदाली हाथ में लें, मिट्टी खोदें और अपने हाथ से उसके प्याले बनावें। फिर एक-एक प्याला घर-घर में, कुटिया-कुटिया में रख आवें और सब लोग उसी मजदूरी का प्रेमामृत पान करें।

2. मनुष्य का जीवन इतना विशाल है कि उसमें आचरण को रूप देने के लिए नाना प्रकार के ऊँच-नीच और भले-बुरे विचार, अमीरी और गरीबी, उन्नति और अवनति इत्यादि सहायता पहुंचाते हैं।

3. बस उस गुलाम ने दुनिया के बादशाहों के बल और अपनी वीरता की हद दिखा दी। बस इतने ही जोर, इतनी ही शेखी पर ये झूठे राजा शरीर को दुःख देते और मारपीट कर अनजान लोगों को डराते हैं। भोले लोग उनसे डरते रहते हैं। क्योंकि वे शरीर कसे अपने जीवन का केंद्र समझते हैं। इसीलिए जहां किसी ने उनके शरीर पर जरा जोर से हाथ लगाया वहीं वे डर के मारे अघमरे हो जाते हैं।

4. प्रेमचंदजी से मेरा प्रथम परिचय पत्र के द्वारा हुआ। तब मैं आठवीं कक्षा की विद्यार्थिनी थी ! मेरी दीपक शीर्षक एक कविता सन्भवः चांद में प्रकाशित हुई। प्रेमचंदजी ने तुरन्त ही मुझे कुछ पत्रियों में अपना आशीर्वाद भेजा। तब मुझे यह ज्ञात नहीं था कि कहानी और उपन्यास लिखने वाले कविता भी पढ़ते हैं। मेरे लिए ऐसे ख्यातनामा कथाकार का पत्र जो मेरी कविता की विशेषता व्यक्त करता था, मुझे आशीर्वाद देता था, बधाई

देता था, बहुत दिनों तक मेरे कौतूहल मिश्रित गर्व का कारण बना रहा।

5. पर उसकी सचेत आंखों में न जाने कौन-सी जिज्ञासा भरी थी। वे निरन्तर घड़ी की तरह खुली मेरे मुख पर टिकी ही रहती थीं। मानो मेरी सारी विद्या-बुद्धि को सीख लेना ही उनका ध्येय था।

6. पर जैसे मेरे नाम की विशालता मेरे लिए दुर्बल है, वैसे ही लक्ष्मी की समृद्धि भक्तिन के कपाल की कुचित रेखाओं में नहीं बँध सकी। वैसे तो जीवन में प्रायः सभी को अपने-अपने नाम का विरोधाभास लेकर जीना पड़ता है, पर भक्तिन बहुत समझदार है, क्योंकि वह अपना समृद्धि सूचक नाम किसी को बताती नहीं।

4x4=16

### भाग-दो

2. सरदार पूरण सिंह का साहित्यिक परिचय दें।
3. महादेवी वर्मा का साहित्यिक परिचय दें।

### भाग-तीन

4. निबंध विधा की परिभाषा देते हुए उसका स्वरूप निर्धारित करें।
5. संस्मरण विधा की परिभाषा देते हुए उसका स्वरूप निर्धारित करें।

### भाग-चार

6. सच्ची वीरता निबंध की विशेषताएं बताएं।
7. भक्तिन संस्मरण की विशेषताएं बताएं। 16x4=64

Exam Code: 103204  
(20)

Paper Code: 4135

Programme: Bachelor of Arts  
Semester-IV

Course Title: Punjabi (Honours)

Course Code: BARL-4579 ✓

Time Allowed: 3 Hours

Max Marks: 80

ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ 5 ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।

ਜੇ ਕਿਸੇ ਪ੍ਰਸ਼ਨ ਦੇ ਦੋ ਹਿੱਸੇ ਹਨ ਤਾਂ ਦੋਵੇਂ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਇਸ ਸਥਿਤੀ ਵਿੱਚ ਅੰਕ ਵੰਡ 8+8=16 ਹੋਵੇਗੀ।

#### ਸੈਕਸ਼ਨ-1

1. (ੳ) ਸੂਫੀ ਮੱਤ ਬਾਰੇ ਸੰਖੇਪ ਜਾਣਕਾਰੀ ਦਿੰਦੀਆਂ ਪੰਜਾਬੀ ਦੇ ਦੋ ਮੁੱਢਲੇ ਸੂਫੀ ਕਵੀਆਂ ਨਾਲ ਪਰਿਚੈ ਕਰਵਾਓ।  
(ਅ) ਪੰਜਾਬੀ ਸੂਫੀ ਕਾਵਿ ਵਿੱਚ ਵਰਤੇ ਜਾਂਦੇ ਵਿਭਿੰਨ ਕਾਵਿ ਰੂਪਾਂ ਦੀ ਜਾਣਕਾਰੀ ਦਿਓ।
2. ਸ਼ਾਹ ਹੁਸੈਨ ਨੂੰ ਇੱਕ ਸੂਫੀ ਸਾਹਿਤਕਾਰ ਦੇ ਤੌਰ 'ਤੇ ਦ੍ਰਿਸ਼ਟੀਗੋਚਰ ਕਰਦੇ ਹੋਏ ਉਹਨਾਂ ਦੀ ਵਿਚਾਰਧਾਰਾ ਦਾ ਵਰਣਨ ਕਰੋ।

16

### ਸੈਕਸ਼ਨ-2

3. ਕਿੱਸਾ ਕਾਵਿ ਦੀ ਪ੍ਰਕਿਰਤੀ, ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਅਤੇ ਵਿਕਾਸ ਦਾ ਸਮੁੱਚਾ ਵਰਣਨ ਕਰੋ।
4. (ੳ) ਪੀਲੂ ਦੇ ਕਿੱਸਾ 'ਮਿਰਜ਼ਾ ਸਾਹਿਬਾ' ਵਿੱਚ ਪੇਸ਼ ਪੰਜਾਬੀ ਸਮਾਜ ਸੱਭਿਆਚਾਰ ਤੱਤਾਂ ਦਾ ਵਰਣਨ ਕਰੋ।  
(ਅ) ਪੀਲੂ ਦੇ 'ਕਿੱਸਾ ਮਿਰਜ਼ਾ ਸਾਹਿਬਾ' ਵਿੱਚ ਔਰਤ ਜਾਤ ਪਤੀ ਅਪਣਾਏ ਦ੍ਰਿਸ਼ਟੀਕੋਣ ਉੱਤੇ ਝਾਤ ਪਵਾਓ।

16

### ਸੈਕਸ਼ਨ-3

5. ਵਾਰਤਕ ਦੀ ਪਰਿਭਾਸ਼ਾ ਦਿੰਦੇ ਹੋਏ ਵਿਭਿੰਨ ਵਾਰਤਕ ਰੂਪਾਂ ਦਾ ਵਰਣਨ ਕਰੋ।
6. ਵਾਰਤਕ ਦੇ ਤੱਤਾਂ ਅਤੇ ਸ਼ੈਲੀ ਬਾਰੇ ਵਿਸਤਾਰਪੂਰਵਕ ਚਰਚਾ ਕਰੋ।

16

### ਸੈਕਸ਼ਨ-4

7. 'ਵਾਰਤਕੀ' ਪਾਠ ਪੁਸਤਕ ਵਿੱਚ ਸ਼ਾਮਿਲ 'ਸਾਖੀ ਨੰਬਰ।' ਲੇਖ ਦੇ ਲੇਖਕ ਦੀ ਵਰਤਕ ਸ਼ੈਲੀ ਉੱਤੇ ਵਿਸਤਾਰਪੂਰਵਕ ਨੋਟ ਲਿਖੋ।
8. (ੳ) ਹੇਠ ਲਿਖੀਆਂ ਪੁਰਾਤਨ ਜਨਮਸਾਖੀਆਂ ਦਾ ਸੰਖੇਪ ਸਾਰ ਲਿਖੋ:-
  1. ਸਾਖੀ ਨੰਬਰ 2
  2. ਸਾਖੀ ਨੰਬਰ 35(ਅ) ਹੇਠ ਲਿਖੇ ਵਾਰਤਕ ਲੇਖਾਂ ਦਾ ਸੰਖੇਪ ਸਾਰ ਲਿਖੋ:-
  1. ਮਿੱਤਰਤਾ
  2. ਗੋਤਮ ਬੁੱਧ

16



Exam Code: 103204  
(20)

Paper Code: 4136

Programme: Bachelor of Arts Semester-IV

Course Title: History (Honours): The National Movement

Course Code: BARL-4589 (Opt-II) ✓

Time Allowed: 3 Hours

Max Marks: 80

Section-A

Note: Attempt any four questions in 40-50 Sentences. Each question will carry 5 marks.  $4 \times 5 = 20$

1. a. What is Safety Valve Theory?
- b. Two causes for the rise of Nationalism in the 19<sup>th</sup> Century.
- c. Name two Regional Political Associations in the 19<sup>th</sup> Century.
- d. Write a note on Champaran Satyagraha?
- e. What were the Rowlett Bills?
- f. Write a note on Kamahatamaru.
- g. Write a note on Simon Commission.
- h. Write two causes for the rise of Communalism in India.

$4 \times 5 = 20$

## Section-B

**Note:** - Candidates shall attempt 5 questions in 1000 words, by at least selecting One question from each Unit and the 5<sup>th</sup> question may be attempted from any of the four Units. Each question will carry 12 marks. The total weightage of this Section will be 60 marks.

### Unit I

2. Discuss the formation of Indian National Congress.
3. Discuss the Causes for the rise of Extremism.

### Unit II

4. Discuss the Swadeshi Movement of 1905.
5. Discuss the formation and Policies of the Gadhar party.

### Unit III

6. Evaluate the aims and methods of Revolutionaries.
7. Discuss the activities of Revolutionaries in Punjab.

### Unit IV

8. Discuss the causes of Civil Disobedience Movement.
9. What were the causes of Partition of India?

5x12=60

Hindi version

सैक्शन-ए

नोट:- 40-50 वाक्यों में किन्ही चार प्रश्नों के उत्तर दीजिए। प्रत्येक प्रश्न 5 अंक का होगा।

1. सुरक्षा वाल्व सिद्धांत क्या है?
2. 19 वीं शताब्दी में राष्ट्रवाद के उदय के दो कारण।
3. 19 वीं शताब्दी के दो क्षेत्रीय राजनीतिक संघों के नाम लिखिए।
4. चंपारण सत्याग्रह पर एक टिप्पणी लिखिए।
5. रॉलेट बिल क्या थे?
6. कमागतनारु पर एक टिप्पणी लिखिए।
7. साइमन कमीशन पर एक टिप्पणी लिखिए।
8. भारत में साम्प्रदायिकता के उदय के दो कारण लिखिए।

4x5=20

सैक्शन-बी

नोट: उम्मीदवार प्रत्येक इकाई से कम से कम एक प्रश्न का चयन करके 1000 शब्दों में 5 प्रश्नों का प्रयास करेंगे और 5 वें प्रश्न को चार इकाइयों में से किसी एक से करने का प्रयास किया जा सकता है। प्रत्येक प्रश्न 12

अंक का होगा। इस सेशन का कुल वेटेज 60 अंक का होगा।

### यूनिट-1

2. भारतीय राष्ट्रीय कांग्रेस के गठन की विवेचना कीजिए।
3. उग्रवाद के उदय के कारणों की विवेचना कीजिए।

### यूनिट-2

4. 1905 के स्वदेशी आंदोलन की चर्चा कीजिए।
5. गदर पार्टी के गठन और नीतियों की चर्चा कीजिए।

### यूनिट-3

6. क्रांतिकारियों के उद्देश्यों और तरीकों का मूल्यांकन करें।
7. पंजाब में क्रांतिकारियों की गतिविधियों की चर्चा कीजिए।

### यूनिट-4

8. सविनय अवज्ञा आंदोलन के कारणों की विवेचना कीजिए।
9. भारत के विभाजन के क्या कारण थे?

5x12=60

Exam Code: 103204  
(20)

Paper Code: 4137

Programme: Bachelor of Arts  
Semester-IV

Course Title: Political Science (Honours): Indian Foreign  
Policy(Opt-I)

Course Code: BARL-4599 ✓

Time Allowed: 3 Hours

Max Marks: 80

Note: 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 will carry sixteen marks.

**Section-A**

1. Write a note on evolution on Indian Foreign Policy.
2. Discuss major determinants of Indian Foreign Policy

**Section B**

3. Discuss the relationship between India and Bangladesh with special reference to COVID times.
4. Elaborate in detail the relationship between India and Sri Lanka in the context of economic crisis faced by Sri Lanka in the year 2022?

### Section C

5. Discuss relationship between India and USA during Modi's era.
6. Discuss relationship between India and China in the context of Galwan crisis.

### Section D

7. Write a note on India's Nuclear Policy.
8. Discuss about the role of United Nations in recent Russian—Ukraine crisis.



Exam Code: 103204/103304  
(20)

Paper Code: 4138

Programme: B.Sc Economics (~~Honours~~) | Bachelor of Arts  
Semester-IV

Economics (Honours)  
Course Title: International Economics

Course Code: BARL-4609 (Opt-IV)/BECL-4607 (Opt-IV)

Time Allowed: 3 Hours

Max Marks: 80

Note: 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 16 marks.

#### Section A

1. Critically examine the modern theory of international trade. How this theory is superior to classical theory.
2. Discuss the secular deterioration hypothesis of term of trade. Explain its limitations also.

#### Section B

3. Explain the partial equilibrium analysis of tariff.
4. Discuss, in detail, the theory of custom union of international trade.

### Section C

5. Explain the expenditure switching and expenditure changing policies to correct BOP disequilibrium.
6. Give arguments in favour and against fixed and flexible rate of exchange.

### Section D

7. What are the problems of international liquidity? Discuss the role of IMF in improving international liquidity.
8. Explain the role of Euro-dollar and Euro-currency markets in developing countries.

Exam Code: 103204  
(20)

Paper Code: 4139

Programme: Bachelor of Arts  
Semester-IV

Course Title: Psychology (Honours): Social Psychology

Course Code: BARL-4619 ✓

Time Allowed: 3 Hours

Max Marks: 80

Note: Attempt Five Questions out of eight, selecting at least one question from each section. The fifth question may be attempted from any Section. Each question carries 16 marks.

**SECTION — A**

1. Write a detailed note on the Nature and Scope of Social Psychology. 16
2. Discuss Cognitive Dissonance Theory in detail. 16

**SECTION — B**

3. Write a short note on:
  - a. Pro-Social Behavior 8
  - b. Negative-State Relief theory of Pro-Social Behavior 8
4. Discuss in detail the nature of Interpersonal Attraction highlighting its determinants. 16

**SECTION — C**

5. Write a note on the concept of Aggression. How can it be controlled? 16
6. What is Conformity? Discuss its determinants in detail. 16

**SECTION — D**

7. Discuss the Nature and Formation of Groups in detail. 16
8. What is Social Facilitation? Explain giving examples. 16

**Paper Code: 4109**

<b>Programme</b>	<b>Exam Code</b>	<b>Course Code</b>
Bachelor of Arts	103204	BARM-4124
Bachelor of Science (Economics)	103304	BECM-4124

**Course Title: Computer Applications (Vocational)  
(Relational Database Management Systems)  
Semester-IV  
(30)**

**Time Allowed: 3 Hours**

**Max Marks: 50**

**Attempt 5 questions by selecting at least one question from each section. The 5<sup>th</sup> question may be attempted from any section. Each question carries 10 marks.**

**Section A**

- a) What do you mean by DBMS? Explain role of DBA . 5

b) Distinguish between Network and Hierarchical models. 5
2. Discuss Twelve Codd's Rule for relational database management. 10

### Section B

3. What do you mean by Oracle? Describe object-oriented features of Oracle. Explain transaction control language in detail. 10
4. a) Explain any three DDL commands of SQL. 5  
b) What is the difference between 'Having' clause and a 'Where' clause? Explain by taking suitable example. 5

### Section C

5. What are aggregate functions? Explain any four with the help of suitable examples. 10
6. What do you mean by subquery Also Explain Join operators in detail. 10

### Section D

7. a) Differentiate between functions and procedures in PL/SQL. Explain 5  
b) Explain Conditional Control in PL/SQL. 5
8. What is PL/SQL? How is it different from SQL ? Explain. Also explain exception handling, in PL/SQL. 10



Programme	Exam Code	Course Code
Bachelor of Arts	103204	BARM-4134 ✓
Bachelor of Science (Computer Science)	103304	BCSM-4134 ✓
Bachelor of Science (Economics)		BEEM-4134 ✓

**Course Title: Computer Science (Data Structures)**  
**Semester-IV**  
**(30)**

Time Allowed: 3 Hours

Max Marks: 50

**Note:** 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 10 marks. The students can use non-programmable/Scientific & non-storage type calculator.

**SECTION A**

1. a) Define Data Structures? Discuss in brief various operations performed on Data Structures. 5
- b) What do you mean by Complexity of an algorithm and time space trade off? Explain it. 5

2. a) Compare linear and binary search techniques and apply binary search to locate 7 in a list comprising of elements 1,3,5,7,9,11. 5
- b) Write an algorithm that inserts an element at K th position with in an one dimension array. 5

### Section B

3. a) Differentiate between Array and Linked List data structures. 5
- b) Define Linked List. Write an algorithm that delete a node from the Linked List whose location 'LOC' is given. 5
4. a) Define Stack. Discuss in brief various applications of Stack data structure. 5
- b) Explain the working of quick sort method with the help of suitable example. 5

### Section C

5. a) Define queue. Write the algorithms describing how enqueue and dequeue operations can be performed on queue. 5
- b) Write an algorithm that sort elements using merge sort. 5
6. (a) Explain the working of heap sort by taking suitable example. 5
- b) Compare the working of selection sort with insertion sort. 5

### Section D

7. a) Discuss in brief Preorder and Inorder tree traversal techniques with the help of examples. 5
- b) Define Graph. Discuss the algorithm for performing DFS traversal. 5

8. Write a short note on the following:

i) Big O notation -

ii) Garbage Collection

iii) Priority queues

iv) Homogeneous and Heterogeneous Data structures

10

Exam Code: 103204  
(20)

Paper Code: 4129

Programme: Bachelor of Arts  
Semester-IV

Course Title: Cosmetology (Vocational)

Course Code: BARM-4147 ✓

Time Allowed: 3 Hours

Max Marks: 40

Attempt any Five Questions.

Candidates are required to select atleast one question from each Section. The fifth question may be selected from any Section. Each question carries equal (8) marks.

**Section-A**

1. (a) Explain chemical structure of hair. 4  
(b) Name the side bonds of hair. 3  
(c) Which is the strongest side bond? 1
2. (a) What are hair bonds? Explain. 4  
(b) Difference between side bonds and end bonds? 3  
(c) Which bond breaks by change of Ph? 1

**Section - B**

3. What are acids and alkalis? Explain with example. 8
  
4. How can we determine hair porosity in-

- |               |   |
|---------------|---|
| (a) Rebonding | 4 |
| (b) Perming   | 4 |

**Section- C**

- |  |   |
|--|---|
| 5. Explain colour principles?  | 8 |
| 6. Define colour key programme and its relation to skin, eye and hair. | 8 |

**Section-D**

- |   |   |
|---|---|
| 7. What are the factors to be kept in mind while doing client analysis? | 8 |
| 8. (a) Explain the types of hair texture.                               | 4 |
| (b) Explain colour wheel.   | 4 |



Exam Code: 103204  
(20)

Paper Code: 4128

Programme: Bachelor of Arts  
Semester-IV

Course Title: Fashion Designing and Garment Construction  
(Vocational) (Fundamentals of Textile-II)

Course Code: BARM-4237 ✓

Time Allowed: 3 Hours

Max Marks: 30

Note: Attempt five questions in all, one questions from each section, and fifth question from any section. Each question carries equal (6) marks

**Section-A**

1. Write short note on:
  - a. Twill weave
  - b. leno weave (2x3=6)
2. Briefly explain the steps of weaving operation. (6)

**Section- B**

3. Explain the following stitches of warp knitting.
  - a. Tricot
  - b. Milanese (2x3=6)
4. Differentiate between felting and bonding. (6)

### Section-C

5. What do you understand by finishes? Classify them. (6)
6. Briefly explain any two chemical finishes. (6)

### Section-D

7. Differentiate between roller printing and screen printing. (6)
8. What is resist dyeing? Explain Tie and dye in detail. (6)

Exam Code: 103204  
(20)

Paper Code: 4120

Programme: Bachelor of Arts  
Semester-IV

Course Title: Fine Arts (Drawing and Painting)

Course Code: BARM-4245 ✓

Time Allowed: 3 Hours

Max Marks: 40

Note:- Eight questions of equal marks are to be set, Two in each of the four section(A-D).

Candidates are required to attempt five questions in all, selecting one question from each section. The fifth question may be attempted from any section. Each question carries 8 marks.

#### Section-A

1. Throw light on the characteristics of Pala school of paintings. 8
2. Explain subject matter of western and Indian miniature paintings and Palm leaf manuscripts. 8

#### Section-B

3. Discuss about the pictorial characteristics of art executed during Akbar's period. 8

4. Describe the development of mughal schools of the mughal period, and discuss any Two important Artists.

8

**Section-C**

5. Give an assessment of the style, method and technique of the paintings of Rajasthani Art. 8
6. Explain what similarities are there in Mewar paintings and Rajasthani painting? 8

**Section-D**

7. Explain kangra is known for the beauty of Women? 8
8. What do you know about the technique and style of Ramayana paintings of Basohli. 8

## Hindi version

### सैक्शन-ए

1. पाला स्कूल के चित्रों को विशेषताओं पर प्रकाश डालें। 8
2. ताड़पत्र पांडुलिपियों और पश्चिमी भारतीय लघु चित्रों की विषय वस्तु की व्याख्या करो। 8

### सैक्शन-बी

3. अकबर काल के दौरान निष्पादित कला की सचिव विशेषताओं के बारे में चर्चा करें। 8
4. मुगल काल के मुगल स्कूलों के विकास का वर्णन करें। और किन्हीं दो महत्वपूर्ण कलाकारों पर चर्चा करें। 8

### सैक्शन-सी

5. राजस्थानी कला के चित्रों की शैली विधि और तकनीक का मूल्यांकन करें। 8
6. मेवाड़ पेन्टिंग और बुंदी पेन्टिंग में क्या समानताएं हैं? 8

### सैक्शन-डी

7. कांगड़ा कलम चित्रों की सुन्दरता के कारण प्रसिद्ध है। समझाइयें। 8
8. बसोहली के रामायण चित्रों की तकनीक और शैली के बारे में आप क्या जानते हैं? 8

Programme: Bachelor of Arts  
Semester-IV

Course Title: Hindi (Elective) (Aadhunik Hindi Katha  
Sahitya)

Course Code: BARM-4268 ✓

Time Allowed: 3 Hours

Max Marks: 60

नोट: यह प्रश्न पत्र कुल ~~सत्र~~<sup>चौ</sup> इकाइयों में विभाजित है। विद्यार्थी को कुल पांच प्रश्नों के उत्तर देने होंगे। प्रथम इकाई अनिवार्य है। प्रथम भाग में कुल छः में से तीन गद्यांशों की सप्रसंग व्याख्याएं करनी जरूरी है। प्रत्येक व्याख्या 250 शब्दों पृष्ठों में हो। इकाई दो, तीन और चार में एक-एक प्रश्न का उत्तर देना अनिवार्य है। पांचवा प्रश्न विद्यार्थी व्याख्या भाग को छोड़कर अन्य किसी भी भाग से कर सकता है। विद्यार्थी को प्रत्येक प्रश्न का उत्तर लगभग 1000 शब्दों में देना है। प्रत्येक प्रश्न के लिए निर्धारित अंक 12 है।

इकाई-एक

1. व्याख्या के लिए गद्यांश-

क. यहीं तो तुम लोगों की खराबी है। कुछ थोड़ी-सी खराबियां जाति-व्यवस्था की देख लीं और उसके खिलाफ हो गए। एक रिसर्च स्कॉलर का दृष्टिकोण ही दूसरा होना चाहिए। फिर हमारे भारत की प्राचीन सांस्कृतिक पाम्यशाओं के तो बहुत ही

सावधानी से समझने की आवश्यकता है। यह समझा लो की मानव जाति दुर्बल नहीं है। अपने विकास-क्रम में वह उन्हीं संस्थाओं, रीति-रिवाजों और परम्पराओं को रहने देती है जो उसके अस्तित्व के लिए आवश्यक होती हैं।

ख. अरे नहीं ऐसी बात नहीं। हिन्दुस्तानियों को ऐसा बना दिया है अंग्रेजों ने। वरना हिन्दुस्तान ने ही चन्द्रगुप्त और अशोक पैदा किये थे और रही बात जाति-व्यवस्था की तो मुझे तो स्पष्ट दिख रहा है कि जाति-व्यवस्था टूट रही है।" कपूर बोला, रोटी-बेटी की कैंद थी। रोटी की कैंद तो करीब-करीब टूट गयी, अब बेटी की कैंद भी... ब्याह शादियाँ भी दो-एक पीढ़ी के बाद स्वच्छंदता से होने लगेंगी।

ग. अविश्वास आदमी की प्रवृत्तियों को जितना बिगड़ता है, विश्वास आदमी को उतना ही बनाता है। डॉक्टर साहब चन्द्र पर जितना विश्वास करते थे, सुधा उस पर जितना विश्वास करती थी और उधर बिनती उस पर जितना विश्वास करने लगी थी उसके कारण चन्द्र के चरित्र में इतनी दृढ़ता आ गयी की वह फौलाद बन गया था।

घ. घिमटा कितने काम की चीज़ है। रोटियाँ तवे से उतार लो, चूल्हे से सेंक लो। कोई आग मांगने आये तो चटपट चूल्हे से निकालकर उसे दे दो। दादी बेचारी को कहीं फुसंत है की बाज़ार आए। और इतने पैसे ही कहीं मिलते हैं! रोज, हाथ जला लेती है।



ड. अपराध के प्रति करुणा होनी ही चाहिए। रोष का अधिकार नहीं है। प्रेम से ही अपराध-वृत्ति को जीता जा सकता है। आतंक से उसे दबाना ठीक नहीं है। बालक का स्वभाव कोमल होता है और सदा ही उससे स्नेह से व्यवहार करना चाहिए।

घ. हमारे विद्वान् पाठकों में कोई होता तो उन मूर्खों को समझाता—यह संसार क्षणभंगुर है। इसमें सुख क्या और दुःख क्या! जो जिसने बनाया है वह उसी में लय हो जाता है—इसमें शोक और उद्वेग की क्या बात है?  $4 \times 3 = 12$

#### इकाई—दो

2. डॉ. धर्मवीर भारती का साहित्यिक परिचय देते हुए उनके साहित्य की विशेषताएं बताएं।
3. गुनाहों का देवता उपन्यास के पात्र चंदर का चरित्र-चित्रण कीजिए।

#### इकाई—तीन

4. गुनाहों का देवता उपन्यास में निरूपित मध्यवर्गीय मानसिकता को स्पष्ट कीजिए।
5. बाल मनोविज्ञान पर आधारित कहानी खेल की विशेषताओं पर प्रकाश डालें।

### इकाई—चार

6. ईदगाह कहानी के उद्देश्य को स्पष्ट करें।
7. उसकी शोटी कहानी की नायिका बालो के चरित्र की विशेषताओं पर प्रकाश डालें।

Exam Code: 103204  
(20)

Paper Code: 4117

Programme: Bachelor of Arts  
Semester-IV

Course Title: Home Science (Clothing Textiles-II)

Course Code: BARM-4284 ✓

Time Allowed: 3 Hours

Max Marks: 60

Note: The question paper consists of four sections. Candidates are required to attempt five questions, selecting at least one question from each section. Fifth question may be attempted from any section. Each question carries 12 marks.

#### Section A

1. Explain the types and importance of principle of Balance in design with examples and diagrams.
2. How Color and Texture are used in design?

#### Section B

3. What points are to be kept in mind while selecting clothes for the elderly?
4. Explain the care and maintenance of wool and silk fabrics? How do you store them?

### Section C

5. What are Bleaches? What are their types, uses and importance?
6. What is Sanforisation? Also explain Calendering and its types?

### Section D

7. What are Simple Yarns? What are the different types of Simple Yarns?
8. What is Twill weave? What is the difference between Satin and Sateen weave?

नोट: प्रश्न पत्र में चार खंड होते हैं। उम्मीदवारों को प्रत्येक खंड से कम से कम एक प्रश्न का चयन करते हुए, किन्हीं पांच प्रश्नों का प्रयास करना आवश्यक है। पांचवा प्रश्न किसी भी खंड से हल किया जा सकता है। प्रत्येक प्रश्न 12 अंक का होता है।

#### खंड-एक

1. डिजाइन में संतुलन के सिद्धांत के प्रकार और महत्व को उदाहरणों और आरेखों के साथ समझाएं।
2. डिजाइन में रंग और बनावट का उपयोग कैसे किया जाता है?

#### खंड-बी

3. बुजुर्गों के लिए कपड़े चुनते समय किन बातों का ध्यान रखना चाहिए?
4. ऊन और रेशमी कपड़ों की देखभाल और रखरखाव के बारे में बताएं? आप कैसे स्टोर करते हैं?

#### खंड-सी

5. ब्लीच क्या है? उनके प्रकार, उपयोग और महत्व क्या हैं?
6. सैनफोराइजेशन क्या है? कैलेंडरिंग और उसके प्रकारों को भी समझाइए?

खंड-डी

7. सिंपल यार्न क्या हैं? सिंपल यार्न के विभिन्न प्रकार क्या हैं?
8. टवील बुनाई क्या है? साटन और साटन बुनाई में क्या अंतर है?

Exam Code: 103204  
(20)

Paper Code: 4115

Programme: Bachelor of Arts  
Semester-IV

Course Title: Journalism and Mass Communication  
(Vocational) (Mass Media and Photography)

Course Code: BARM-4313 ✓

Time Allowed: 3 Hours

Max Marks: 60

Candidates are required to attempt five questions in all, selecting one question from each section. The fifth question may be attempted from any section. Each question will carry 12 marks.

**Section-A**

1. Discuss about the concept of traditional <sup>media</sup> ~~maker~~? 12
2. What are the different types of radio programmes? 12

**Section-B**

3. Explain the effects of satellite channels on Indian society? 12
4. Reality shows have been very popular programs in Indian television. Explain with example. 12



### Section-C

5. Discuss the qualities of good photographer. 12
6. What is 'Depth of field'? Explain the factors affecting Depth of field. 12

### Section-D

7. What does feature mean in journalism? 12
8. Why is photo journalism such an important part of media? 12

Programme	Exam Code	Course Code
Bachelor of Arts	103204	BARM-4333 (I)
Bachelor of Science (Non-Medical)	103304	BSNM-4333 (I)
Bachelor of Science (Economics)		BECM-4333 (I)
Bachelor of Science (Computer Science)		BCSM-4333 (I)

**Course Title: Mathematics (Statics and Vector Calculus)**  
**Semester-IV**

(50)

**Time Allowed: 3 Hours**

**Max Marks: 40**

Attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 8 marks.

**Section-A**

- (i) If  $P, Q$  are two components of given force  $F$ , and its line of action divides the angle between them in ratio 1:2. Prove that  $Q(F+Q) = P^2$  (3)
- (ii) State Lami's theorem. (2)

- (iii) A heavy uniform bar 5 metre long balances at a point 1.5 metre from one end when a weight of 200 kg is suspended 1 metre from that end. Find weight of the bar. 3
2. (i) Forces of magnitude  $P, 3P, 2P, 5P$  act along the sides  $AB, BC, CD$  and  $DA$  of square  $ABCD$ . Find magnitude and direction of their resultant and Prove that it meets  $AD$  produced at a point  $E$  such that  $AE:ED = 5:4$  4
- (ii) A uniform rod of weight ' $W$ ' be hinged at one end to a fixed point and the other end rests against a smooth vertical wall. If the rod makes an angle of  $30^\circ$  with the horizontal, Find magnitude and direction of the reaction at the hinge. 4

#### Section-B

3. (i) A uniform Ladder rests with one end on a Horizontal floor and other against a vertical wall, the coefficients of friction being  $\frac{3}{7}$  and  $\frac{1}{3}$  respectively. Find the inclination of the ladder when it is about to slip. 4

(ii) Two equal weights rest on the faces of a double inclined plane whose inclinations to the horizon are  $\alpha$ ,  $\beta$  ( $\alpha > \beta$ ) and are connected by a string passing over a smooth pulley on the vertex. If the weights be in limiting equilibrium, show that the coefficient of friction is equal to  $\frac{\sin \alpha - \sin \beta}{\cos \alpha + \cos \beta}$ . 4

4. (i) If a piece of wire is bent into the shape of an isosceles triangle whose sides are  $a$ ,  $a$ ,  $b$ , show that the distance of centre of gravity from the base is  $\frac{a}{2} \sqrt{\frac{2a-b}{2a+b}}$ . 4

(ii) Prove that centre of gravity of solid right circular cone lies on its axis, and it divides the axis in ratio 3:1 from the vertex. 4

### Section-C

5. (i) The necessary and sufficient condition for the vector function  $\vec{f}(t)$  to have constant magnitude is  $\vec{f} \cdot \frac{d\vec{f}}{dt} = 0$  3
- (ii) If  $\vec{r} \cdot \frac{d\vec{r}}{dt} = 0$ , show that  $|\vec{r}| = \text{constant}$ . 2

(iii) Find the directional derivative of  $F = xy + yz + zx$  in the Direction of vector  $\hat{i} + 2\hat{j} + 2\hat{k}$  at the point  $(1,2,0)$

3

6. (i) Find  $\text{div } \vec{F}$  curve  $\vec{F}$  where  $\vec{F} = \text{grad} (x^3 + y^3 + z^3 - 3xyz)$

4

(ii) Prove that  $\text{div} \left\{ \frac{f(r)}{r} \vec{r} \right\} = \frac{1}{r^2} \frac{d}{dr} [r^2 f(r)]$

4

#### Section-D

7. (i) State and Prove stokes Theorem. 4

(ii) Verify Green Theorem in the plane for  $\oint_C (x^2 - xy^3)dx + (y^2 - 2xy) dy$  where C is square with vertices  $(0,0), (2,0), (2,2), (0,2)$

4

8. (i) Verify Gauss's Divergence theorem for  $\vec{F} = (x^2 - yz)\hat{i} + (y^2 - zx)\hat{j} + (z^2 - xy)\hat{k}$  taken over the rectangular parallelepiped  $0 \leq x \leq a, 0 \leq y \leq b, 0 \leq z \leq c$ .

4

(ii) Apply Green's Theorem in plane to Evaluate  $\oint [(y - \sin x) dx + \cos x dy]$  where c is the triangle enclosed by the lines  $y = 0, 2x = \pi, \pi y = 2x$ .

4

Programme	Exam Code	Course Code
Bachelor of Arts	103204	BARM-4333(II) ✓
Bachelor of Science (Non-Medical)	103304	BSNM-4333(II) ✓
Bachelor of Science (Economics)		BECM-4333 (II) ✓
Bachelor of Science (Computer Science)		BCSM-4333 (II) ✓

**Course Title: Mathematics (Solid Geometry)**  
**Semester-IV**  
**(50)**

Time Allowed: 3 Hours

Max Marks: 40

Note: Attempt five questions each carrying 8 marks, selecting at least one question from each section. Fifth question may be attempted from any section.

## Section A

Q1. Find the equation of right circular cylinder whose axis is

$$\frac{x-2}{2} = \frac{y-1}{1} = \frac{z}{3} \text{ and passes through } (0,0,3). \quad [8]$$

Q2. Find the equation of the enveloping cylinder of the sphere  $x^2 + y^2 + z^2 - 2x + 4y + 1 = 0$  having its generators parallel to the line  $x = y = z$ . [8]

## Section B

Q3. A is point on OX and B on OY so that the angle OAB is constant ( $=\alpha$ ). On AB as diameter a circle is described whose plane is parallel to OZ. Prove that as AB varies the circle generates the cone

$$2xy - z^2 \sin 2\alpha = 0. \quad [8]$$

Q4. (a) Find the equation to the right circular cone whose vertex is P (2, -3, 5), axis PQ which makes equal angles with the axes and semi vertical angle is  $30^\circ$ . [4]

(b) Justify whether the equation  $7x^2 + 2y^2 + 2z^2 - 10zx + 10xy + 26x - 2y + 2z - 17 = 0$

represents a cone? [4]

## Section C

Q5. (a) Trace the locus of the equation  $\frac{x^2}{a^2} + \frac{y^2}{b^2} = \frac{2z}{c}$  where a, b, c are positive constants. [4]

(b). Write down the equation of surface of revolution obtained by rotating the surface

$$y^2 = 4ax, z=0 \text{ about the } x\text{-axis.} \quad [4]$$

Q6. Prove that the sum of the squares of the reciprocals of any three mutually perpendicular diameters of an ellipsoid is constant. [8]

Section D

Q7. Reduce the equation  $x^2 + 4y^2 - 4xy - 32x + 4y + 16 = 0$  to the standard form and give the nature of the surface. [8]

Q8. Tangent planes are drawn to ellipsoid  $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$  through the points  $(\alpha, \beta, \gamma)$ . Prove that the perpendiculars to them through the origin generate the cone

$$(\alpha x + \beta y + \gamma z)^2 = a^2 x^2 + b^2 y^2 + c^2 z^2. \quad [8]$$



Exam Code: 103204

Paper Code: 4127

Programme: Bachelor of Arts (Semester: IV)

Course Title: Music (Instrumental)

Course Code: BARM-4357 ✓

Time Allowed: 3 Hours

Max Marks: 40

Note: Attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 08 marks.

**Section- I**

1. Write an essay on the historical development of Indian music in medieval period.
2. Highlight the contribution of Ustad Inayat Khan to the Indian Music.

**Section- II**

3. Define and explain the following terms:  
a) *Shuddh Raga*                      b) *Chayalag Raga*  
c) *Sankiran Raga*                    d) *Janya Raga*
4. Discuss in detail the concepts of *Alaap* and *Jod Alaap*.

**Section- III**

5. Write notes on the following terms :  
a) *Zamzama*                      b) *Murki*                      c) *Khatka*                      d) *Gamak*
6. Write notes on the significance of *Laya* and *Layakari* with particular reference to Indian Music.

**Section- IV**

7. Write down the description and notation of *Raga Malkauns* along with four *taals*.
8. Give a description of *Jhap taal* or *Ada Chantal* with *Ekgun* and *Dugun Layakaris*.

## PUNJABI VERSION

### ਸੈਕਸ਼ਨ- I

1. ਮੱਧਕਾਲੀਨ ਕਾਲ ਵਿੱਚ ਭਾਰਤੀ ਸੰਗੀਤ ਦੇ ਇਤਿਹਾਸਕ ਵਿਕਾਸ ਉੱਤੇ ਇੱਕ ਲੇਖ ਲਿਖੋ।
2. ਭਾਰਤੀ ਸੰਗੀਤ ਵਿੱਚ ਉਸਤਾਦ ਇਨਾਇਤ ਖਾਨ ਦੇ ਯੋਗਦਾਨ ਨੂੰ ਉਜਾਗਰ ਕਰੋ।

### ਸੈਕਸ਼ਨ- II

3. ਨਿਮਨਲਿਖਤ ਸ਼ਬਦਾਂ ਦੀ ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵਿਆਖਿਆ ਕਰੋ:

- |               |              |
|---------------|--------------|
| a) ਸੁੱਧ ਰਾਗ   | b) ਛਯਾਲਗ ਰਾਗ |
| c) ਸੰਕਿਰਨ ਰਾਗ | d) ਜਨਯ ਰਾਗ   |

4. ਅਲਾਪ ਅਤੇ ਜੋੜ ਅਲਾਪ ਦੇ ਸੰਕਲਪਾਂ ਬਾਰੇ ਵਿਸਥਾਰ ਵਿੱਚ ਚਰਚਾ ਕਰੋ।

### ਸੈਕਸ਼ਨ- III

5. ਹੇਠ ਲਿਖਿਆ 'ਤੇ ਨੋਟ ਲਿਖੋ:

- |          |          |         |        |
|----------|----------|---------|--------|
| a) ਜਮਜਮਾ | b) ਮੁਰਕੀ | c) ਖਟਕਾ | d) ਗਮਕ |
|----------|----------|---------|--------|

6. ਭਾਰਤੀ ਸੰਗੀਤ ਦੇ ਵਿਸ਼ੇਸ਼ ਸੰਦਰਭ ਵਿੱਚ ਲਯਾ ਅਤੇ ਲਯਕਾਰੀ ਦੀ ਮਹੱਤਤਾ ਬਾਰੇ ਵਿਸਤ੍ਰਿਤ ਨੋਟ ਲਿਖੋ।

### ਸੈਕਸ਼ਨ- IV

7. ਰਾਗ ਮਲਕੌਸ ਦਾ ਵਰਣਨ ਅਤੇ ਨੋਟੇਸ਼ਨ ਚਾਰ ਤਾਲਾਂ ਸਮੇਤ ਲਿਖੋ।

8. ਝਪ ਤਾਲ ਜਾਂ ਅਦਾ ਚੌਟਾਲ ਦਾ ਇਕਗੁਨ ਅਤੇ ਦੁਗੁਨ ਲਯਕਾਰੀਆਂ ਦੇ ਨਾਲ ਵਰਣਨ ਦਿਓ।

Exam Code: 103204

Paper Code: 4124

Programme: Bachelor of Arts (Semester: IV)

Course Title: Music (Vocal)

Course Code: BARM-4366 ✓

Time Allowed: 3 Hours

Max Marks: 40

Attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any Section. Each question carries 8 marks.

**Section-A**

1. Define and explain the following musical terms: Greh, Ansh, Niyaas and Upnyaas.
2. Write a biography of Sardar Sohan Singh and his contribution towards Indian classical music.

**Section-B**

3. Define and explain the Dharupad and Dhamaar singing style of Indian Classical Music.
4. What do you know about Raga vargikaran system of Indian Classical Music.

**Section-C**

5. Which singing forms of folk singing style have been used in Gurmat Sangeet.
6. What is the importance of Devotional Music in human life?

**Section-D**

7. Write down the introduction and notation of drut khayal of raga Darbari along with two alaap and four tans.
8. Prescribing the raga Chandrakauns, compare it with the raga Malkauns.

ਨੋਟ- ਕੋਈ ਪੰਜ ਸਵਾਲ ਕਰੋ, ਹਰੇਕ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ ਘੱਟੋ-ਘੱਟ ਇੱਕ ਸਵਾਲ ਜ਼ਰੂਰ ਹੋਵੇ। ਪੰਜਵਾਂ ਸਵਾਲ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ। ਹਰੇਕ ਸਵਾਲ ਦੇ 08 ਅੰਕ ਹਨ।

#### ਸੈਕਸ਼ਨ-ਏ

1. ਗ੍ਰਹਿ, ਅੰਸ਼, ਨਿਆਸ ਅਤੇ ਅਪਨਿਆਸ ਨੂੰ ਪਰਿਭਾਸ਼ਿਤ ਕਰਦੇ ਹੋਏ ਇਨ੍ਹਾਂ ਦੀ ਵਿਆਖਿਆ ਕਰੋ।
2. ਸਰਦਾਰ ਸੋਹਣ ਸਿੰਘ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਉਨ੍ਹਾਂ ਦਾ ਭਾਰਤੀ ਸੰਗੀਤ ਪ੍ਰਤੀ ਯੋਗਦਾਨ ਲਿਖੋ।

#### ਸੈਕਸ਼ਨ-ਬੀ

3. ਧਰੁੱਪਦ ਅਤੇ ਧਮਾਰ ਗਾਇਨ ਸੈਲੀਆਂ ਨੂੰ ਪਰਿਭਾਸ਼ਿਤ ਕਰਦੇ ਹੋਏ ਉਨ੍ਹਾਂ ਦੀ ਵਿਆਖਿਆ ਕਰੋ।
4. ਭਾਰਤੀ ਸ਼ਾਸਤਰੀ ਸੰਗੀਤ ਦੀ ਰਾਗ ਵਰਗੀਕਰਣ ਪ੍ਰਣਾਲੀ ਬਾਰੇ ਤੁਸੀਂ ਕੀ ਜਾਣਦੇ ਹੋ?

#### ਸੈਕਸ਼ਨ-ਸੀ

5. ਗੁਰਮਤਿ ਸੰਗੀਤ ਵਿੱਚ ਲੋਕ-ਅੰਗ ਦੇ ਕਿਹੜੇ ਕਿਹੜੇ ਗਾਇਨ ਰੂਪਾਂ ਦਾ ਪ੍ਰਯੋਗ ਕੀਤਾ ਗਿਆ ਹੈ?
6. ਭਗਤੀ ਸੰਗੀਤ ਦਾ ਮਨੁੱਖੀ ਜੀਵਨ ਵਿੱਚ ਕੀ ਮਹੱਤਵ ਹੈ?

#### ਸੈਕਸ਼ਨ-ਡੀ

7. ਰਾਗ ਦਰਬਾਰੀ ਦੀ ਜਾਣਕਾਰੀ ਦਿਓ ਅਤੇ ਇਸਦੇ ਦਰੁੱਤ ਖਿਆਲ ਦੀ ਸੁਰਲਿਪੀ ਦੋ ਆਲਾਪ ਅਤੇ ਚਾਰ ਤਾਨਾਂ ਸਮੇਤ ਲਿਖੋ।
8. ਰਾਗ ਚੰਦਰਕੌਸ ਦਾ ਪ੍ਰੀਚੈ ਦਿੰਦੇ ਹੋਏ ਇਸ ਦੀ ਰਾਗ ਮਾਲਕੌਸ ਨਾਲ ਤੁਲਨਾ ਕਰੋ।



**Exam Code: 103204**  
**(20)**

**Paper Code: 4126**

**Programme: Bachelor of Arts**  
**Semester-IV**

**Course Title: Philosophy (Inductive Logic and**  
**Environmental Ethics)**

**Course Code: BARM-4377** ✓

**Time Allowed: 3 Hours**

**Max Marks: 60**

**Note: 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 will have 12 Marks.**

**Section A**

1. Explain induction and describe types of induction.
2. What is Causation? Explain Plurality of Causes according to Mill.

**Section-B**

3. Explain Nature of Vyapti in Nyaya Darshan.
4. What is Anumana ? Explain Anumana according to Nyaya school of Philosophy.

**Section-C**

5. Illustrate Environmental Ethics and its concerns
6. Explain Ecology and its concerns.

**Section-D**

7. Describe Population and its effects on Environment
8. Write an essay on Nuclear threats.

Programme: Bachelor of Arts (Semester-IV)

Course Title: Physical Education

Course Code: BARM-4384 ✓

Time Allowed: 3 Hours

Max Marks: 50

Note:- Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. All question carry 10 marks.

**Section A**

1. What do you understand by yoga? Explain the aims and type of yoga.
2. Explain the following cultural poses in detail:
  - a. Dhanur asana
  - b. Hal asana
  - c. Bhujang asana

**Section B**

3. What is Pranayam? Describe its types, objectives and physiological values.
4. What do you mean by Shudhi Kriya? Explain its types, objectives and physiological values.

**Section-C**

5. What is excretory system? Elaborate the structure and functions of kidney and skin.
6. What is the meaning of endocrine gland? Explain the functions and location of pituitary, thyroid and adrenal glands

**Section D**

7. What do you mean by nervous system? Explain the organs and functions of nervous system.
8. What is the meaning of Blood? Describe the function and composition of blood.



Exam Code: 103204  
(40)

Paper Code: 4118

Programme: Bachelor of Arts  
Semester-IV

Course Title: Physical Education

Course Code: BARM-4384

Time Allowed: 3 Hours

Max Marks: 50

उम्मीदवारों को प्रत्येक सैक्शन से कम से कम एक प्रश्न का चयन करते हुए, किन्हीं पांच प्रश्नों का प्रयास करना आवश्यक है। पांचवां प्रश्न किसी भी सैक्शन से किया जा सकता है। प्रत्येक प्रश्नों में 10 अंक होते हैं।

#### सैक्शन-ए

1. योग से आप क्या समझते हैं? योग के उद्देश्य और प्रकार बताइए।
2. निम्नलिखित सांस्कृतिक पदों के बारे में विस्तार से बताएं:  
क. धनुर आसन  
ख. हल आसन  
ग. भुजंग आसन

#### सैक्शन-बी

3. प्राणायाम क्या है? इसके प्रकारों, उद्देश्यों और शारीरिक मूल्यों का वर्णन करें।

4. शुद्धि क्रिया से आपका क्या तात्पर्य है? इसके प्रकारों, उद्देश्यों और शारीरिक मूल्यों की व्याख्या करें।

#### सैक्शन-सी

5. उत्सर्जन प्रणाली क्या है? गुर्दे और त्वचा की संरचना और कार्यों को विस्तृत करें।
6. अंतः सावी ग्रंथियों का अर्थ क्या है? पिट्यूटरी, थायरॉयड और अधिवृक्क ग्रंथियों के कार्यों और स्थान की व्याख्या करें।

#### सैक्शन-डी

7. तंत्रिका तंत्र से आपका क्या तात्पर्य है? तंत्रिका तंत्र के अंगों और कार्यों की व्याख्या करें।
8. रक्त का अर्थ क्या है? रक्त के कार्य और संरचना का वर्णन करें।

ਨੋਟ: ਉਮੀਦਵਾਰਾਂ ਨੂੰ ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਘੱਟੋ-ਘੱਟ ਇਕ ਪ੍ਰਸ਼ਨ ਚੁਣ ਕੇ ਪੰਜ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਕੋਸ਼ਿਸ਼ ਕਰਨੀ ਹੈ, ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਤੋਂ ਲਿਆ ਜਾ ਸਕਦਾ ਹੈ, ਸਾਰੇ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ 10 ਅੰਕ ਹਨ।

#### ਸੈਕਸ਼ਨ-ਏ

1. ਤੁਸੀਂ ਯੋਗਾ ਤੋਂ ਕੀ ਸਮਝਦੇ ਹੋ? ਇਸ ਦੇ ਉਦੇਸ਼ਾਂ ਅਤੇ ਕਿਸਮਾਂ ਦੀ ਵਿਆਖਿਆ ਕਰੋ।
2. ਹੇਠ ਦਿੱਤੇ ਸਭਿਆਚਾਰ ਪੰਜ ਨੂੰ ਵਿਸਤਾਰ ਵਿੱਚ ਦੱਸੋ:  
 ਓ) ਧਨੁਰ ਆਸਣ  
 ਅ) ਹਲ ਆਸਣ  
 ਏ) ਭੁਜੰਗ ਆਸਣ

#### ਸੈਕਸ਼ਨ-ਬੀ

3. ਪ੍ਰਣਾਯਮ ਕੀ ਹੈ? ਇਸ ਦੀਆਂ ਕਿਸਮਾਂ, ਉਦੇਸ਼ਾਂ ਅਤੇ ਸਰੀਰਕ ਕਦਰਾਂ ਕੀਮਤਾਂ ਦਾ ਵਰਣਨ ਕਰੋ।
4. ਸੁੱਪੀ ਕ੍ਰਿਆ ਤੋਂ ਤੁਹਾਡਾ ਗੀ ਭਾਵ ਹੈ? ਇਸ ਦੀਆਂ ਕਿਸਮਾਂ, ਉਦੇਸ਼ਾਂ ਅਤੇ ਸਰੀਰਕ ਕਦਰਾਂ ਕੀਮਤਾਂ ਦੀ ਵਿਆਖਿਆ ਕਰੋ।

#### ਸੈਕਸ਼ਨ-ਸੀ

5. ਐਕਸਰੇਟਰੀ ਸਿਸਟਮ ਕੀ ਹੁੰਦਾ ਹੈ? ਗੁਰਦੇ ਅਤੇ ਚਮੜੀ ਦੀ ਬਣਤਰ ਅਤੇ ਕਾਰਜਾਂ ਦਾ ਵੇਰਵੇ ਕਰੋ।
6. ਐਂਡੋਕਰੀਨ ਗਲੈਂਡ ਦਾ ਮਤਲਬ ਕੀ ਹੈ? ਪਿਟੂਟਰੀ, ਥਾਇਰਾਇਡ ਅਤੇ ਐਡਰੀਨਲ ਗਲੈਂਡ ਦੇ ਕਾਰਜਾਂ ਅਤੇ ਸਥਾਨ ਦੀ ਵਿਆਖਿਆ ਕਰੋ।

### ਸੈਕਸ਼ਨ-ਡੀ

7. ਦਿਮਾਗੀ ਪ੍ਰਣਾਲੀ ਤੋਂ ਤੁਹਾਡਾ ਕੀ ਭਾਵ ਹੈ? ਦਿਮਾਗੀ ਪ੍ਰਣਾਲੀ ਦੇ ਅੰਗਾਂ ਅਤੇ ਕਾਰਜਾਂ ਦੀ ਵਿਆਖਿਆ ਕਰੋ.
8. ਲਹੂ ਦਾ ਕੀ ਅਰਥ ਹੈ? ਲਹੂ ਦੇ ਕਾਰਜ ਅਤੇ ਰਚਨਾ ਦਾ ਵਰਣਨ ਕਰੋ.

Exam Code: 103204  
(40)

Paper Code: 4114

Programme: Bachelor of Arts  
Semester-IV

Course Title: Psychology (Experimental Psychology)

Course Code: BARM-4443 ✓

Time Allowed: 3 Hours

Max Marks: 60

Attempt Five questions, selecting at least one question from each section. The Fifth question may be attempted from any section. Each question carries 12 marks. The use of Non-Programmable calculator is allowed.

**SECTION — A**

1. Define Sensation. Briefly discuss its Nature. 12
2. What is Perception? Explain the Gestalt Approach to Perception. 12

**SECTION — B**

3. Write a short note on the following:
  - a. Mnemonics
  - b. Eyewitness Testimony 6,6
4. Discuss in detail the concept and nature of Memory. 12

### SECTION - C

5. Write a detailed note on the nature of Problem Solving. 12
6. Discuss in detail the nature and types of thinking. 12

### SECTION - D

7. Define correlation. What are its characteristics? 12
8. Calculate the correlation using Pearsons Product Moment Method:

Student	A	B	C	D	E	F	G	H	I
Marks in Test-I	50	54	56	59	60	62	61	65	67
Marks in Test-II	22	25	34	28	26	30	32	30	28

12

## Programme: Bachelor of Arts (Semester: IV)

## Course Title: Sanskrit (Elective) (Neetikatha Evam Vyakarana)

Course Code: BARM-4466 ✓

Time Allowed: 3 Hours

Max Marks: 60

नोट – प्रश्नपत्र का माध्यम हिन्दी-संस्कृत होगा। उत्तर संस्कृत, हिन्दी, पंजाबी, अंग्रेजी में हो सकते हैं।  
प्रश्नपत्र के चार सैक्शन ABCD होंगे। प्रत्येक सैक्शन में दो प्रश्न होंगे। इस प्रकार चारों सैक्शन में कुल आठ प्रश्न होंगे। किसी एक सैक्शन से दोनों प्रश्न करना अनिवार्य है। शेष तीन सैक्शन से केवल एक-एक प्रश्न करना अनिवार्य है। सभी प्रश्नों के अंक समान हैं। (12)

## Section-A

Question -1. निम्नलिखित कथाओं में से किसी एक कथा का सार, शिक्षा और जीवन में महत्त्व लिखिए –

१. मत्स्यमण्डूककथा
२. लोभाविष्टचक्रधरकथा

Question – 2. निम्नलिखित में से किन्हीं दो श्लोकों की सप्रसंग व्याख्या कीजिए –

१. अयं निजःपरोवेति गणना लघुचेतसाम्  
उदारचरितानाम् तु बसुर्धैव कुटुम्बकम् ॥
२. न यत्त्रास्ति गतिर्वार्योः रश्मीनां च विवस्वतः।  
तत्रापि प्रविशत्याशु बुद्धिर्बुद्धिर्मताम् सदा।
३. शरज्ज्योत्स्नाहते दूरं तमसि प्रियसन्निधौ।  
धन्यानां विशति श्रोत्रे गीतसंकारजा सुधा ॥
४. अरक्षितं तिष्ठति देवरक्षितं सुरक्षितं देवहतण् विनश्यति।  
जीवत्वनाथोऽपि वने विसर्जितः कृतप्रयत्नोऽपि गृहे न तिष्ठति ॥

## Section – B

Question – 3. निम्नलिखित कथाओं में से किसी एक कथा का सार, शिक्षा और जीवन में महत्त्व लिखिए –

१. सिंहकारकमूर्खब्राह्मणकथा
२. क्षपणककथा

Question – 4. निम्नलिखित में से किन्हीं दो श्लोकों की सप्रसंग व्याख्या कीजिए –

१. लघुरयमाह न लोकः कामं गर्जन्तमपि पतिं पयसाम्।  
सर्वलज्जाकरमिह यद्यदकुर्वन्ति परिपूर्णाह ॥
२. ध्यानव्याजमुपेत्य चिन्तयसि कामुन्मील्य चक्षुः क्षणं।  
पश्यान् इगशरातुरं जनमिमं त्राता पि नो रक्षसि ॥
३. अतिलोभो न कर्तव्यो लोभं नैव परित्यजेत्।  
अतिलोभाभिभूतस्य चक्रं धमति मस्तके ॥
४. स्वामी द्वेष्टिः सुसेवितो पि सहसा प्रोञ्जन्ति सदान्धवाः।  
राजन्ते न गुणास्त्यजन्ति तनुजाः स्फारीभवन्त्यापदः ॥

## Section – C

Question-5. निम्नलिखित में से कोई चार शब्दरूप लिखिए -

- |           |         |                    |
|-----------|---------|--------------------|
| १. अस्मद् | २. लता  | ३. द्वि (पुल्लिंग) |
| ४. नदी    | ५. मातृ | ६. विद्रस          |



Question-6. निम्नलिखित में से किन्हीं बारह शब्दों के साथ स्त्रीप्रत्यान्तरूप लिखिए -

१.	प्रवीण	+	टाप्
२.	बुद्धिमत्	+	डीप्
३.	मातृ	+	डीप्
४.	साधु	+	डीप्
५.	प्रथम	+	टाप्
६.	मूषक	+	टाप्
७.	दक्ष	+	टाप्
८.	श्रीमत्	+	डीप्
९.	विद्वस्	+	डीप्
१०.	गुरु	+	डीप्
११.	परिव्राजक	+	डाप्
१२.	दातृ	+	डीप्
१३.	राजन्	+	डीप्
१४.	बुद्धिमत्	+	डीप्
१५.	तपस्विन्	+	डीप्

Section - D

Question-7. (a) निम्नलिखित में से किन्हीं तीन समस्तपदों का विग्रह कीजिए -

१.	सरसिजम्	२.	परस्मैपदम्	३.	ओजसाकृतम्
४.	विश्वजित्	५.	अनुपकारः	६.	पञ्चतन्त्रम्

(b). निम्नलिखित में से किन्हीं तीन विग्रहों का समस्तपद कीजिए -

१.	पञ्चानाम् काव्यानां समाहारः	२.	लता इव कोमला
३.	वाचि पटुः	४.	भुवः भर्ता
५.	गवे हितम्	६.	वाचा कलहः

Question-8. कारक विभक्तियों के अनुसार बारह वाक्यों का संस्कृत में अनुवाद कीजिए

१. वह कर्तव्य से प्रमाद करता है।
२. चूहा शेर से डरता है।
३. शिष्य अध्यापक से पढता है।
४. ब्रह्मा से प्रजाएँ उत्पन्न होती हैं।
५. छात्र घर से महाविद्यालय जाते हैं।
६. जंगल से गाँव योजन भर है।
७. ईश्वर से पृथक् कोई भी रक्षक नहीं है।
८. गाँव के पास खेत हैं।
९. बाल्यावस्था से लेकर मैं यहाँ रहता हूँ।
१०. महाविद्यालय के बाहर सुन्दर उपवन है।
११. विदेश में रहने वाले बालक माता का स्मरण करते हैं।
१२. अध्ययन के लिए छात्र आजकल विदेश जा रहे हैं।
१३. माता पुत्री से स्नेह करती है।
१४. नास्तिक ईश्वर पर विश्वास नहीं करते।
१५. वह वीणा बजाने में कुशल है।

Attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any Section. Each question carries six marks.

**Section-A**

1. Tabulate the differences between microbial industrial processes and chemical industrial processes. (6)
2. What are the different principles used for food processing in food industries? (6)

**Section-B**

3. Discuss the followings:
  - a. Isolation of organic acid producing microbes with examples. (3)
  - b. Isolation of cellulase producing IIMs. (3)
4. Why there is a need to preserve IIMs, and through, what strategies IIMs preservation is carried out in various industries? (6)

**Section-C**

5. Briefly discuss and describe the processes involved in process optimization of Industrial and agro industrial microbes? (6)
6. Elaborate followings through suitable examples:
  - a. Isolation of inhibition resistant mutants. (3)
  - b. Media formulation and optimization for IIMs. (3)

**Section-D**

7. Write down the major steps involved in Sauerkraut production.  
Draw flow chart also. (6)
8. a. How proteases enzyme can be used in leather industries? (3)  
b. Give the making process of Yoghurt? (3)

Exam Code: 107404  
(30)

Paper Code: 4191

Programme: Bachelor of Science (Bio-Technology)  
Semester-IV

Course Title: Immunology-II

Course Code: BBTM-4062 ✓

Time Allowed: 3 Hours

Max Marks: 30

Note: 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.

**Section-A**

1. What are T-lymphocytes. How are they helpful in providing cell-mediated immune response. (6)
2. What are Recombinant antigen vaccine? Explain. Write its three advantages and disadvantages? (6)

**Section-B**

3. How intracellular bacteria can be killed by immune response? Explain the mechanism in detail? (6)
4. A) Give the principle of Radio-immunoassay (3)

B) Write down the principle of Haemagglutination - inhibition reaction. (3)

#### Section-C

5. How T cells recognise endogenous and exogenous antigens? (6)
6. What are Subunit vaccine? Give examples. Write advantages and disadvantages? (6)

#### Section-D

7. Define Immune invasion. What are different immune invasion methods used by bacteria for infection. (6)
8. What is Double immunodiffusion methods. Give the principle and its applications. (6)

Exam Code: 107404  
(30)

Paper Code: 4193

Programme: Bachelor of Science (Bio-Technology)  
Semester-IV

Course Title: Skill Development in Biotechnology

Course Code: BBTM-4064 ✓

Time Allowed: 3 Hours

Max Marks: 30

Note: Attempt five questions in all selecting at least one question from each section A to D. All questions carry equal 6 marks. Fifth question may be attempted from any section.

#### Section-A

1. Define/describe in short.
  - a) Food emulsifier 2
  - b) Plant tissue culture 2
  - c) Probiotic 2
2. What is Food Spoilage? List and describe the types of food spoilage with suitable example. 6

#### Section B

3. List the advantages of food preservation. Provide the principals of food preservation involved in the process of canning, dehydration and irradiation. 6

4. Differentiate the following
- a. Class I vs Class II preservatives. 3
  - b. Flexible vs Rigid Packaging materials. 3

### Section C

5. What do you mean Basal Metabolic Rate (BMR)? Describe the measurement procedure for BMR and discuss about the factors affecting BMR. 6
6. a. Why we consider the energy value for macro nutrients but not for micronutrients? 3
- b. Describe the reason for more energy requirement in case of pregnant ladies and lactating mothers. 3

### Section D

7. a. What implications we get if only a few essential amino acids are obtained from consumption of food/protein? 3
- b. Describe the steps of protein estimation using Kjeldhal method. 3
8. Define/describe in short.
- a. Water soluble vitamins 2
  - b. Antinutrients 2
  - c. Variations in RDA for protein in different categories of human beings 2



**Exam Code: 107404**  
**(30)**

**Paper Code: 4194**

**Programme: Bachelor of Science (Bio-Technology)**  
**Semester-IV**

**Course Title: Fundamentals of Bioinformatics**

**Course Code: BBTM-4065**

**Time Allowed: 3 Hours**

**Max Marks: 30**

**Instructions: All questions carry 6 marks. Attempt five questions in all, selecting at least one question from each section and the fifth question from any section.**

**Section A**

1. Discuss the applications of a light pen and Joystick in Computers.
2. Discuss the different types of Computer Hardware.

**Section B**

3. Explain the Smith-Waterman algorithm for pairwise sequence alignment.
4. Discuss the history and milestones in the field Bioinformatics.



### Section C

5. Elaborate on the construction of PAM matrices.
6. Write a note on the progressive multiple sequence alignment method giving an example of any one tool based on this method.

### Section D

7. Write a note on the ExPasy.
8. What are secondary databases? Explain one secondary database.

Programme: Bachelor of Science (Bio-technology) Semester – IV

Course Title: Biochemistry – IV

Course Code: BBTM-4083 ✓

Time Allowed: 3 Hours

Maximum Marks: 30

Attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any Section. Each question carries six marks.

Section- A

- Q 1 Discuss
- a. Biosynthesis of Leucine. 3
  - b. Conversion of homoserine to methionine. 3
- Q 2 Explain the regulation of amino acid biosynthesis through feedback inhibition. 6

Section- B

- Q 3 Discuss 3
- a. Alanine transamination reaction. 3
  - b. Homocystinuria. 6
- Q 4 Explain phenylalanine catabolism and related disorders.

Section- C

- Q 5 Describe 3
- a. Structure of pyrimidine bases. 3
  - b. Biological importance of adenosine containing nucleotides. 6
- Q 6 Explain de novo synthesis of Purines.

Section- D

- Q 7 Discuss.
- a. Purine salvage pathways and regulation 3
  - b. Reaction and regulation of HGPRTase enzyme. 3
- Q 8 Explain the catabolism of Pyrimidines. 6

Exam Code: 105404  
(40)

Paper Code: 4246

Programme: Bachelor of Business Administration  
Semester-IV

Course Title: Financial Management

Course Code: BBRL-4323



Time Allowed: 3 Hours

Max Marks: 40

Note: Students are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. Each section carries (8) equal marks.

#### SECTION A

1. "The Principal focus of finance is on decision and actions which affect the value of firm" How can financial management help to maximize it? (8)
2. What do you understand by over capitalisation? Critically discuss the causes and disadvantages of over capitalisation. How would you correct over capitalization in the corporation? (8)

### SECTION B

3. Define cost of capital? Explain its significance in financial decision making. (8)
4. What are the various sources on which financial resources of business are classified? (8)

### SECTION C

5. What do you mean by capital budgeting? Discuss the purposes of such budgeting from the point of view of an industrial concern. (8)
6. Explain the Modigliani and Miller's hypothesis of dividend irrelevance. Does this hypothesis suffer from any limitations? (8)

### SECTION D

7. What do you mean by leverages? What are the various types of leverages? (8)
8. Working capital is a means and not an end. Discuss the statement and explain the factors which influence the working capital needs of a manufacturing undertaking. (8)

Exam Code: 105404  
(40)

Paper Code: 4247

Programme: Bachelor of Business Administration  
Semester-IV

Course Title: Production and Operations Management

Course Code: BBRI-4324 ✓

Time Allowed: 3 Hours

Max Marks: 40

Note: Candidates are required to attempt five questions, selecting at least one from each section. The fifth question may be attempted from any section. Each question carries 8 marks.

#### SECTION A

1. Explain in detail Production & Operation management Explain its functions also?
2. Define Market analysis. Explain its need & importance?

#### SECTION B

3. Explain the concept of Productivity in detail?
4. What are the advantages & disadvantages of work study? Explain

### SECTION C

5. What do you mean by EOQ? Derive its formula? How we measure safety stock, Maximum level, Reorder level?
  6. Explain the following :
    - a) ABC Analysis
    - b) SOS Classification
    - c) SDE Analysis
    - d) GOLF classification
- 2x4

### SECTION D

7. Define JUST IN TIME Manufacturing. Discuss its characteristics also?
8. What is Supply chain management? Explain its components, advantages & disadvantages?

**Exam Code: 105404**  
**(40)**

**Paper Code: 4248**

**Programme: Bachelor of Business Administration**  
**Semester-IV**

**Course Title: Business Environment**

**Course Code: BBRL-4325** ✓

**Time Allowed: 3 Hours**

**Max Marks: 40**

**Note: Attempt 5 questions, selecting at least 1 question from each section. The fifth question may be attempted from any section. Each question carries 8 marks.**

**Section-A**

1. Explain the different environmental factors that create a profound impact on business.
2. Define environmental analysis. Explain the techniques of business environmental analysis

**Section-B**

3. What do you mean by SWOT analysis. Discuss the SWOT analysis of any two Indian industries.
4. Explain the concept of liberalisation and measures taken for liberalisation.



### **Section-C**

5. Explain the functions of NITI Aayog in detail.
6. Explain the concept of Corporate governance in detail

### **Section- D**

7. Discuss the deficit financing and its implications for the Indian economy.
8. Explain the salient features of FEMA.

Exam Code: 105404  
(40)

Paper Code: 4249

Programme: Bachelor of Business Administration  
Semester-IV

Course Title: Operations Research

Course Code: BBRL-4326

Time Allowed: 3 Hours

Max Marks: 40

Note: Attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 8 marks.

SECTION A

1. Briefly explain the meaning and significance of Operations Research? (8)

2. Solve the following Problem:

$$\text{Minimize } Z = 60X_1 + 80X_2$$

Subject to:

$$X_1 + X_2 = 500$$

$$X_2 \geq 200$$

$$X_1 \leq 400$$

Where  $X_1, X_2 \geq 0$

(8)

### SECTION B

3. Solve the following transportation problem:

	WAREHOUSE			
	W1	W2	W3	SUPPLY
PLANT	7	6	9	20
	5	7	3	28
	4	5	8	17
DEMAND	21	25	19	65

(8)

4. Solve the following Assignment Problem where five jobs are to be processed on five machines with **resulting profits** as follows:

		Machines				
		A	B	C	D	E
Jobs	1	32	38	40	28	40
	2	40	24	28	21	36
	3	41	27	33	30	37
	4	22	38	41	36	36
	5	29	33	40	35	39

(8)

### SECTION C

5. The following are the activity timings in a project network:

Activity	Expected time( $t_e$ )
1-2	7
1-3	6
1-4	14
2-5	5
2-6	11
3-6	7
4-7	11
5-7	4
6-7	5

- (i) Draw the network diagram.  
(ii) Find the expected project completion time.  
(iii) Calculate the floats of the activities.

(4,2,2)

6. Explain the following terms:
- PERT and CPM
  - Head and Tail Event
  - Looping and Dangling
  - Fulkerson's Rule to Numbering of Events

(8)

### SECTION D

7. Solve the following Game using Graphic Method:

		B	
		B1	B2
A	A1	-6	7
	A2	4	-5
	A3	-1	-2
	A4	-2	5
	A5	7	-6

(8)

8. The Mahavir Paints Ltd., would like to improve its inventory management policies for its supply of paint used for automobiles. Annual demand for such paint is 50,000 litres, and the paint which costs Rs 20 per litre is used at constant rate. Annual carrying costs are estimated at 15% of the value of paint held. Each order costs Rs 80.

Determine

- How much paint should be ordered each time?
- How often should paint be ordered?
- What is the total annual cost associated with this policy?

(8)

Exam Code: 105404  
(40)

Paper Code: 4250

Programme: Bachelor of Business Administration  
Semester-IV

Course Title: Fundamentals of Insurance

Course Code: BBRI-4327 ✓

Time Allowed: 3 Hours

Max Marks: 40

Attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any section. Each questions carries 8 marks.

**Section-A**

1. Define Insurance. Explain the principles of insurance in detail? 8
2. Write a note on various reforms undertaken in Insurance. 8

**Section-B**

3. Discuss in detail various types of insurance? 8
4. Give general provisions of IRDA, Act 1999. ? 8

### Section-C

5. What do you mean by underwriting contract in insurance also discuss the process of Underwriting? 8
6. What do you mean by Re-insurance. What are its advantages and disadvantages to the insurer? 8

### Section-D

7. Write a note on various distribution channels in insurance? 8
8. What do you mean by:
- (i) Actuaries
  - (ii) Bancassurance
  - (iii) Surveyors
  - (iv) Brokers
- (2\*4=8)



Exam Code: 107404  
(30)

Paper Code: 4195

Programme: Bachelor of Science (Bio-Technology)  
Semester-IV

Course Title: Zoology-II

Course Code: BBTM-4486



Time Allowed: 3 Hours

Max Marks: 30

Note: Attempt five questions in all, selecting one question from each section (A to D). Fifth question can be attempted from any section. Each question carries equal 6 marks.

**Section A**

1. Give in detail evolution of prokaryotes. 6
2. Discuss chemical origin of life. 6

**Section B**

3. Explain modern theory of evolution. 6
4. Give detail about eras of geological time scale. 6

### Section C

5. Give brief account of life history, mode of infection and pathogenicity of *Ascaris* , 6
6. Describe life cycle of *Plasmodium vivax* in detail. 6

### Section D

7. Give symptoms and cause of yellow fever. 6
8. Differentiate malaria and dengue. 6

Exam Code: 107204  
(60)

Paper Code: 4261

Programme: Bachelor of Computer Applications  
Semester-IV

Course Title: Data Structures

Course Code: BCAL-4111

Time Allowed: 3 Hours

Max Marks: 60

Note: Candidates are required to attempt five questions, selecting at least one from each section. The fifth question may be attempted from any section. Each question carries 12 marks.

#### SECTION- A

1. Define Data Structure. What is the difference between linear and nonlinear data structure. Explain various operations on data structures along with examples. 12
2. a) Define Array. How arrays are stored and represented into memory. 8  
b) What do you mean by Time Space tradeoff? 4

### SECTION-B

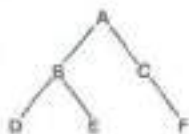
3. What is binary search? What are its advantages over Linear Search? Write and Explain an algorithm for searching an element using binary search. 12
4. What is Linked List? Enlist various types of linked lists. Write an algorithm for insertion of a node in the Linked List. 12

### SECTION-C

5. Define stack. Write a procedure and demonstrate it through example to convert infix to Reverse Polish notation and solving it. 12
6. What are queues? How are queues implemented in memory? What are the various queue operations? Write algorithm for each. 12

### SECTION-D

7. Discuss the breadth first search algorithm for graph using an example. 12
8. What are binary trees? Explain various binary tree traversal techniques. Apply these techniques to traverse the following tree. 12



Programme: Bachelor of Computer Applications

(Semester: IV)

Course Title: Information Systems

Course Code: BCAL-4112 ✓

Time Allowed: 3 Hours

Max. Marks: 60

Note: Attempt five questions in all, selecting at least one from each section. The fifth question may be attempted from any section. Each question carries 12 marks.

**SECTION A**

Q.1. Explain the Terms: Data, Information, Knowledge and Database.(12)

Q.2. Explain Primary sources of information. (12)

**SECTION B**

Q.3. Explain different phases of System Development Life cycle. (12)

Q.4. What are various types of Decisions taken at different levels of organization. (12)

**SECTION C**

Q.5. What is the need of Management Information System in an organization? Explain its components as well. (12)

Q.6. What do you know about Decision Support Systems. Explain. (12)

**SECTION D**

Q.7. What are Transaction Processing Systems. Explain the Input and Output of TPS. (12)

Q.8. Discuss the Case Study of Accounting Information System. (12)

Exam Code: 107204

Paper Code: 9401

Programme: Bachelor of Computer Applications

(Semester: IV)

Course Title: Information Systems

Course Code: BCAL-4112 ✓

Time Allowed: 3 Hours

Max. Marks: 60

Note: Attempt five questions in all, selecting at least one from each section. The fifth question may be attempted from any section. Each question carries 12 marks.

**SECTION A**

Q.1. What is Information? Explain the differences between data and information.

Q.2. Explain Methods of capturing the Information.

**SECTION B**

Q.3. Explain the Latest trends in Hardware with respect to information systems.

Q.4. Discuss Development Life Cycle of Information systems.

**SECTION C**

Q.5. Explain the Working of Office Automation Systems.

Q.6. What are the Components of Transaction Processing System, also explain TPS cycles.

**SECTION D**

Q.7. What do you mean by Expert Systems? Discuss in detail.

Q.8. Explain the Case Study of Inventory Information System.



Time Allowed - 3 Hours

Maximum Marks: 60

Note- Attempt five Questions in all selecting at least one question from each section. Fifth question can be attempted from any section. Each Question carries equal (12) marks.

**Section-A**

- 1 (a) Define Internet? Discuss the various phases in the development of Internet?  
(c) What is an Email? What is difference between Cc: and Bcc: header? (6+6)
- 2 (a) Write a short note on  
(i) Intranet  
(ii) Extranet (6)
- (b) Explain Domain Name Server and how it is different from IP addresses? (6)

**Section-B**

- 3 Explain the following:  
(a) TCP/IP (6)  
(b) HTTP (6)
- 4 (a) Explain Different types of Lists used in HTML? (6)  
(b) Describe the role of Frames in HTML (6)

**Section-C**

- 5 (a) Describe the procedure for the creation of CSS? (6)  
(b) Describe various Font families that can change the content structure? (6)
- 6 (a) What do you mean by Javascript Functions?  
(b) How array and strings can be implemented in Javascript? (12)

**Section-D**

- 7 (a) Explain the role of Google analytics in evaluating the performance of a website?  
(b) What is Wordpress? How we can add new pages in Wordpress? (12)
- 8 (a) What is Live chat? How we can measure the effectiveness of Livechat? (6)  
(b) List some of Plugins that comes with Word press. (6)



Exam Code: 107204

Paper Code: 4264

Programme: Bachelor of Computer Applications

(Semester – IV)

Course Title: Computer Architecture

Course Code: BCAL-4114

Time Allowed: 3 Hours

Maximum Marks: 60

Attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any Section. Each question carries 12 marks.

**Section -A**

1. a) What are the 5 arithmetic operations? 6  
b) Explain 4 micro-operations in computer architecture. 6
2. How many registers are there in computer architecture? Explain in detail. 12

**Section -B**

- 3 a) What are addressing modes in computer architecture? 6  
b) What are program control instructions? 6
- 4 Explain instruction format and its types with examples. 12

**Section -C**

5. Describe Designs & Concepts of Main Memory with example in detail. 12
6. Explain Associative Memory, Cache and virtual memory in detail. 12

**Section -D**

7. Explain Pipeline & Vector Processing with concept of SIMD & MISD. 12
8. What are different modes of transfer in DMA? 12

(Only for Reappear Candidates (2021-2022))

Exam Code: 107204

Paper Code: 9402

Programme: Bachelor of Computer Applications

(Semester-IV)

Course Title: Foundation of Data Science

Course Code: BCAL-4114 ✓

Time Allowed: 3 Hours

Maximum Marks: 60

Attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any Section. Each question carries 12 marks.

**SECTION A**

- Q.1. What is Data Science? Explain the Advantages of using Data Science. (12)
- Q.2. Explain in detail the Data Science Process. (12)

**SECTION B**

- Q.3. What are various Job Roles in Data Science domain? (12)
- Q.4. (a) Discuss various challenges that data analyst has to face. (6)
- (b) Explain Exploratory Data Analysis. (6)

**SECTION C**

- Q.5. Explain the term – Data Collection. Discuss various methods of data collection. (12)
- Q.6. Explain in detail Interview Technique of data collection. (12)

**SECTION D**

- Q.7. What are various characteristics of data to be taken care while analyzing data? (12)
- Q.8. Explain Diagnostic and Prescriptive types of data analytics. (12)

Exam Code: 109104  
(100)

Paper Code: 4236

**Programme: Bachelor of Commerce (Honours)**  
**Semester-IV**

**Course Title: Cost Accounting**

**Course Code: BCOL-4091**

**Time Allowed: 3 Hours**

**Max Marks: 80**

**Note: Attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 16 marks.**

**Section-A**

Q.1. Define Cost Accounting? Distinguish between cost and financial accounting.

Q.2. A manufacturing company provides you the following information for the month of December:

Direct labour cost Rs 17,500 (175% of works over heads) cost of goods sold excluding administrative expenses Rs. 56,000. Inventory records reveal the following:

	Opening Rs.	Closing Rs.
Raw Material	8,000	10,600
Work-in-Progress	10,500	14,500
Finished Goods	17,600	19,000
Other informations for the month of March-		
Selling expenses		3,500
Administration expenses		2,500
Sales		75,000

Compute the value of material Purchased and prepare statement of cost and also the profit.

**Section-B**

Q.3. What is Material control? Explain the various techniques of material control.

Q. 4. Show the store ledger entries as they would appear when using the FIFO method, of pricing issues in connection with the following transactions:

	Units	Price
April 1 Opening Stock	400	2.00
April 2 Purchased	200	2.20
April 12 Purchased	300	2.30
April 20 Purchased	400	2.40
April 22 Issued	300	
April 24 Issued	200	
April 26 Issued	200	
April 27 Issued	350	
April 28 Returns to stores	50 Pieces issued from opening stock	
April 30 Returns to suppliers	60 Pieces purchased on 12 <sup>th</sup> April	

### Section-C

Q. 5. What is Zero base budgeting? Explain the steps involved in Zero base budgeting and also give its advantages.

Q. 6. Finished products of a factory pass through two processes the entire material being placed to process at the beginning of the first process. From the following production and cost data relating to the first process. Work out the value of work in process and out put transferred to process II (use FIFO Method)

	Rs.
Opening WIP	10,000
Material	27,500
Wages	50,000
Over heads	40,000
Opening WIP (25% complete) 4000Kg	
Put into Process 12000 Kg	
Transferred to Process II 10,000 Kg	
Closing WIP (20% complete) 5,000 Kg	
Normal Spoilage during the process 1,000 Kg	

### Section-D

Q. 7. Hero cycles Ltd. Purchases 20,000 bells per annum from an outside supplier @ Rs. 5 each. The management feels that the same can be manufactured, hence should not be purchased. A machine costing Rs. 50,000 will be required having an annual capacity of 30,000 units and life of 5 years. Further information is:

Material cost per bell Rs. 2.00

Labour cost per bell Rs. 1.00

Variable overheads -100% of labour cost

Kindly advice the management whether (i) the company should continue to purchase the bells from the outsider or should manufacture it in its own market. (ii) the company should accept an order to supply 5,000 bells to the market at Rs. 4.50 per unit?

Q. 8. Write a short note on (a) Target costing (b) Activity based costing (c) Absorption costing (d) Variance Analysis.



**Exam Code: 109104**  
**(100)**

**Paper Code: 4237**

**Programme: Bachelor of Commerce (Honours)**  
**Semester-IV**

**Course Title: Fundamentals of Investment Management**

**Course Code: BCOL-4092**

**Time Allowed: 3 Hours**

**Max Marks: 80**

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 will carry 16 marks.

**PART- A**

1. Explain various non marketable financial assets? Discuss their features in detail. Also discuss sources of financial information in detail. 16
2. What do you mean by Risk? What are the various causes of risks? How risk is calculated? 16

### **PART- B**

3. What do you mean by Bond Valuation? Discuss various approaches for Bond Valuation. 16
4. (a) Explain various fundamentals which are considered while estimating bond yields.  
(b) Discuss various types of Bond Risks in detail. 8+8

### **PART- C**

5. What is Fundamental Analysis? Explain economic and company fundamental analysis in detail. 16
6. What do you mean by Valuation of Equity Shares? Explain various models of Equity Valuation in detail. 16

### **PART- D**

7. What do you mean by Financial Derivatives? Discuss various derivatives instruments in detail along with their features. 16
8. What do you mean by Mutual Funds? Discuss various SEBI guidelines relating to Mutual funds. 16

**Exam Code: 109104**  
**(100)**

**Paper Code: 4238**

**Programme: Bachelor of Commerce (Honours)**  
**Semester-IV**

**Course Title: Insurance and Risk Management**

**Course Code: BCOL-4093**

**Time Allowed: 3 Hours**

**Max Marks: 80**

- NOTE: (i) The paper is divided into FOUR sections.**  
**(ii) Candidates are required to attempt FIVE questions, selecting at least one question from each section. The fifth question may be attempted from any section.**  
**(iii) Each question carry equal marks (16 marks each).**

**SECTION — A**

1. What do you mean by Risk? How can risk be classified?
2. Define Risk Management. Explain the process of risk management

**SECTION — B**

3. What do you mean by insurance? Explain the role and importance of insurance
4. Define Re-Insurance' Write the rights and liabilities of re-insurer.



### SECTION — C

5. Discuss the following principles of an Insurance contract:
  - (a) insurable interest
  - (b) Doctrine of subrogation
  - (c) Proxima clause
6. What is settlement of claim? Describe the procedure for the settlement of claim under the motor insurance.

### SECTION — D

7. Discuss the powers, duties and scope of IRDA.
8. Write a detailed note on Insurance Ombudsman

25-5-2023 (M02)

Exam Code: 109104  
(100)

Paper Code: 4239

Programme: Bachelor of Commerce (Honours)  
Semester-IV

Course Title: Marketing Management

Course Code: BCOL-4094 ✓

Time Allowed: 3 Hours

Max Marks: 80

Note: Attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries (16) marks.

#### SECTION-A

1. What do you mean by Marketing Environment? Discuss the Micro and Macro-Environment in detail. (16)
2. "Market segmentation is very useful for effective marketing on any product." Elaborate. (16)

#### SECTION-B

3. What is product positioning. Explain the process along with the strategies of product positioning. (16)

4. What do you mean by product? Explain the classification of product along with product mix. (16)

#### SECTION-C

5. What do you mean by Pricing? Explain in detail the various methods of Pricing. (16)
6. "Selection of advertisement media should be preceded by an analysis of all factors involved in the total marketing situation." What factors should you consider in such analysis and why? (16)

#### SECTION-D

7. a. Discuss various Ethical issues in Marketing. (8)  
b. Explain the challenges in services marketing. (8)
8. "Green Marketing is also known as Ecological Marketing or Environmental Marketing. Explain the statement. (16)

Exam Code: 109104  
(100)

Paper Code: 4240

Programme: Bachelor of Commerce (Honours)  
Semester-IV

Course Title: Goods and Services Tax (GST)

Course Code: BCOL-4095 ✓

Time Allowed: 3 Hours

Max Marks: 80

The paper contains 4 sections (A-D). Each sections carries 2 questions. The candidates are required to attempt 5 questions selecting atleast one question from each section. The fifth question can be attempted from any section. Each question carries 16 marks.

#### Section-A

1. Explain salient features of GST. Also write a note on advantages and disadvantages of GST. 16
2. Write a detailed note on levy and collection of tax under IGST Act. 16

#### Section-B

3. Describe the provisions for exemptions for services to Educational Institutions. 16

4. Write a note on:-
- (a) Amendment in registration certificate.
  - (b) Cancellation/ Surrender of Registration Certificate. 16

### Section-C

5. Who and under what circumstances is required to prepare E way Bill. State the rules for generation and carrying of E-Way Bills. 16
6. Write a detailed note on outward supplies under GSTR-1. 16

### Section-D

7. What is GST Portal? What is the importance of GST Portal? 16
8. Write a detailed note on PGST Act and salient provisions of (Punjab GST) PGST. 16

### Section B

Explain the concept of supply under GST. What are the rules of GST for and place of supply?

What do you mean by ITC? Explain the mechanism of ITC in detail.

Exam Code: 108504  
(50)

Paper Code: 4241

Programme: Bachelor of Commerce  
Semester-IV

Course Title: Goods and Services Tax

Course Code: BCRL-4093 ✓

Time Allowed: 3 Hours

Max Marks: 40

Note: Candidates are required to attempt five questions, selecting at least one from each section. The fifth question may be attempted from any section. Each question carries 8 marks.

#### SECTION A

1. What do you mean by GST? Discuss various advantages and limitations of GST in detail.
2. What do you mean by Composition Scheme? Discuss various provisions of composition scheme in detail.

#### SECTION B

3. What do you mean by Compulsory and voluntary registration? How a person can be registered under GST.

4. Differentiate between Interstate and Intrastate supply?  
Discuss various provisions for place of supply.

### **SECTION C**

5. What do you mean by Input Tax Credit? Discuss various provisions for the apportionment of credit under ITC.
6. What do you mean by Electronic payment? Discuss various methods of payment of GST.

### **SECTION D**

7. Discuss various provisions of filing monthly, quarterly and yearly returns in detail.
8. What do you mean by GST Portal? Discuss various services provided by GST portal to taxpayer.



Exam Code: 108504  
(50)

Paper Code: 4242

Programme: Bachelor of Commerce  
Semester-IV

Course Title: Industrial Laws

Course Code: BCRL-4094

Time Allowed: 3 Hours

Max Marks: 40

Note: Attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries (8) marks.

**Section -A**

1. Enumerate the provisions relating to health of the workers under Factories Act, 1948.
2. Write short note on -
  - (a) Working hours for adults
  - (b) Welfare

**Section -B**

3. Discuss the authorities provided for settlement of Industrial Disputes.
4. Briefly explain the procedure of registration of trade union under Trade Union Act, 1926.

### Section -C

5. Explain the rules regarding the Contribution of employees and employers under Employees State Insurance Act, 1948.
6. Discuss the various benefits available under ESI Act, 1948.

### Section -D

7. State the employer's liability for compensation under Employee Compensation Act,1923 Are there any exceptions to the liability?
8. Explain the principle of 'Notional Extension' under Employee Compensation Act,1923.

Exam Code: 108504  
(50)

Paper Code: 4243

Programme: Bachelor of Commerce  
Semester-IV

Course Title: Principles and Practices of Banking and  
Insurance

Course Code: BCRL-4095

Time Allowed: 3 Hours

Max Marks: 40

Attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any section. Each questions carries 8 marks.

**Section-A**

1. What are the factors affecting deposit management?
2. What are the objectives of credit control? Discuss the methods of credit control?

**Section-B**

3. What are the essential elements of E-banking? Explain them briefly?
4. Discuss the importance of reform in Indian banking? What are the challenges ahead?

### **Section-C**

5. Explain the principles of Insurance.
6. Write the nature and use of Life Insurance? Discuss the distinguishing characteristics of life Insurance contracts?

### **Section-D**

7. Discuss the power, duties and scope of IRDA?
8. Why insurance sector is opened for private players? Discuss the steps taken by government in this regard?

Exam Code: 108504  
(50)

Paper Code: 4244

Programme: Bachelor of Commerce  
Semester-IV

Course Title: Cost Accounting

Course Code: BCRL-4096 ✓

Time Allowed: 3 Hours

Max Marks: 40

Note: attempt five questions selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 8 marks. Candidates are allowed to use non-scientific calculators.

**Section A**

1. Discuss the differences between Cost Accounting and Financial Accounting. How is cost accounting better than financial accounting in Cost Control?
2. MXN co. is the manufacturer of picture tubes for T.V. The following are the details of the operations during 2017:

Average monthly demand = 200 Tubes

Ordering cost = Rs. 100 per order | \_

Inventory carrying cost = 20% per annum

Cost of tubes = Rs. 500 per tube

Normal usage = 100 tubes per week  
 Minimum usage = 50 tubes per week  
 Maximum usage = 200 tubes per week  
 Lead time to supply = 6-8 weeks  
 Compute from the above: -

1. EOQ. If supplier is willing to supply quarterly 1,500 units at a discount of 5%, is it worthy accepting?
2. Maximum level of stock
3. Minimum level of stock
4. Reorder level

#### Section - B

3. What is Time Rate System? What are the advantages and suitability of Time Rate System?
4. Shine Ltd. has three production  $P_1, P_2, P_3$  and two service departments  $S_1, S_2$ . The details of are as follows:

	$P_1$	$P_2$	$P_3$	$S_1$	$S_2$
Wages	3,000	2,000	3,000	1,500	195
Value of machines	60,000	80,000	1,00,000	5,000	5,000
H.P. of machines	60	30	50	10	-
Light points	10	15	20	10	5
Floor space (sq. ft.)	2,000	2,500	3,000	2,000	500

The following information is available from accounting records and by using the information prepares Overhead Distribution Statement:

Expenses	Amount (Rs.)	Expenses	Amount (Rs.)
Rent and Rates	5,000	Power	1,500
Lighting	600	Depreciation on machines	10,000
Indirect wages	1,939	Sundries	9,695

The expenses of service departments are allocated as under:

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	S <sub>1</sub>	S <sub>2</sub>
S <sub>1</sub>	20%	30%	40%	-	10%
S <sub>2</sub>	40%	20%	30%	10%	-

### Section – C

5. The following particulars relate to a contract undertaken by a firm of a contractors:

Items	Amount (Rs.)	Items	Amount (Rs.)
Materials sent to site	85,349	Work Uncertified	4,500
Labour	74,375	Materials on hand, 31 March	1,883
Plant installed	15,000	Wages Accrued on hand, 31 March	2,400
Direct expenses	3,167	Direct expenses accrued on hand, 31 March	240
Establishment Charges	4,126	Plant value on hand, 31 March	11,000
Materials returned	549	Contract Price	2,50,000
Work Certified	1,95,000	Cash Received	1,80,000



You are required to prepare Contract Account, Contractee's Account, and Work - in -Progress Account.

6. What do you mean by Activity Based Costing? What are the advantages of Activity Based Costing?

#### Section-D

7. What are the managerial applications of Marginal Costing?
8. From the information given below, prepare flexible budget for 60, 75 and 80 percent capacities and fix the total overhead rates as a percent on direct wages at these capacities:

Overheads	75% capacity(Rs.)	60% capacity	80% Capacity
Variable Overheads:			
a) Indirect Material	7,500		
b) Indirect Labour	22,500		
Semi-Variable Overheads:			
a) Electricity (40% fixed, 60% variable)	37,500		
b) Repairs (80% fixed, 20% variable)	3,750		
Fixed Overheads:			
a) Salaries	1,00,000		
b) Insurance	5,000		
c) Depreciation	25,000		
Estimated direct wages Rs. 40,250 at 75% capacity			

**Exam Code: 108504**  
**(50)**

**Paper Code: 4245**

**Programme: Bachelor of Commerce**  
**Semester-IV**

**Course Title: Electronic Banking and Risk Management**  
**(Honours)**

**Course Code: BCRL-4628Opt-A(II)**

**Time Allowed: 3 Hours**

**Max Marks: 40**

**Note: Students are required to attempt five questions in all with one question from each section. The fifth question may be attempted from any section. Each section carries (8) marks.**

**SECTION A**

1. Write short notes on a) Cheque truncation; b) SWIFT
2. Discuss electronic banking and its effect on banking operations.

**SECTION B**

3. Write a note on developments in banking technology at the global level and opportunities it holds.
4. What do you mean by bank net, RBI net and data net?

### SECTION C

5. What are the considerations involved in designing a risk management framework in banks?
6. Discuss important strategies for management of systematic risks in banks.

### SECTION D

7. What are the different measures which can be adopted by banks for measuring risks?
8. What is asset liability management? Why is it important for banks'?

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KMU-II

Exam Code: 103304  
(20)

Paper Code: 4111

Programme: Bachelor of Science (Economics)  
Semester IV

Course Title: Quantitative Techniques (Quantitative  
Techniques-IV)

Course Code: BECL-4453 ✓

Time Allowed: 3 Hours

Max Marks: 80

Note: 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 16 marks. Use of simple calculator & log table is allowed

**Section A**

- (a) Define modified exponential curve. What are its different shapes  
(b) Fit a parabola of Second degree to the following data:  

X	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Y	1.1	1.3	1.6	2.0	3.7	3.4	4.1

(6,10)
- Fit the multiple linear regression  $X_1$  on  $X_2$  and  $X_3$  from the following data:  

$X_1$ :	5	3	2	4	3	1	8
---------	---	---	---	---	---	---	---

$X_2$ :	2	4	2	2	3	2	4	
$X_3$ :	21	21	15	17	20	13	32	(16)

#### Section B

- (a) A problem in statistics is given to 3 students whose chances of solving the problem are , and respectively. Find the probability that problem is solved.  
(b) Two unbiased dice are thrown. Find expected value of sum of numbers of point on them. (8, 8)
- In a bolt factory Machines A, B and C manufacture respectively 20%, 30% and 50% of the total of its output. Of them 5, 4 and 2 percent respectively are defective bolts. A bolt is drawn at random from the product and is found to be defective. What is the probability that it was manufactured by machine B? (16)

#### Section C

- (a) Derive Binomial distribution in respect to mean, variance, skewness, kurtosis and additive properties.  
(b) Four unbiased coins are tossed 160 times. Find the expected frequencies (8, 8)
- Explain the properties of Gamma function in details. (16)

#### Section D

- Explain Standard Error of Estimate in detail. (16)
- What is random sampling? Discuss its various types with the help of an example. (16)

Exam Code: 108604  
(30)

Paper Code: 4277

Programme: Bachelor of Science (Fashion Designing)  
Semester-IV

Course Title: History of Costumes

Course Code: BFDM-4231 ✓

Time Allowed: 3 Hours

Max Marks: 50

Attempt five questions, selecting at least one question from each section. The fifth question can be attempted from any section. Each question carries equal marks. (10 marks.)

**Section-A**

1. Explain in detail the male costumes of Kushan period with special reference to hairstyle and headgears.
2. Discuss the any ten state male and female Indian costumes.

**Section-B**

3. Discuss the costumes worn Women during Gupta period.
4. Explain the costumes worn during Mughal Period.

### **Section-C**

5. Explain the male and female costumes of Jammu Kashmir with special reference to hairstyle and headgears.
6. Explain the male and female costumes of Gujrat.

### **Section-D**

7. Explain the male and female costumes of West Bengal.
8. Explain the traditional Tunics and Himations of Greece.



Exam Code: 108604  
(30)

Paper Code: 4278

Programme: Bachelor of Science (Fashion Designing)  
Semester-IV

Course Title: Garment Construction and Draping

Course Code: BFDM-4232

Time Allowed: 3 Hours

Max Marks: 40

Note: Attempt five questions, selecting one question from each section and fifth question can be attempted from any section. Each question carries 8 marks.

**Section-A**

1. What factors will you keep in mind while selecting clothing for school going children? 8
2. How a wardrobe should be selected as per occupation and season? 8

**Section-B**

3. Explain various pattern alterations with respect to Bust and neck fitting problems in Bodice? 8
4. What is pattern alteration. Discuss guidelines to be followed to alter the patterns? 8

**Section-C**

5. Discuss tools and equipments used in Draping? 8
6. Write in detail about steps involved in preparation of Muslin for Draping? 8

**Section-D**

7. Discuss
- a) Lining
  - b) Interlining 4X2=8
8. What do you know about handling satin and silk fabrics during stitching? 8

**Bachelor of Science (Home Science) Semester –IV****Course Title: Consumer Economics****Course Code : BHSL-4172** ✓**Time Allowed : 3 Hours****Max Marks :40**

**Note: Attempt five questions in all, selecting at least one question from each section. The fifth question can be attempted from any section. Each question carries 8 marks.**

**Section –A**

1. What is Consumer Protection? Explain the process for consumer protection. 2,6
2. What is Consumerism? Explain its scope with the help of examples. 2,6

**Section –B**

3. What are Consumer Responsibilities? How business malpractices can be checked through consumer responsibilities? 2,6
4. What is consumer exploitation? Discuss frauds and business malpractices adopted by business persons to exploit consumers. 2,6

**Section –C**

5. What is Labelling? Explain types of Labelling. 2,6
6. What is Packaging? Briefly explain its problems and advantages. 2,6

**Section –D**

7. Explain advantages and qualities of a good salesperson. 4, 4
8. Explain advantages and modes of advertising. 4, 4

**Exam Code: 108204**  
**(20)**

**Paper Code: 4196**

**Programme: Bachelor of Science (Home Science)**  
**Semester-IV**

**Course Title: Developmental stages till Old Age**

**Course Code: BHSL- 4281** ✓

**Time Allowed: 3 Hours**

**Max Marks: 40**

**Attempt five questions in all, selecting atleast one question from each section. The fifth question may be attempted from any section. All questions carries equal marks.**

**Section-A**

1. State the main problems of adolescence? What suggestions should be given to parents for tackling these problems? 8
2. What emotional and physical changes occur during puberty in both boys and girls? 8

**Section-B**

3. What do you mean by adult hood? What are the developmental tasks of adulthood? 8
4. What is parenthood? Discuss major issues influencing the decisions to become a parent. 8

### Section-C

5. Describe the physical and psychological changes that occur during middle adulthood. 8
6. What is grand parenting? Discuss the role of grand parents in the family. 8

### Section-D

7. What is retirement planning? Explain its importance. 8
8. What type of family adjustments are there in old age? Discuss the role of family members in helping older people to adjust. 8

Exam Code: 108204  
(20)

Paper Code: 4202

Programme: Bachelor of Science (Home Science)  
Semester-IV

Course Title: Applied Chemistry



Course Code: BHSM-4087 ✓

Time Allowed: 3 Hours

Max Marks: 30

Note: Candidates are required to attempt five questions in all selecting at least one question from each section. The fifth question may be attempted from any section.  
Each question carries 6 marks.

### SECTION A

1. (a) Write down the structure of following:  
(i) 2-Chloropropane  
(ii) Heptan-4-one  
(iii) Cyclopentane (3)
- (b) Write IUPAC names of the following:  
(i)  $\text{CH}_3\text{-CH}_2\text{-CH=CH-CH=CH-OH}$   
(ii)   
(iii)  $\text{CH}\equiv\text{CH}$  (3)
2. (a) Give the structure of following:  
(i) Picric Acid  
(ii) Benzoic Acid  
(3)
- (b) Write IUPAC names of following:  
(i)  $\text{Cl-CH}_2\text{-CH}_2\text{-CH}_2\text{-CH}_2\text{-Cl}$   
(ii)  (3)

### Section-B

3. (a) Explain the cleaning mechanism of soaps alongwith labeled diagrams? (3)  
(b) What are detergents? How these are better cleansing agents than soaps? (3)
4. (a) Differentiate between soaps and detergents. (3)  
(b) Write detailed note on preparation of Soaps. (3)

### Section-C

5. (a) What are plastics? Give its structure. (3)  
(b) What type of material is rubber? What are different types of rubber? (3)
6. (a) Mention the advantages of synthetic rubber over natural rubber. (3)  
(b) Write a short note on composition of Cosmetics. (3)

### Section-D

7. (a) Give the composition, properties and uses of Compressed Natural Gas (CNG). (3)  
  
(b) What do you mean by fuels? How are these classified? (3)
8. (a) Write a detailed note on Fuels for home using suitable examples. (3)  
(b) What are advantages of LPG over gaseous fuels? (3)



Exam Code: 108204  
(20)

Paper Code: 4198

Programme: Bachelor of Science (Home Science)  
Semester-IV

Course Title: Kitchen Design and its Equipment

Course Code: BHSM-4283 ✓

Time Allowed: 3 Hours

Max Marks: 60

Note- Student are required to attempt five questions in all. One question from each section and the fifth question may be attempted from any section. Each question carries 12 marks

#### SECTION A

1. a) How to plan efficient storage area in the kitchen. (6)  
b) Demonstrate lighting in the kitchen. (6)
2. a) Demonstrate the planning of ventilation and drainage in the kitchen. (6)  
b) What are the material specifications for kitchen floor, walls and ceiling? (6)

### SECTION B

3. What measures should be taken for selection and efficient use of equipment. (12)
4. Explain selection, care and operation of:
  - a) Microwave oven,
  - b) Dishwasher. (12)

### SECTION C

5. Mention general characteristics, suitability and care of copper and brass articles. (12)
6. Write down general characteristics, suitability and care of earthenware and plastics. (12)

### SECTION D

7. Describe —
  - a) Porcelain Enamel and
  - b) Synthetic baked enamel. (12)
8. Describe —
  - a) Surface finishes like copper claid and chromium
  - b) Teflon coated non- stickcookware. (12)

Exam Code: 108204  
(20)

Paper Code: 4199

Programme: Bachelor of Science (Home Science)  
Semester-IV

Course Title: Quantity Food Production and Service

Course Code: BHSM-4284 ✓

Time Allowed: 3 Hours

Max Marks: 60

Note- Student 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 12 marks

**SECTION — A**

1. Explain the aims and objectives of different food service and beverages outlet.
2. Explain the food and beverage service methods table.

**SECTION — B**

3. What is meal planning? Write its importance, factors, construction writing and display.

4. What do you understand by cost control? Write the standardization and portion size of recipe.

#### **SECTION — C**

5. Write the characteristics of food quality in food service. Explain quantitative, sensory and nutritional qualities.
6. Explain food production system, process and effects of cooking methods on nutritional quality of food.

#### **SECTION — D**

7. What is waste product handling? Write the planning for waste disposal(solid and liquid waste).
8. Write in brief about the service area - planning of service area, table sizes and decor of service area.

Exam Code: 108204  
(20)

Paper Code: 4200

Programme: Bachelor of Science (Home Science)  
Semester-IV

Course Title: Traditional Embroideries, Textiles and  
Costumes of India

Course Code: BHSM-4285 ✓

Time Allowed: 3 Hours

Max Marks: 60

Note: The question paper consists of four sections. Candidates are required to attempt five questions, selecting at least one question from each section. Fifth question may be attempted from any section. Each question carries 12 marks.

#### Section A

1. Why Kantha is called poor man's blanket? Explain the fabric, motifs and stitches used in Kantha?
2. Explain different types of Kutch embroidery in detail?

#### Section B

3. Explain Baluchari and Kashmir shawls?
4. Explain Mulmul and Jamdani fabrics?

### Section C

5. Explain the technique and different types of Patola fabric?
6. What is the process of Bandhani. Explain its types?

### Section D

7. Explain the male and female costumes of Punjab?
8. Explain the male and female costumes of Kerala?

Exam Code: 108204  
(20)

Paper Code: 4201

Programme: Bachelor of Science (Home Science)  
Semester-IV

Course Title: Applied Physics

Course Code: BHSM-4396 ✓

Time Allowed: 3 Hours

Max Marks: 30

Note: Attempt FIVE questions selecting ONE question from each section A, B, C and D. The fifth question may be attempted from any section. Each question carries 6 marks.

#### SECTION-A

1. What is Thermostat. Explain its working with the help of a diagram. (6)
2. (a) Define Reflection. State laws of Reflection. (2)  
(b) What are the characteristics of image formed by plane mirror. (3)  
(c) When an object is held between two plane mirrors inclined at an angle  $\theta=60^\circ$ , find the total Number of images formed. (1)



### SECTION-B

3. What is CFL. Explain its construction. Compare it with incandescent lamps. (6)
4. Define Electromagnetic Spectra. Give properties and uses of Radio waves and Microwaves. (6)

### SECTION-C

5. (a) How energy is transferred from power plant to the home. (2)  
(b) Explain Kilowatt hour meter. (4)
6. (a) What safety precautions should be taken while using Electricity. (2)  
(b) Explain two types of fuses. (4)

### SECTION—D

7. Explain Heating Effect of current. State Joule's law of heating, Why nichrome is used as a heating element in heating appliances. (6)
8. Discuss the working of AC motor. (6)

Bachelor of Science (Information Technology) Semester IV

Course Title: Database Management System

Course Code: BITL-4111 ✓

Time Allowed: 3 Hours

Max Marks: 60

Note: Candidates are required to attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 12 marks.

**Section A**

Q1. Elaborate three-level architecture of database system. Explain why we need mapping between the levels and also Explain the various type of data independence. (12)

Q2. (a) Explain Network Model. (08)

(b) What is DBA? What are the responsibilities of DBA? (04)

**Section B**

Q3. What is Relational Algebra? Explain different operators used in it. How it is different from Relational calculus? (12)

Q4. Write the short note on:

a) Codd's Rules

b) E-R Diagram (6X2)

**Section C**

Q5. Why we need to Normalization in database? Explain 2NF and how the anomalies of the 1NF removed in 2NF? (12)

Q6. Why concurrency control is needed? How to control concurrency using locking methods. (12)

**Section D**

Q7. What are cursors? Explain implicit and explicit cursors with example. (12)

Q8. Explain with example:

a) DDL and DML Statements

b) Big Data and Analytics (6X2)

Bachelor of Science (Information Technology) Semester - IV

Course Title: Internet Applications

Course Code: BITL-4112 ✓

Time Allowed: 3 hrs

Max. Marks: 60

Note: Attempt five questions in all, selecting at least one question from each section. The fifth question can be attempted from any section. Each question carries 12 marks.

**Section-A**

- Q:1 What do you mean by ISP? What are various ISP connection ways or options? (12)
- Q :2 (a) Write note on DNS? Explain different DNS applications? (6)
- (b) Explain the working of Email in details? (6)

**Section-B**

- Q :3 Define FTP and Explain the features of FTP? (12)
- Q :4 Write a short note on TELNET? (12)

**Section-C**

- Q:5 (a) What is CSS? Discuss the various parts of CSS rule? (6)
- (b) What is External style sheet? How is it different from Internal Style sheet? (6)
- Q: 6 (a) What are Undeclared and Undefined Variables? (6)
- (b) What is DOM? Explain different levels of DOM? (6)

**Section-D**

- Q :7 (a) What is Wordpress? What are the different system requirement for installing Wordpress? (6)
- (b) Explain Pages in Wordpress? (6)
- Q :8 (a) Explain Google map and it's working ? (6)
- (b) What do you mean by Word press plug-in? (6)

Time Allowed: 3 Hours

Max Marks: 60

Note: Candidates are required to attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 12 marks.

**Section A**

Q1. (a) Explain the Object-Oriented features of Java.

(b) What is the difference between Classes and Objects? Explain with example. (2X6)

Q2. (a) What are the various primitive data types used in Java? (8)

(b) How to compare and concatenate the strings with example. (4)

**Section B**

Q3. What are methods in Java? Explain the concept of Method Overloading and Method Overriding with example. (12)

Q4. Difference between Abstract Class and Interface with example. Write a program showing multiple inheritance using interface. (12)

**Section C**

Q5. Explain the following:

(a) Try-catch

(b) Try-finally

(c) Throw-throws. (3X4)

Q6. What is Multithreading? How multithreading is done in Java? (12)

**Section D**

Q7. Write the note on following:

(a) Buffered input and output stream

(b) JDBC (2X6)

Q8. Explain JDBC drivers, steps to connect to the database, connectivity with MYSQL. (12)



Time Allowed - 3 Hours

Maximum Marks: 60

Note- Attempt five Questions in all selecting at least one question from each section. Fifth question can be attempted from any section. Each Question carries equal (12) marks.

Section-A

1. What are the various steps to open an online business? Specify hardware/ software as well as technical issues? (12)
2. What is E- commerce? Explain the E-commerce framework in detail? (12)

Section-B

3. What is EDI? What are the components of EDI? Discuss business before EDI? (12)
4. Discuss the various feature / characteristics of EDI? How can we successfully Implement EDI in business. (12)

Section-C

5. What are the laws of E-commerce? Explain legal issues concerns for the growth of E-commerce? (12)
6. Discuss the following in detail giving their relative merits and demerits
  - (a) Digital Signature
  - (b) Electronic Cash (06+06)

Section-D

7. What do you mean by change management? Explain the role of change Management strategy in BPR (Business Process Re-Engineering)? (12)
8. Discuss case studies to demonstrate usefulness of E-Commerce in Bank? (12)

Exam Code: 105704  
(20)

Paper Code: 4269

Programme: Bachelor of Science (Information Technology)  
Semester-IV

Course Title: Foundation of Statistical Computing

Course Code: BITM-4118

Time Allowed: 3 Hours

Max Marks: 40

Note: Attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. All question carry 8 marks. Use of Simple calculator is allowed.

**Section-A**

1. Explain the concept of Sampling and Cumulative Sampling. 8
2. Explain vectors in R. What various operations can be applied on vectors? Explain with programming examples. 8

**Section B**

3. Explain list. What various operations can be applied on list? Explain with programming examples. 8
4. Explain Data Frames and Factors. Explain various operations that can be applied on Data Frames. 8

### Section C

5. Explain scan and readline functions in R with programming examples. 8
6. Explain looping and decision making statements in R with programming examples. 8

### Section D

7. Explain various packages and functions in R for drawing Simple and histogram graphs. 8
8. Write a program using R script to check whether the given number is palindrome or not. 8



Exam Code: 108704  
(20)

Paper Code: 4140

Programme: Bachelor of Arts (Journalism & Mass Communication)  
Semester-IV

Course Title: Media: Business Communication

Course Code: BJML-4311

Time Allowed: 3 Hours

Max Marks: 60

Note: Attempt Five questions, selecting at least one question from each section. The fifth question may be attempted from any Section. Each question carries 12 marks.

**Section-A**

1. What do you mean by Communication? Discuss its role and importance in any Business organisation.
2. Which are the various barriers to Effective Communication?

**Section-B**

3. Throw light upon the main types of communication.
4. Explain the concept of Vertical and Horizontal as well as Upward and Downward Communication.

### Section-C

5. Discuss various types of Business Letters.
6. Which are the various points should be kept in mind while writing a report?

### Section-D

7. How communication is helpful in Negotiation?
8. Discuss the role played by communication in any conflict management in the organisation.

Exam Code: 108704  
(20)

Paper Code: 4141

Programme: Bachelor of Arts (Journalism & Mass Communication)  
Semester-IV

Course Title: Programme Formats: Radio and TV

Course Code: BJML-4312 ✓

Time Allowed: 3 Hours

Max Marks: 60

Note: 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 will carry twelve marks.

**Section A**

1. Write a detailed note on the technique of writing for Radio Talk?
2. Write short notes on Phone In & Radio Bridge.

**Section B**

3. Write a detailed note on Voice Culture?
4. How a listener can be made connected to the programme

### Section C

5. Write a detailed note on the programme objectivity?
6. Explain in detail the role of script in programme preparation

### Section D

7. Write a note on the Piece to Camera and its significance in television news?
8. What are the things that need to be kept in mind while anchoring a Television programme.

Exam Code: 108704  
(20)

Paper Code: 4142

Programme: Bachelor of Arts (Journalism & Mass Communication)  
Semester-IV

Course Title: Video Production: Idea to Screen

Course Code: BJML-4313 ✓

Time Allowed: 3 Hours

Max Marks: 60

Note: Attempt Five questions in all, One question from each section and fifth question can be attempted from any Section. Each question carries 12marks.

**Section A**

1. Write an extended note on lighting.
2. Discuss various shots and camera movements.

**Section B**

3. Do you think researching the topic before developing a programme is important? Discuss.
4. What is a Storyboard? Write a note on script layout.

### **Section C**

5. What is Editing? Explain rules of editing.
6. Elaborate on Editing sound/audio.

### **Section D**

7. How a programme can be evaluated?
8. Discuss the importance of evaluation and analysis of a programme.

Exam Code: 108704  
(20)

Paper Code: 4143

Programme: Bachelor of Arts (Journalism & Mass Communication)  
Semester-IV

Course Title: Folk Media

Course Code: BJML-4314 ✓

Time Allowed: 3 Hours

Max Marks: 60

Note: Attempt Five questions in all, selecting at least one question from each section and fifth question can be attempted from any Section. Each question carries 12 marks.

**Section-A**

1. What do you mean by Folk Media? Explain various channels of Folk Media used in India for Mass Communication?
2. Comment upon the relevance of Folk Media in the modern time.

**Section-B**

3. What do you know about Puppetry? Discuss its various types with suitable examples.
4. Discuss Music and Dance as significant Instruments of Folk Media.



**Section-- C**

5. Explain Radio and Television as promoters of Folk Media
6. Describe the use of Folk Media in Indian Cinema?

**Section-D**

7. Explain the features of Bhangra and Ghidha as folk forms?
8. Write a note on FTII and DAVP.

Exam Code: 108704  
(20)

Paper Code: 4144

Programme: Bachelor of Arts (Journalism & Mass Communication)  
Semester-IV

Course Title: Advertising: Concepts and Principles

Course Code: BJML-4315 ✓

Time Allowed: 3 Hours

Max Marks: 60

**Note:** Attempt Five questions in all, selecting at least one question from each section and fifth question can be attempted from any Section. Each question carries 12 marks.

**Section A**

1. Define the term Advertising. Trace the growth of Advertising in India
2. 'Advertising is an act of Business and Commerce'. Do you agree'?

**Section-B**

3. Explain various needs for advertising in detail.
4. What do you know about the Functions of Advertising?

### Section-C

5. Which are the various types of Advertising? Explain with suitable examples.
6. Discuss the importance of Regional, National and Co-operative ads.

### Section-D

7. Discuss in detail about Advertising as a tool of Mass Communication?
8. Comment upon the role of advertising in the development of a country like India.

Exam Code: 107504  
(20)

Paper Code: 4145

Programme: Bachelor of Arts (Honours) English  
Semester-IV

Course Title: Elements of Novel-II

Course Code: BOEL-4211 ✓

Time Allowed: 3 Hours

Max Marks: 40

Section A

Answer the following questions in about 100 words each. Each question carries 4 marks. (4x4 = 16)

1. a) Who is Manolin ?  
Or  
b) Who is Di Maggio ?
2. a) Who is Claggart ?  
Or  
b) What were the last words of Captain Vere ?
3. a) Who is Hugo?  
Or  
b) Who actually believed Edward to be the King ?
4. a) Explain Onomatopoeia.  
Or  
b) Explain Narrative Technique.

### Section B

Answer any 1 question in about 600 words (1x8 =8)

5. Describe Santiago's struggle with the fish.
6. Describe Santiago -Manolin relationship.

### Section C

Answer any 1 question in about 600 words (1\*8 =8)

7. Why Billy Budd has to die ?
8. Write a character sketch of Captain Veré.

### Section D

Answer any 1 question in about 600 words (1\*8 =8)

9. Write a character sketch of Tom Canty.
10. Write a character sketch of Miles Hendon.

Exam Code: 107504  
(20)

Paper Code: 4146

Programme: Bachelor of Arts (Honours) English  
Semester-IV

Course Title: English Drama: Jacobean Period to 19<sup>th</sup> Century

Course Code: BOEL-4212 ✓

Time Allowed: 3 Hours

Max Marks: 40

SECTION-A

Attempt 4 questions in 100 words.

- Comment on the opening of The Duchess of Malfi.
  - Discuss the character of Bosola in The Duchess of Malfi.
- Discuss the title of Oliver Goldsmith's She Stoops to Conquer.
  - Discuss the character of Kate in She Stoops to Conquer.
- What is the significance of the title of Richard Sheridan's The Rivals.
  - Discuss the character of Mrs Malaprop in The Rivals.
- Write a note on Comedy of Manners.
  - Write a note on Three Classical Unities. (4x4=16)

### Section B

**Note : Answer any one in 600 words**

5. Discuss The Duchess of Malfi as a Tragedy.
6. How is gender represented in The Duchess of Malfi?  
(1x8=8)

### Section C

**Note : Answer any one in 600 words.**

7. What is the theme of She Stoops to Conquer?
8. Can She Stoops to Conquer be regarded as a comedy of manners?  
(1x8=8)

### Section D

**Note : Answer any one in 600 words.**

9. What are the major themes in The Rivals and how are they expressed in the action of the play?
10. Discuss the character of Lydia in The Rivals.  
(1x8=8)



Exam Code: 107504  
(20)

Paper Code: 4147

Programme: Bachelor of Arts (Honours) English  
Semester-IV

Course Title: Victorian Poetry

Course Code: BOEL-4213 ✓

Time Allowed: 3 Hours

Max Marks: 40

Section- A

Note: Attempt the following questions in about 100 words each.

1. a. State the Greek myth on which Tennyson's poem 'Tithonus' is based.  
b. "To strive, to seek, to find, and not to yield."  
Comment on the concluding line of Tennyson's 'Ulysses'.
  
2. a. "And a voice less loud, through its joys and fears."  
Whose voice is it and why is it less loud? Explain in context with Robert Browning's 'Meeting at Night'.

- b. Comment on the significance of the line 'That moment she was mine' in 'Porphyria's lover'.
3. a. What are the symptoms of growing old according to Matthew Arnold in his poem 'Growing Old'?
- b. What do the 'pebbles' symbolize in Matthew Arnold's 'Dover Beach'?
4. Attempt any 2 literary terms in about 100 words. Each term carries two marks.
- a. Dramatic Monologue
  - b. Imagery
  - c. Rhyme Scheme
  - d. Cacophony

4x4=16

**Note: Attempt three questions (one each from section B, C & D) in about 600 word.**

#### **Section-B**

2. Discuss symbolism and pictorial quality in 'The Lady of Shallot'.
3. Critically analyse Tennyson's poem 'Crossing the Bar' and also comment on its theme. (1x8=8)

#### **Section-C**

4. Sum up the main idea of 'Pippa's Song' throwing light on Browning's optimism.
5. What makes "My Last Duchess" a perfect exemplar of dramatic monologue? Also critically analyse the poem. (1x8=8)

#### Section-D

6. Matthew Arnold's poem 'Dover Beach' suggests that the loss of faith affects the poet and his thoughts. Comment and also critically analyse the poem.

7. Write a detailed note on Shakespeare's personality based on Arnold's sonnet 'Shakespeare'.

(1x8=8)

Exam Code: 107504  
(20)

Paper Code: 4148

Programme: Bachelor of Arts (Honours) English  
Semester-IV

Course Title: Indian Poetry and Drama

Course Code: BOEL-4214 ✓

Time Allowed: 3 Hours

Max Marks: 40

Section- A

**Note:** Answer the following questions in about 100 Words each. Each question carries 4 marks.

1. a. Who does Tagore address as the prisoner? How does he become one?  
Or  
b) How does Tagore celebrate the innocence and simplicity of children?
2. a. Attempt a brief character sketch of Barani in the play Tughlaq by Girish Karnad.  
Or  
b. How does Aziz help Mohammad Tughlaq unburden his soul towards the climax of the play.
3. a. Comment on the hypocrisy of the elite class in the play Seven Steps Around the Fire by Mahesh Dattani.  
Or

- b. Attempt a brief character sketch of Champa in the play Seven Steps Around the Fire by Mahesh Dattani.
4. a. What do you mean by the literary term Catharsis? Give suitable example.  
Or  
b. Differentiate between rhyme and rhythm with suitable examples. (4x4=16)

#### Section- B

**Attempt any one question in about 600 words.**

5. Comment on Tagore's use of symbols in the songs in Geetanjali.
6. Why does Tagore refute the yogi's claim of attaining salvation through renunciation? (1x8 =8)

#### Section C

**Attempt any one question in about 600 words.**

7. Give a detailed pen portrait of Mohammad Tughlaq in the play Tughlaq by Girish Karnad.
8. Comment on the role of irony and satire in the play Tughlaq by Girish Karnad. (1X8 =8)

#### Section D

**Attempt any one question in about 600 words.**

9. Highlight the themes interwoven in the play Seven Steps Around the Fire by Mahesh Dattani.
10. How would you explain Seven Steps Around the Fire by Mahesh Dattani as a murder mystery. (1 X8 =8)

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12/11/20-21

Exam Code: 107504  
(20)

Paper Code: 4149

Programme: Bachelor of Arts (Honours) English  
Semester-IV

Course Title: American Poetry and Drama

Course Code: BOEL-4215 ✓

Time Allowed: 3 Hours

Max Marks: 40

Section- A

Note: - Answer the questions in 100 words each. Each question carries four marks.

1. a) What do the words, 'lovely, dark and deep', suggest about the 'woods' in the poem 'Stopping by Woods on a Snowy Evening'?  
b) Which country's history is referred in the poem 'The Gift Outright'?
2. a) What kind of relationship exists between mother and daughter in Mourning Become Electra?  
b) What is significance of the title of the play Mourning Become Electra?
3. a) How did Larry die in the play All my Sons and what was his family belief about his death



- b) What are various superstitious beliefs held by Kate Keller in the play All my Sons
4. a) Elaborate the term Metre.  
b) Elaborate the term Psychological Drama

4x4=16

**Note: - Candidates will have to attempt three questions in all selecting one from the sections B, C and D in 600 words each. Each question carries eight marks.**

#### Section- B

5. Discuss the Wife and Husbands' ways of grieving in the poem 'Home Burial'
6. Give critical appreciation of the poem, 'The gift outright'.

#### Section- C

7. Discuss Mourning Become Electra as a Modern version of Greek Tragedy.
8. Discuss the plot of the play Mourning Become Electra.

#### Section- D

9. Discuss Joe Keller as a Tragic Hero in the play All my Sons.
10. What picture does the play All my Sons give of the American Society? (3x8=24)

Exam Code: 107504  
(20)

Paper Code: 4150

Programme: Bachelor of Arts (Honours) English  
Semester-IV

Course Title: History of England(1853-1914)

Course Code: BOEL-4276 ✓

Time Allowed: 3 Hours

Max Marks: 40

Note:

Section A:- Attempt any four questions, selecting at least one from each unit in 100 words. Each question carries 4 marks.

Section -B, C and D:-Attempt one question from each section in 600 words. Each question carries 8 marks.

#### SECTION-A

1. a. Feninas
- b. New Imperialism
- c. Berlin Conference
- d. Armenian Massacre
- e. The Boxer Rising
- g. The Trades dispute Act

4x4=16

### SECTION-B

2. Palmerstone was conservative home and Liberal abroad. Explain. 8
3. What was the extent of British Empire in 1880. 8

### SECTION-C

4. New imperialism led to scramble for colonies in Africa and Asia by European powers. Explain. 8
5. Discuss the Crimean War (1852-1856). 8

### SECTION-D

6. Describe the significant developments which took place in India under the Colonial rule in the 19<sup>th</sup> Century. 8
7. Evaluate Gladstone's tenure as Prime Minister. 8

Exam Code: 107504

216 - 3/6/2023 mor

Paper Code: 4151

**Bachelor of Arts (Honours) English (Semester-IV)**

**Course Title: Social Change in India - B**

**Course Code: BOEL-4477** ✓

**Time Allowed: 3hrs**

**Max. Marks: 40**

**Note: There are Four Sections – A, B, C and D. In section A attempt Four questions selecting one from each Unit and fourth can be done from any Unit. In section B, C, D Attempt one question from each section.**

**Section A**

**Unit I**

1. What is Class. Explain how it is different from Caste ?
2. Define Gender. How is it different from sex ?

**Unit II**

3. Explain the concept of Domestic Violence. How it can be stopped?
4. What is Female Foeticide how is it different from infant mortality ?

**Unit III**

5. What is the meaning of Deviance. ?
6. Explain the various forms of Deviance ?

(4\*4=16)

**Section B**

7. Discuss how Caste is being replaced by Class. ? 8
- Explain the concept of Race and its impact on society ? 8

**Section C**

8. Is the problem of Dowry still prevalent in India. Discuss ? 8

**OR**

Is the Divorce rate Increasing or decreasing in India. Explain ? 8

**Section D**

9. What is Social disorganization. Explain in detail ? 8

**OR**

Elaborate how Deviance is a factor responsible for society being disorganized ? 8

Exam Code: 112414  
(30)

Paper Code: 4203

Programme: Bachelor of Science(Honours) Mathematics  
Semester-IV

Course Title: Vector Calculus

Course Code: BOML-4331 ✓

Time Allowed: 3 Hours

Max Marks: 80

Note: Attempt five questions in all selecting at least one question from each section. The fifth question may be attempted from any section. All questions carry equal marks (16 marks each).

Section A

Q1. (a) Verify whether  $[\vec{b} \times \vec{c}, \vec{c} \times \vec{a}, \vec{a} \times \vec{b}] = [\vec{a}, \vec{b}, \vec{c}]^2$  or not.

(b) If  $\vec{A} = x^2yz\vec{i} - 2xz^3\vec{j} + xz^2\vec{k}$ ,  $\vec{B} = 2x\vec{i} + y\vec{j} - x^2\vec{k}$ , then find  $\frac{\partial^2}{\partial x \partial y}(\vec{A} \times \vec{B})$  at  $(1, 0, -2)$ .  
[8 X 2=16]

Q2. (a) Calculate the angle between the surfaces  $x^2 + y^2 + z^2 = 9$  and  $z = x^2 + y^2 - 3$  at the point  $(2, -1, 2)$ .

(b) Find the directional derivative of the function  $\phi^2$ , where  $\phi = xy^2\vec{i} + zy^2\vec{j} + xz^2\vec{k}$  at the point  $(2, 0, 3)$  in the direction of the tangent to the curve  $x = a \sin t, y = a \cos t, z = at$ ; at  $t = \frac{\pi}{4}$ .  
[8 X 2=16]

Section B

Q3. (a) Justify whether  $\text{div curl } \vec{v} = 0$ , for any vector  $\vec{v}$ .

(b) Discuss and elaborate physical interpretation of Divergence.

[8 X 2=16]

Q4. (a) Evaluate  $\text{curl}(\vec{r} \sin r)$ , where  $r$  and  $\vec{r}$  have their usual meaning.

(b) Determine the constant  $a$ , so that the vector  $\vec{F} = (x + 3y)\vec{i} + (y - 2z)\vec{j} + (x + az)\vec{k}$  is solenoidal.

[8 X 2=16]

Section C

Q5. (a) Express  $\text{curl } \vec{A}$  in orthogonal curvilinear coordinates.

(b) Find the circulation of  $\vec{F} = y\hat{i} + z\hat{j} + x\hat{k}$  round the curve C where C is the circle

$$x^2 + y^2 = 1, z = 0.$$

[8 X 2=16]

Q6. (a) Find the work done in moving the particle in a field  $\vec{f} = 3x^2\hat{i} + (2xz - y)\hat{j} + z\hat{k}$  along the line joining the points (0, 0, 0) to (2, 1, 3).

(b) Verify Green's theorem in plane for  $\oint_C (xy^2 - 2xy)dx + (x^2y + 3)dy$ , around the boundary C of the region enclosed by  $y^2 = 8x$  and  $x = 2$ .

[8 X 2=16]

Section D

Q7. (a) State and prove Gauss Divergence Theorem.

(b) Verify Gauss Divergence Theorem for the vector  $\vec{F} = y\hat{i} + x\hat{j} + z^2\hat{k}$  over the cylinder region bounded by  $x^2 + y^2 = 9$ ,  $z = 0$  and  $z = 2$ .

[8 X 2=16]

Q8. (a) State and prove Stoke's Theorem.

(b) Verify Stoke's Theorem for a vector field defined by  $\vec{F} = 2y\hat{i} + 3x\hat{j} - z^2\hat{k}$ , where S is the upper half surface of the sphere  $x^2 + y^2 + z^2 = 9$  and C is its boundary.

[8 X 2=16]



Programme: Bachelor of Science(Honours) Mathematics  
Semester-IV

Course Title: Partial Differential Equations

Course Code: BOML-4332 ✓

Time Allowed: 3 Hours

Max Marks: 80

Note: Attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries equal (16) marks

Section- A

1. (a) Form the partial differential equation by eliminating a & b from

$$2z = \frac{x^2}{a^2} + \frac{y^2}{b^2}$$

- (b) Form the partial differential equation by eliminating arbitrary functions f & g from

$$z = f(x^2 - y) + g(x^2 + y) \quad (8,8)$$

2. (a) Discuss Lagrange's method of solving  $Pp + Qq = R$ , where P, Q, R are the functions of x, y, z.

(b) Solve  $x(y - z)p + y(z - x)q = z(x - y)$  (8,8)

Section- B

3. (a) Find the integral surface of the partial differential equation

$$(x - y)p + (y - x - z)q = z \text{ passing through the curve } z = 1, x^2 + y^2 = 1$$

- (b) Find a complete integral of  $(p^2 + q^2)y = qz$  using Charpit's method. (8,8)

4. (a) Solve  $(D^3 - 4D^2D' + 4DD'^2)z = \cos(2x + y)$

(b) Solve  $(D^2 - DD' - 2D'^2)z = (y - 1)e^x$  (8,8)

Section- C

- 5(a) Solve  $(D^2 - DD' + D' - 1)z = \cos(x + 2y) + e^x + xy + 1$

(b) Solve  $(D^2 - D'^2 - 3D + 3D')z = xy$  (8,8)

6. (a) Solve  $(x^2D^2 + 2xyDD' + y^2D'^2)z = x^m y^n$  where  $m + n \neq 0, 1$

(b) Solve  $x^2r - y^2t + px - qy = \log x$  (8,8)

Section- D

7. (a) Solve  $ys - p = xy^2 \cos(xy)$

(b) Find a surface satisfying  $t = 6x^3y$  and containing the two lines  $y = z = 0, y = z = 1$  (8,8)

8. (a) Reduce the equation  $x^2r - y^2t = 0$  to canonical form & hence solve it.

(b) Reduce the equation  $r + 2s + t = 0$  to canonical form and hence solve it. (8,8)



Programme: Bachelor of Science (Honours) Mathematics  
Semester-IV

Course Title: Group Theory

Course Code: BOML-4333 ✓

Time Allowed: 3 Hours

Max Marks: 80

NOTE

- 1) Paper consists of EIGHT questions of equal marks (16 marks each).
- 2) Attempt FIVE questions in all by selecting atleast ONE question from each of FOUR Sections: FIFTH question may be attempted from any Section.

SECTION-A

1. (a) State and prove division algorithm. (8)  
(b) Prove that no integer in the sequence

$$11, 111, 1111, 11111, \dots$$

is a perfect square. (8)

2. (a) Using Euclidean Algorithm obtain the integers  $x$  and  $y$  satisfying  $\text{gcd}(1769, 2378) = 1769x + 2378y$ . (8)  
(b) State and prove Fundamental theorem of Arithmetic. (8)

SECTION-B

3. (a) Let  $G$  be a group and suppose there exist two relatively prime positive integers  $m$  and  $n$  such that  $a^m b^m = b^m a^m$  and  $a^n b^n = b^n a^n$  for all  $a, b \in G$ . Show that  $G$  is abelian. (8)  
(b) Define Centre of a group  $G$ . Prove that centre of a group  $G$  is a subgroup of  $G$ . (8)
4. (a) If  $H$  and  $K$  are two subgroups whose orders are relatively prime then show that  $H \cap K = \{e\}$ . (8)  
(b) Show that for a group  $G$ ,  $Z(G) = \bigcap_{a \in G} N(a)$  where  $Z(G)$  denotes center of group and  $N(a)$  denotes normalizer of element  $a \in G$ . (8)

SECTION-C

5. (a) State and prove Lagrange's theorem. Is the converse of Lagrange's theorem is true? Justify your answer. (8)  
(b) If  $H$  and  $K$  are finite subgroups of a group  $G$ , then prove that

$$o(HK) = \frac{o(H)o(K)}{o(H \cap K)}$$

(8)

6. (a) Let  $a \in G$  be such that  $a^n = e$ . Let  $H = \langle a^r \rangle$ ,  $K = \langle a^s \rangle$ . Show that  $H \subseteq K$  iff  $\text{g.c.d}(n, s)$  divides  $\text{g.c.d}(n, r)$ . Hence deduce that  $H = K$  iff  $\text{g.c.d}(n, s) = \text{g.c.d}(n, r)$ . (8)  
(b) If a group has finite number of subgroups, then show that it is a finite group. (8)

SECTION-D

7. (a) Prove that every permutation of a finite set can be written as a cycle or as a product of disjoint cycles. (8)
- (b) What are the possible orders for the elements of  $S_6$  and  $A_6$ , also state the theorems which have been used for listing the orders. (8)
8. Show that product of two transpositions is either (i) the identity or (ii) a 3-cycle or (iii) a product of 3-cycles. (16)

Time Allowed - 3 Hours

Maximum Marks: 50

Note- Attempt five Questions in all selecting at least one question from each section. Fifth question can be attempted from any section. Each Question carries equal (10) marks.

Section-A

1. What are lists in R? Write R script to create, name, access, merge and manipulate list elements using suitable examples.
2. Describe the concept of vectors and its relevance. Create a vector with the names of your favourite fruits.
  - a) Get the length of above vector.
  - b) Get the first two fruit names from above vector.
  - c) Print the second and third fruit.
  - d) Sort the fruits alphabetically

Section-B

3. What are data frames? Create two different data frames with common information. Explain the full, left and right outer join operations on the data frames.
4. Explain the concept of factors and levels in R using suitable examples

Section-C

5. Discuss multiple ways in R to connect to Excel, read the contents of sheet and load in R object using suitable examples.
6. Discuss the control structures with conditional statements in R giving suitable examples.

Section-D

7. How can you get multiple plots in R in a single window? Discuss on single and multiple object plots in R.
8. Discuss the importance of histogram and qqplot with examples for data visualization in R.

Programme: Bachelor of Science(Honours) Physics  
Semester-IV

Course Title: Mathematics-IV

Course Code: BOPL-4333

Time Allowed: 3 Hours

Max Marks: 40

Note: Attempt five questions in all selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries equal 8 marks.

Section- A

1. (a) State and prove Cayley- Hamilton Theorem

(b) Verify Cayley – Hamilton Theorem for the matrix  $A = \begin{bmatrix} 0 & 0 & 1 \\ 1 & 2 & 0 \\ 2 & -1 & 0 \end{bmatrix}$ . Hence find inverse of A.

(4,4)

2. (a) Find the matrix A if  $\begin{bmatrix} 2 & 1 \\ 3 & 2 \end{bmatrix} A \begin{bmatrix} -3 & 2 \\ 5 & -3 \end{bmatrix} = \begin{bmatrix} -2 & 4 \\ 3 & -1 \end{bmatrix}$

(b) Prove that  $\begin{vmatrix} (b+c)^2 & a^2 & a^2 \\ b^2 & (c+a)^2 & b^2 \\ c^2 & c^2 & (a+b)^2 \end{vmatrix} = 2abc(a+b+c)^3$  (4,4)

Section- B

3. (a) Find the rank of the Matrix  $A = \begin{bmatrix} 2 & 3 & -1 & -1 \\ 1 & -1 & -2 & -4 \\ 3 & 1 & 3 & -2 \\ 6 & 3 & 0 & -7 \end{bmatrix}$

(b) Find the value of K so that the Equation

$$x - 2y + z = 0$$

$$3x - y + 2z = 0$$

$y + Kz = 0$  have (i) Unique solution (ii) Infinitely many solution. Also find solution for these value of K

(4,4)

4. (a) Find the Matrices P and Q such that PAQ is in the Normal Form, where A is the matrix

$$\begin{bmatrix} 1 & -1 & 2 & -1 \\ 4 & 2 & -1 & 2 \\ 2 & 2 & -2 & 0 \end{bmatrix}$$

(b) Find the Solution of the System of Equations

$$2x - y + 3z = 5$$

$$3x + 2y - z = 7$$

$$4x + 5y - 5z = 9$$

(4,4)

Section- C

5. (a) Prove that the series  $1 + \frac{1}{2} + \frac{1}{2^2} + \frac{1}{2^3} + \dots + \frac{1}{2^{n-1}} + \dots$  converges to the sum 2.

(b) Discuss the Convergence or Divergence of the series  $\frac{1}{4.7.10} + \frac{4}{7.10.13} + \frac{9}{10.13.16} + \dots$

(4,4)

6. (a) Prove that the series  $\sum_{n=1}^{\infty} \frac{1}{n^p}$ ,  $p > 1$ , converges and its sum lies between  $\frac{1}{p-1}$  and  $\frac{p}{p-1}$ .

(b) Test whether the series is absolutely convergent or not  $\sum_{n=1}^{\infty} \frac{(-1)^{n-1} n}{2n-1}$  (4,4)

## Section- D

7.(a) Show that the vectors  $v_1 = (1,2,3)$ ,  $v_2 = (0,1,2)$ ,  $v_3 = (0,0,1)$  generates  $V_3(\mathbb{R})$ .

(b) Find the value of  $k$  so that the vectors  $\begin{bmatrix} 1 \\ -1 \\ 3 \end{bmatrix}$ ,  $\begin{bmatrix} 1 \\ 2 \\ -2 \end{bmatrix}$  and  $\begin{bmatrix} k \\ 0 \\ 1 \end{bmatrix}$  are linear dependent. (4,4)

8. (a) Show that  $T: V_3(\mathbb{R}) \rightarrow V_3(\mathbb{R})$  defined by  $T(x,y,z) = (x \cdot y + z, 2x)$  is a linear transformation.

(b) Let  $T$  be a linear operator on  $\mathbb{R}^2$  defined by  $T(x,y) = (4x-2y, 2x+y)$

(i) Find Matrix of  $T$  relative to Basis  $\{ (1,1); (-1,0) \}$

(ii) Also Verify that  $[T; B][v; B] = [T(v); B]$  for any vector  $v \in \mathbb{R}^2$  (4,4)



Exam Code: 112414

Paper Code: 4206

Bachelor of Science (Honours) Mathematics (Semester-IV)

Course Title: Statistical Methods

Course Code: BOMM-4334 ✓

Time Allowed: 3 Hours

Max. Marks: 50

Note: Attempt five questions in all, selecting atleast one question from each section. Fifth question may be attempted from any section. Each question carries equal marks. Students are allowed to use statistical Tables and a simple non programmable and non-storage calculator.

#### Section-A

Q1. (a) Derive the limits for Karl Pearson's Coefficient of Correlation.

(b) The I.Q.'s of a group of 6 persons were measured, and they then sat for a certain examination. Their I.Q.'s and examination marks were as follows:

I.Q. : 110, 100, 140, 120, 80, 90

Exam Marks : 70, 60, 80, 60, 10, 20.

Compute rank correlation (5,5)

Q-2 (a) Define Regression Coefficient and explain any two properties with proof.

(b) For two random variables X and Y with common mean  $\mu$ , the two regression lines are  $Y=aX+b$  and  $X=cY+d$ . Show that  $b/d = 1-a/1-c$ . (5,5)

#### Section-B

Q-3 (a) If  $X_1$  and  $X_2$  are two independent  $\chi^2$ - variates with  $n_1$  and  $n_2$  degrees of freedom respectively, then prove that ratio of Chi-Square Variates follows Beta Variate

(b) If a Statistic t follows t- distribution with n degrees of freedom, then find the distribution of square of t. (5,5)

Q-4 (a) Derive the reciprocal distribution of F- distribution

(b) Derive Mean deviation about Mean of t-distribution. (5,5)

### Section-C

**Q-5 (a)** Twenty people were attacked by a disease and only 18 survived. Will you reject the survival rate, if attacked by this disease, is 85 percent in favor of the hypothesis that it is more at 5 percent level

**(b)** The wages of 10 workers taken at random from a factory are given below

Wages (in Rupee): 578, 572, 570, 568, 572, 570, 572, 596, 584, 578

Is it possible that the mean wages of all the workers of this factory is rupee 580? (5,5)

**Q-6 (a)** A sample of 400 individuals is found to have a mean height of 67.47 inches. Can it be reasonably regarded as a sample from a large population with mean height of 67.39 inches and standard deviation 1.30 inches

**(b)** The increase in weights due to two kinds are given below. Can it be said that food B is better than food A?

Food A	49	53	51	52	47	50	52	53
Bank B	52	55	52	53	50	54	54	53

(5,5)

### Section-D

**Q-7 (a)** Describe Chi-square test for independence of attributes, stating clearly the conditions for its validity

**(b)** The following data is collected on two characters

	Cine-goers	Non Cine-goers
Literate	83	57
illiterate	45	68

Based on this, can you conclude that there is no relation between the habit of cinema goers and literacy? (5,5)

**Q -8** Two random samples drawn from two normal populations are

Sample1	66	67	75	76	82	84	88	90	92	---	---
Sample2	64	66	74	78	82	85	87	92	93	95	97

Test whether the population have same variances at 5% level of significance. (10)



Exam Code: 171804  
(20)

Paper Code: 4211

Programme: Bachelor of Science(Honours) Physics  
Semester-IV

Course Title: Chemistry-IV

Course Code: BOPL-4084 ✓

Time Allowed: 3 Hours

Max Marks: 40

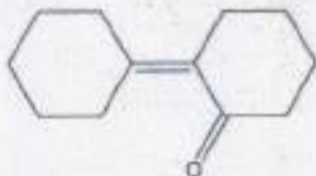
Note: Attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 8 marks.

SECTION A

1. Explain the following terms:
  - (a) Auxochrome
  - (b) Hypsochromic Shift
  - (c) Red Shift
  - (d) Molar absorptivity (8)
2. (a) Describe various types of Electronic transitions observed in organic compounds when exposed to UV & Visible light? (4)  
(b) Explain in detail about degree of freedom of motion. Calculate degree of freedom of Acetylene and Water Molecule (4)

## SECTION B

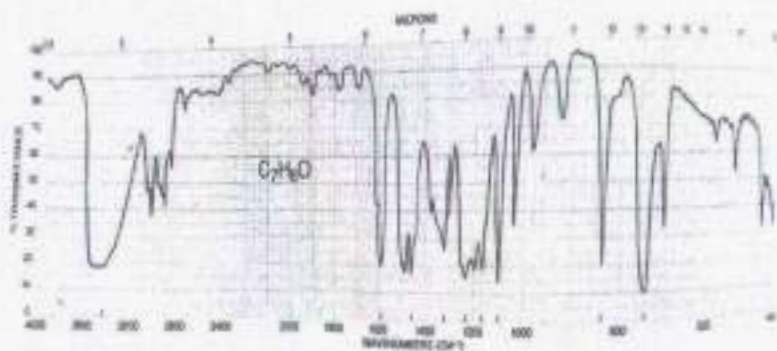
3. (a) Define following terms: Fermi Resonance and Vibrational Coupling (4)  
 (b) Discuss various types of vibrations observed in IR spectroscopy? (4)
4. (a) Calculate  $\lambda_{max}$  for the following: (4)



and

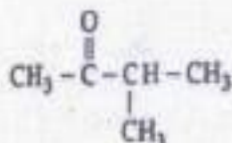


- (b) A molecular formula is given in the spectrum provided below. Deduce the possible structure that is consistent with the infrared spectrum. There may be more than one possible answer. (4)



### SECTION C

5. (a) Discuss the PMR Spectra of Ethanol? (5)  
(b) Predict the number of signals and splitting pattern of each signal in the spectrum of following compound. (3)



6. (a) What is TMS? What are the reasons for choosing it as a reference compound during  $^1\text{H-NMR}$  spectroscopy? (3)  
(b) Write Short Notes on the following: Coupling Constant and Anisotropic effect (5)

### SECTION D

7. (a) Distinguish the following isomeric pair on the basis of mass spectrometry: 1-Pentanol and 2-Pentanol (4)  
(b) Discuss Retro-Diels Alder reaction with suitable example. (4)
8. (a) The mass spectrum of anisole exhibits prominent peaks at  $m/e = 108$  ( $M^+$  Base peak), 93, 78, 77 and 65. Explain the formation of ions corresponding to these peaks. (4)  
(b) Write note on Multicenter Fragmentation and Chemical ionization (4)

Programme: Bachelor of Science (Honours) Physics

(Semester: IV)

Course Title: Numerical Methods and Error Analysis

Course Code: BOPL-4335

Time Allowed: 3 Hours

Max Marks: 40

Note: Candidates are required to attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 8 marks. Students can use non-programmable calculators.

## Section A

1. (a) What are different types of errors? How can we minimize them? (3)

(b) A physical quantity X is given by  $X = \frac{a^2 b^3}{c \sqrt{d}}$ . If the percentage errors of measurement in a, b, c and d are 4%, 2%, 3% and 1% respectively, then calculate the percentage error in X. (3)

(c) What is difference between accuracy and precision of a measurement? Explain with examples? (2)

2. (a) How the error propagates in sum and difference of two quantities? Find the expressions for percentage errors in the results? (3)

(b) If  $x = \frac{a^n}{b^m}$ ,  $\Delta a$  = absolute error in measurement of a,  $\Delta b$  = absolute error in measurement of b then find the absolute error in x? (3)

(c) Solve the following and express the result to an appropriate number of significant figures:

(i) Add 6.2 g, 4.33 g and 17.456 g

(ii) Subtract 63.54 kg from 187.2 kg

(iii)  $75.5 \times 125.2 \times 0.51$  (2)

### Section B

3. Discuss the technique of secant method graphically to find the roots of a polynomial equation and find the root of equation  $x^3 - 5x + 3 = 0$  up to three decimal places using secant method. (8)
4. (a) Solve the following equations by Jacobi Method (5)
- $$5x - y + z = 10$$
- $$2x + 4y = 12$$
- $$x + y + 5z = -1$$
- (b) Prove the Newton Raphson method is second order convergent. (3)

### Section C

5. What do you mean by interpolation? Derive divided difference interpolation formula and use it to compute  $f(8)$  for the following data. (8)
- |         |    |     |     |     |      |      |
|---------|----|-----|-----|-----|------|------|
| $x:$    | 4  | 5   | 7   | 10  | 11   | 13   |
| $f(x):$ | 48 | 100 | 294 | 900 | 1210 | 2028 |
6. (a) Explain the least square method for curve fitting and find the expression for regression coefficients for straight line fit of  $x$  on  $y$  and  $y$  on  $x$ . (4)
- (b) Fit the following data by exponential function of the form  $y = Ae^{Bx}$
- |      |     |     |     |     |
|------|-----|-----|-----|-----|
| $x:$ | 600 | 500 | 400 | 350 |
| $y:$ | 2   | 10  | 26  | 61  |

### Section D

7. (a) Compute the integral  $\int_{0.2}^{0.4} (\sin x - \log(x) + e^x) dx$  by Simpson's 1/3 rule? (4)
- (b) Derive Simpson's 1/3 rule to solve numerical integration? Why this method is preferred over trapezoidal rule. Explain graphically? (4)
8. Using Runge-Kutta fourth order method, find approximate value of  $y$  correct up to three decimal places in the interval  $[0, 0.4]$  using step size  $h=0.1$  if

$$10 \frac{dy}{dx} = x^2 + y^2$$

given that  $y = 1$  when  $x = 0$  (8)



Exam Code: 171804  
(20)

Paper Code: 4208

Programme: Bachelor of Science(Honours) Physics  
Semester-IV

Course Title: Mechanics-II

Course Code: BOPL-4391 ✓

Time Allowed: 3 Hours

Max Marks: 60

Note: Attempt five questions, selecting at least one question from each section. Fifth question may be attempted from any section. Each question carry equal (12) marks. Students can use non- Scientific calculators and Log Tables.

#### Section A

1. (a) Discuss the concept of simultaneity in relativity and time dilation? Find the expression for improper time and explain the twins paradox on the basis of time dilation?  
(8)
- (b) An elementary particle formed high up in the atmosphere travels with a speed of  $0.99c$  for a distance 5.4 km before it decays. Find the lifetime of this particle in it's own frame.  
(4)

2. What was the need to prove the existence of ether prevailing all around? Discuss the Michelson-Morley experiment in order to prove the existence of ether and its null result? What were the possible explanations to the null results of the experiment? (12)

### Section B

3. (a) Drive the energy-momentum transformations relating energy and momentum of a particle from two inertial frames having relative motion between them? (8)
- (b) Calculate the effective mass of photon of wavelength  $1 \text{ \AA}$ ? (4)
4. (a) A particle of mass  $m_0$  is moving with velocity  $v$  along a straight line. Drive a relation to find its mass with respect to a stationary observer? (8)
- (b) Calculate the velocity of an electron when it is accelerated by a potential difference of  $10^6$  volts? (4)



### Section C

5. Explain the concept of Minkowski space and prove that Lorentz transformations can be regarded as orthogonal transformations due to rotation of axes in Minkowski space. Also express the Lorentz transformations in four vector form. (12)
6. Explain the phenomena of simultaneity, length contraction and time dilation by drawing the Minkowski diagrams in each case? (12)

### Section D

7. Derive equation of motion of Foucault pendulum and prove that the plane of oscillation of the bob of Foucault's pendulum traces an elliptical path due to rotation of earth. Also find the time period of rotation at poles and equator. (12)

8. (a) Derive the expression for pseudo force acting on an object moving on the surface of earth due to its rotation?

(6)

(b) Describe Einstein's principle of equivalence and how this principle explains the bending of light beam in gravitational field? Explain the phenomenon of gravitational red shift due to gravitational behavior of light?

(6)

(b) What are Galilean transformations and how are they used to describe the motion of objects in classical mechanics. (6)

Exam Code: 171804

Paper Code: 4209

Bachelor of Science (Honours) Physics (Semester-IV)

Course Title: Atomic Spectroscopy

Course Code: BOPL-4392 ✓

Maximum Marks: 60

Examination Time: 3 Hours

Note: Attempt five question out of eight, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 12 marks. Students can use Non-Scientific calculators or logarithmic tables.

### Section A

- A) Give brief description of Bohr's theory and explain hydrogen spectrum. Show that both quantum and classical picture predict the same frequency of emission of radiations for large quantum numbers. (8)

B) What is orbital, spin and total magnetic moment? Derive an expression for orbital magnetic moment. (4)
- A) Give the Frank- Hertz experiment. What is the purpose of retarding voltage applied to the plate in the Frank-Hertz experiment .To what conclusions does it lead? (6)

B) The energy transition in the hydrogen atom occurs from orbit  $n=2$  to  $n=2$ . Value of Rydberg constant is  $1.09678 \times 10^7 \text{ m}^{-1}$ . Calculate the wavelength of the emitted hydrogen. To which spectral series, does this spectral line belong? Does it lie in visible region? (3)

C) How many electron would be there if atom could contain electrons with principal quantum numbers upto  $n=5$ . (3)

### Section B

- A) Explain energy level diagram and different series of hydrogen and lithium atom and show that the concept of spinning electron accounts for the doubling of levels in the spectra of alkali atoms. (9)

B) Consider an atom with an electronic configuration  $1s^2, 2s^2, 2p^1$ .

- a) Find the value of  $l$ ,  $s$  and  $j$  and  
 b) Find the magnitude of angular momentum  $L$ ,  $S$  and  $J$ . (3)
4. A) What is Spin-orbit interaction? Find an expression for energy due to spin-orbit interaction. (6)
- B) What is normal Zeeman effect? Explain the effect of magnetic field on energy levels of an atom on the basis of quantum theory. (6)

### Section C

5. A) Explain the exchange symmetry of wave function and deduce Pauli's Exclusion Principle. (7)
- B) Write down the quantum numbers for the states  ${}^2S_{3/2}$ ,  ${}^3D_2$ ,  ${}^5P_3$ . Determine if any of these states are impossible. (5)
6. A) Discuss the spectrum of helium atom. What are para-helium and ortho-helium? (7)
- B) Two Bosons can exist in same quantum state but two fermions can't. Explain Why? (2)
- C) There are two electrons, each with  $l=1$  and  $s=1/2$  What are the possible quantum number  $J$ ? (3)

### Section D

7. A) State and explain Moseley's Law in X Rays. (8)
- B) Calculate the wavelength of  $K_{\alpha}$  line of Silver ( $Z=47$ ). Given  $R=109737 \text{ cm}^{-1}$  (4)
8. A) Describe the construction and mode of operation of a Coolidge X Ray tube. Explain quality and intensity control in modern X Ray tube. (9)
- B) In X-ray diffraction experiment, second order glancing angle was  $30^\circ$ . Calculate glancing angles for first and third order. (3)

Exam Code: 103304  
(30)

Paper Code: 4187

Programme: Bachelor of Science  
Semester-IV

Course Title: Botany (Diversity of Seed Plants and their  
Systematics-I)

Course Code: BSMM-4075 (I) ✓

Time Allowed: 3 Hours

Max Marks: 30

Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

#### Section-A

1. Write a short note on:
  - a. Characteristics of seed plants
  - b. Evolution of seed habit (2x3)
2. Discuss in details the origin and evolution of angiosperms. (6)

#### Section B

3. Discuss in detail the general features and classification of gymnosperms. (6)

4. Write a note on:  
a. Evolution of gymnosperms  
b. Geological time scale (2x3)

#### Section C

5. Give a general account of morphology, anatomy, reproduction, and life cycle of *Cycas*. (6)  
6. Discuss the morphology, anatomy, reproduction, and life cycle of *Pinus*. (6)

#### Section D

7. Discuss the morphology, anatomy, reproduction, and life cycle of *Ephedra*. (6)  
8. Give a general account of morphology, anatomy, reproduction, and life cycle of *Ginkgo*. (6)



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Exam Code: 103304  
(30)

Paper Code: 4188

Programme: Bachelor of Science  
Semester-IV

Course Title: Botany (Diversity of Seed Plants and their  
Systematics-II)

Course Code: BSMM-4075 (II) ✓

Time Allowed: 3 Hours

Max Marks: 30

Note: Attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section. All questions carry equal marks (Six marks each). Draw well labelled diagrams wherever necessary.

#### Section-A

- Describe following terms:
  - Type Concept
  - Principle of priority
  - Alpha Taxonomy 2X3=6
- Describe important rule of botanical nomenclature.

6



### Section B

3. Explain salient features of Engler and Prantl's system of classification and discuss its merits. 6
4. What is phytochemistry? Discuss the role of phytochemistry in plant taxonomy. 6

### Section C

5. Enumerate diagnostic features of the following families:
  - a. Ranunculaceae
  - b. Brassicaceae 3X2=6
6. Compare floral characters of families Rutaceae and Apiaceae. 6

### Section D

7. Describe floral characteristics of family Euphorbiaceae. 6
8. Give comparative account of floral characteristics of family Liliaceae and Asclepiadaceae. 6

Programme	Exam Code	Course Code
Bachelor of Science (Medical)	103304	BSMM-4084 (I)
Bachelor of Science (Non-Medical)	103304	BSNM-4084 (I)

**Course Title: Chemistry (Inorganic Chemistry)**  
**Semester-IV**  
**(50)**

**Time Allowed: 3 Hours**

**Max Marks: 30**

**Attempt five questions in all, selecting atleast one question from each section. The fifth question may be attempted from any section. All questions carries equal 6 marks.**

**Section-A**

1. (a) Write the IUPAC name of



1

- (b) Write various assumption of Valence Bond theory. Explain the bonding in  $[Fe(CN)_6]^{3-}$  and in  $[Fe(H_2O)_6]^{3+}$  on the basis of valence Bond theory.

5



### Section-C

5. (a) Why are Actinides called Inner Transition Elements?  
1
- (b) Compare and contrast Actinides and Lanthanides in detail. 5
6. (a) What are trans uranic elements? Give examples.  
2
- (b) What is Actinide Contraction? What is its Cause? How does Actinide Contraction differ from Lanthanide Contraction? 4

### Section-D

7. (a) Differentiate between Bohr effect and Root effect.  
2
- (b) Discuss the Biological role of Alkali metal ions. 4

8. (a) What are essential elements? Give example. 1

(b) What are Porphine, Porphyrin and Metalloporphyrin? Discuss the structure and function of Myoglobin. 5

Paper Code: 4184

Programme	Exam Code	Course Code
Bachelor of Science (Medical)	103304	BSMM-4084 (II)
Bachelor of Science (Non-Medical)	103304	BSNM-4084 (II)

Course Title: Chemistry (Organic Chemistry)  
Semester-IV  
(50)

Time Allowed: 3 Hours

Max Marks: 30

Note: Candidates are required to attempt five question in all selecting at least one question from each section. The fifth question may be attempt from any section. Each question carries 6 marks.

Section-I

1. (a) Sketch the mechanism of following reactions



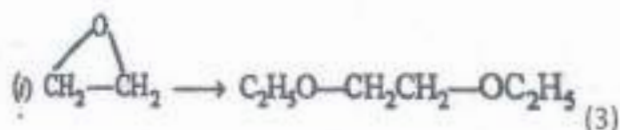
(3)

- (b) Why is acetic acid is weaker than formic acid and p-methoxybenzoic acid weaker than benzoic acid? (3)

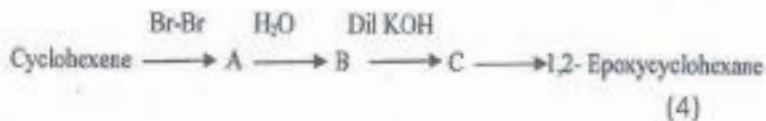
2. (a) Discuss in detail the preparation of acid amides by partial hydrolysis of alkyl cyanides along with a plausible mechanism? (3)
- (b) Explain why  $\text{LiAlH}_4$  give alcohols rather than aldehydes. (3)

### Section-II

3. (a) Discuss the mechanism of dehydration of alcohols to form ethers. Also comment upon its limitations. (3)
- (b) Sketch the following transformation:



4. (a) Identify A, B and C in the reaction below



- (b) Di-tert-butyl ether cannot be made by williamsons synthesis. Explain why? (2)



### Section-III

5. Write the mechanism for Hoffmann bromamide reaction along with the stereochemistry of the reaction. (3)
- (b) Write short notes on Reductive amination. (3)
6. (a) Discuss nucleophilic substitution reaction of nitroarenes. (3)
- (b) How primary, secondary and tertiary amines can be separated using Hinsberg test ? Explain with suitable example. (3)

### Section-IV

7. (a) Sketch a mechanistic scheme depicting addition of a Grignard reagent to carbonyl group. (3)
- (b) How can a ketone or aldehyde and  $\beta$ -haloester to a  $\beta$ -hydroxyester by using metallic zinc and acid workup? (3)

8. (a) Discuss method of preparation of Pyrole derivatives sketching suitable mechanism for the process involved.

(3)

- (b) Discuss Hantzsch synthesis of pyridine derivatives. Explain in brief the orientation observed in nucleophilic substitution reactions in pyridine.

(3)

**Exam Code: 103304**  
**(20)**

**Paper Code: 4189**

**Programme: Bachelor of Science**  
**Semester-IV**

**Course Title: Food Science and Quality Control (Vocational)**  
**(Quality Assurance)**

**Course Code: BSMM-4255** ✓

**Time Allowed: 3 Hours**

**Max Marks: 60**

**Note: Attempt five questions, select at least one question from each section. The fifth question may be attempted from any section. Each question carry equal (12) marks**

**Section-A**

1. Explain the role of quality control in food industry. (12)
2. How quality attributes of a food product affect the quality of a product? (12)

**Section B**

3. Discuss any two instruments used to evaluate the quality of wheat dough. (12)

4. Name any four color measurement instruments used for food products. Discuss any two. (12)

### Section C

5. Give various sensory tests used to assess quality of different candies available in market. (12)
6. Discuss the role of sampling in food industry. What are the various methods of sampling used. (12)

### Section D

7. Discuss role of following in HACCP plan with examples:  
a. CCPs  
b. Hazards  
c. Documentation (4x3=12)
8. What are the various food laws implemented in India before introduction of FSSAI? (12)

Exam Code: 103304  
(20)

Paper Code: 4182

Programme: Bachelor of Science  
Semester-IV

Course Title: Microbiology (Microbial Ecology)

Course Code: BSMM-4343 ✓

Time Allowed: 3 Hours

Max Marks: 60

Note: Attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries equal marks.

#### SECTION A

1. Discuss different types of microbial habitat in an aquatic environment. 12
2. a) Differentiate between phytoplankton and zooplankton with examples. 6  
b) Explain the role of physical environment in the diversity of microbial habitats. 6

### SECTION B

3. a) Why competition is considered a negative interaction? Explain by giving three different example from nature. 6  
b) Discuss in detail the association of microorganisms in syntrophism, commensalism and parasitism . 6
4. Discuss in detail. the biogeochemical cycling of phosphorous and sulphur. 12

### SECTION C

5. a) What are biological insecticides? Describe in detail, giving three different examples. 6  
b) Write a detailed note on biofertilizers. 6
6. What functions do microorganisms play in cycling of organic matter? Discuss in detail giving two different examples. 12

### SECTION D

7. a) What is the significance of activated sludge system. 6  
b) Explain with process diagram working principle of rotational biological contractors. 6
8. a) What is the role of microbes in bioremediation of persistent pollutants? 6  
b) Discuss with the help of process diagram. working operation of dissolved air floatation. 6

Exam Code: 103304  
(30)

Paper Code: 4180

Programme: Bachelor of Science  
Semester-IV

Course Title: Zoology (Biochemistry)

Course Code: BSMM-4483 (I)



Time Allowed: 3 Hours

Max Marks: 30

Candidates are required to attempt five questions, selecting atleast one question from each section. The fifth question may be attempted from any section.

**Section-A**

1. Give the classification and functions of Lipids. 6
2. Proteins are called most important bio molecules why? Give the chemical nature of proteins. 6

**Section-B**

3. Explain the chemical nature of enzymes. Explain the factors that influence the enzyme activity. 6
4. Explain the process of Ketosis. 6



### Section-C

5. Describe TCA cycle. How many ATP are produced in one cycle. 6
6. Describe Hexose mono phosphate shunt. 6

### Section-D

7. Describe oxidative deamination. 6
8. Give the hydrolysis of Proteins. 6

Exam Code: 103304  
(30)

Paper Code: 4181

Programme: Bachelor of Science  
Semester-IV

Course Title: Zoology (Animal Physiology)

Course Code: BSMM-4483 (II) ✓

Time Allowed: 3 Hours

Max Marks: 30

**Note:** Attempt five questions, selecting at least one question from each section (A to D). Fifth question may be attempted from any Section. All questions carry equal marks (6 marks each). Draw diagrams wherever necessary.

**Section-A**

1. Give an account of
  - (a) Digestion of proteins in alimentary canal.
  - (b) symbiotic digestion. (3+3)
2. Give an account of:
  - (a) Oxygen dissociation curves of haemoglobin and Bohr Effect.
  - (b) Chloride shift. (3+3)

### Section- B

3. Give the origin, conduction and regulation of heart beat. 6
4. Briefly discuss the physiology of urine formation. 6

### Section- C

5. Discuss electrical and biochemical events in muscle contraction. 6
6. Give an account of Synaptic transmission. 6

### Section- D

7. Discuss the physiological functions and disorders of thyroid hormones. (6)
8. Write briefly on the following
  - (a) Sequential instincts
  - (b) Classical Conditioning. (3+3)

<b>Exam Code: 103304</b>		<b>Paper Code: 4185</b>
<b>Programme</b>	<b>Bachelor of Science (Non Medical)</b>	<b>Bachelor of Science (Computer Science)</b>
<b>Course Code</b>	<b>BSNM-4395 (I)</b>	<b>BCSM -4395 (I)</b>

(Semester-IV)

**Course Title: Physics (Quantum Mechanics)**

**Maximum Marks: 30**

**Time Allowed: 3 Hrs**

**Note:** Attempt five questions in all, selecting at least one question from each section. Fifth question may be attempted from any section. Each question Carries 6 marks.

**Section-A**

- A. Show that the de Broglie hypothesis successfully explains the Bohr's postulate about the quantization of angular momentum. 3

B. What is photoelectric effect? Describe with the help of an experiment the effect of intensity of light on photoelectric current. 3
- The Kinetic energy of an electron is equal to the energy of a photon. Show that de Broglie wavelength of this electron is less than the wavelength associated with a photon. 6

**Section-B**

- A. Show that probability density  $\Psi^*(x, t) \Psi(x, t)$  is always real. 3

B. An electron has a speed of 600 m/s with an accuracy of 0.05%. Calculate the minimum uncertainty in the location of the electron. 3
- Using the uncertainty principle show that electron does not exist inside the nucleus. 6

**Section-C**

- A. A particle is in the ground state of an infinite square well of size  $a$ . what is the probability of finding the particle in a distance  $\Delta x=0.01$  at (a)  $x=a/2$  (b)  $x=a/4$ . Assume  $\Delta x$  to be very small. 3

B. Show that the sum of the reflection and transmission coefficients for a potential barrier for  $E < V_0$  is 1. 3
- write Schrodinger wave equation for a particle in a box and determine expression for energy eigenvalues and eigenfunctions. Does this predict that the particle can possess zero energy? 6

**Section-D**

- A. Normalize the wave function  $\Phi = N e^{imx}$  3

B. Show that the state of hydrogen atom for a given value of  $n$  is  $n^2$  fold degenerate. 3
- Find the energy eigen values and eigen functions for a free particle in three dimensional rectangular box. 6



Exam Code: 103304		Paper Code: 9409
Programme	Bachelor of Science (Non-Medical)	Bachelor of Science (Computer Science)
Course Code	BSNM-4395 (I) ✓	BCSM -4395 (I) ✓

**(Semester-IV)**

**Course Title: Physics (Quantum Mechanics)**

**Maximum Marks: 30**

**Time Allowed: 3 Hrs**

**Note:** Attempt five questions in all, selecting at least one question from each section. Fifth question may be attempted from any section. Each question Carries 6 marks.

**Section-A**

- A. Show that the de Broglie hypothesis successfully explains the Bohr's postulate about the quantization of angular momentum. 3  
B. What is photoelectric effect? Describe with the help of an experiment the effect of intensity of light on photoelectric current. 3
- The Kinetic energy of an electron is equal to the energy of a photon. Show that de Broglie wavelength of this electron is less than the wavelength associated with a photon. 6

**Section-B**

- A. Show that probability density  $\Psi^*(x, t) \Psi(x, t)$  is always real. 3  
B. An electron has a speed of 600 m/s with an accuracy of 0.05%. Calculate the minimum uncertainty in the location of the electron. 3
- Using the uncertainty principle show that electron does not exists inside the nucleus. 6

**Section-C**

- A. A particle is in the ground state of an infinite square well of size  $a$ . what is the probability of finding the particle in a distance  $\Delta x=0.01$  at (a)  $x=a/2$  (b)  $x=a/4$ . Assume  $\Delta x$  to be very small. 3  
B. Show that the sum of the reflection and transmission coefficients for a potential barrier for  $E < V_0$  is 1. 3
- Write Schrodinger wave equation for a particle in a box and determine expression for energy eigenvalues and eigenfunctions. Does this predict that the particle can possess zero energy? 6

**Section-D**

- What are x-rays? What is their production criteria? Explain the characteristic and continuous x-rays spectra. 6
- What is Raman Effect? Explain the vibrational and rotational spectra of homo-nuclear molecules on the basis of Raman Effect. 6

<b>Exam Code: 103304</b>		<b>Paper Code: 4186</b>
<b>Programme</b>	<b>Bachelor of Science (Non-Medical)</b>	<b>Bachelor of Science (Computer Science)</b>
<b>Course Code</b>	<b>BSNM-4395 (II)</b>	<b>BCSM -4395 (II)</b>

(Semester-IV)

**Course Title: Physics (Atomic and Molecular Spectra)**

**Time: 3 Hours**

**Max Marks: 30**

Attempt five questions in all, selecting at least one question from each section. Fifth question may be attempted from any section. Each question carries 6 marks. Students can use Non-Scientific calculators or logarithmic tables.

**Section A**

- A) Give brief description of Bohr's Correspondence Principle along with its significance. (4)
  - B) Can Stern- Gerlach experiment be performed with ions rather than neutral atoms? (2)
- A) Explain orbital, spin and total magnetic moment . Derive an expression for orbital magnetic moment. (4)
  - B) The series limit wavelength of Balmer series in hydrogen spectrum is found to be  $3646\text{\AA}$ . Find the wavelength of the first member of this series. (2)

**Section B**

- A) Discuss and draw Fine and Hyperfine structure of Hydrogen atom. (4)
  - B) What are selection rules for doublets? (2)
- What is Zeeman effect ? Under what conditions one obtains the anomalous Zeeman effect? Describe and explain it by taking the case of sodium lines. (6)

**Section C**

- A) Explain Symmetric and antisymmetric wave functions. How does their concept leads to Pauli's exclusion principle. (4)
  - B) Show that excited states of helium can have total spin zero or one, but the ground state have a spin of zero only. (2)
- How do non-equivalent electrons differ from equivalent electrons? Explain it by considering p-p and s-s configuration. (6)

**Section D**

- Describe experimental set up to demonstrate Raman effect and explain the theory of pure rotational and vibrational-rotational Raman spectrum. (6)
- A) Show that in rotational spectrum of molecules, lines are equally spaced in frequency. (4)
  - B) Auger effect is an internal photoelectric effect. Comment. (2)



(Old Syllabus (2021-22))

Exam Code: 103304		Paper Code: 9404
Programme	Bachelor of Science (Non-Medical)	Bachelor of Science (Computer Science)
Course Code	BSNM-4395 (II)	BCSM -4395 (II)

(Semester-IV)

**Course Title: Physics (Atomic Spectra and Lasers)**

**Time: 3 Hours**

**Max Marks: 30**

**Note:** Attempt five questions in all, selecting at least one question from each section. Fifth question may be attempted from any section. Each question carries 6 marks. Students can use Non-Scientific calculators or logarithmic tables.

**Section A**

1. A) Give brief description of Stern- Gerlach experiment. Is Spin of a particle an inherent property associated with the particle? (4.5)  
B) What magnetic flux density B is required to observe the normal effect if a spectrometer can resolve spectral lines separated by  $0.5 \text{ \AA}$  at  $5000 \text{ \AA}$ ? (1.5)
2. What is Zeeman effect? Under what conditions one obtains the anomalous Zeeman effect? Describe and explain it by taking the case of sodium lines (6)

**Section B**

3. What is the difference between the energy level diagrams of hydrogen and helium atoms. Explain its fine structure by drawing energy level diagram. (6)
4. How do non-equivalent electrons differ from equivalent electrons? Explain it by considering p-p and s-s configuration. (6)

**Section C**

5. Explain the concept of population inversion and Derive Schawlow-Townes condition for laser oscillations. (6)
6. A) Explain the concept of Coherence. Discuss how the spatial coherence is related to the size of the source (4)  
B) In what ways does the laser light differ from the light from a filament lamp? (2)

**Section D**

7. A) Explain Construction and working of Rubylaser. (4)  
B) Compare the efficiency of Three level and four level lasers. (2)
8. A) What is holography and explain recording as well as reconstruction processes. (4)  
B) How holography is different from photography. (2)