

**FOUR YEAR B.A./B.Com/B.Sc./B.C.A./B.B.A./B.Music/B.Dance/B.A(O.L)/
B.H.M./B.VOCATIONAL IN DAIRYING AND ANIMAL
HUSBANDRY/B.VOCATIONAL IN HORTICULTURE**

(ALL GROUPS) DEGREE EXAMINATION,

DECEMBER/JANUARY -2025/26

CHOICE BASED CREDIT SYSTEM

THIRD SEMESTER

PART - I(D) : MULTIDISCIPLINARY COURSE

PAPER-IV : HEALTH AND HYGIENE

(Under CBCS New Regulation w.e.f. the academic year 2024-25)

Time : 1½ Hours

Max. Marks : 50

Answer any Five questions. Each question carries equal marks.

(5×10=50)

1. Explain the roles and responsibilities of the Village Health Sanitation and Nutritional committee and the role of Accredited Social Health Activists (ASHA) in rural community health.
2. How does the Indian government use mobile apps to promote public health? Explain with relevant examples.
3. Discuss the following healthcare schemes for women and children in India
 - a) RBSK and
 - b) RKSK
4. Explain the functions of proteins in the body, list some dietary sources of protein, and describe the effects of protein deficiency.
5. Give a brief overview of vitamins. What are their functions, what foods provide them, and what happens if you have a vitamin deficiency?
6. What is the National Health Mission (NHM)? Outline the frameworks of the National Rural Health Mission (NRHM) and the National Urban Health Mission (NUHM).
7. Write short notes on - WHO - INDIA and UNICEF - INDIA.
8. How does the Indian government manage disasters, epidemics, and pandemics? What are the acts, guidelines, and the roles of government and public in these situations?
9. Differentiate between macro and micro minerals. Explain their functions, deficiency disorders and dietary sources?
10. What are the roles of lipids (fats) in the body? Enumerate dietary sources and deficiency disorders of fat.

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(ALL GROUPS) DEGREE EXAMINATION,

DECEMBER/JANUARY - 2025/26

CHOICE BASED CREDIT SYSTEM

THIRD SEMESTER

PART- I(C) : LIFE SKILL COURSE

PAPER-III: INFORMATION AND COMMUNICATION TECHNOLOGY

(Under CBCS New Regulation w.e.f. the academic year 2024-25)

Time : 1½ Hours

Max. Marks : 50

Answer any Five questions. Each question carries equal marks.

(5×10=50)

1. Discuss various internet applications and their impact on daily life.
 2. Examine the role of social networking platforms such as Twitter, Facebook, and LinkedIn.
 3. Explain the concept of Internet addressing.
 4. Explain the importance of user IDs, passwords, and email addresses in email communication.
 5. Discuss the features and benefits of Google Drive.
 6. Explain the essential components of an email message.
 7. Explain different types of viruses.
 8. Define cryptography and discuss its importance in securing online communications.
 9. Provide an overview of Internet security.
 10. Compare hardware firewalls and software firewalls.
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**FOUR YEAR B.C.A. (HONOURS) (DATA SCIENCE/AI/BIG DATA/
CLOUD COMPUTING/GENERAL) DEGREE EXAMINATION,
DECEMBER/JANUARY - 2025/26**

THIRD SEMESTER - MAJOR

PART - II

Paper-5: DATABASE MANAGEMENT SYSTEM (DBMS)

(Under CBCS New Regulation w.e.f. 2024-25)

Time : 3 Hours

Max. Marks : 75

SECTION - A

Answer any Five of the following questions. Each question carries equal marks.

(5×3=15)

1. Differentiate between Database system and File - based system.
2. Explain different types of Database Users.
3. Define Schema and Instance with examples.
4. Explain the concept of Primary Key and Foreign Key with an example.
5. What is Functional Dependency? Give an example.
6. Explain 2NF with a suitable example.
7. Draw an ER diagram for a University database.
8. Explain SQL DDL commands with examples.
9. Write short notes on Joins in SQL.
10. What are Triggers in PL/SQL? Give an example.

SECTION - B

Answer any Five of the following questions. Each question carries equal marks.

(5×12=60)

11. Explain the characteristics of Database systems. Compare with File - based systems.
 12. Explain the Three - tier Schema Architecture. How does it provide Data Independence?
 13. Explain Codd's rules for Relational Model with examples.
 14. Discuss Normalization. Explain 1NF, 2NF, 3NF and BCNF with examples.
 15. Draw and explain an ER diagram for Online shopping system.
 16. Explain SQL DML operations with syntax and examples.
 17. Explain different types of Joins in SQL with examples.
 18. Explain Commit, Rollback, Savepoint, Grant and Revoke commands with examples.
 19. Explain PL/SQL program structure with an example.
 20. Explain Exception Handling in PL/SQL with examples.
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**FOUR YEAR B.C.A. (HONOURS) (DATA SCIENCE/ARTIFICIAL
INTELLIGENCE/BIG DATA/CLOUD COMPUTING/GENERAL)
DEGREE EXAMINATION, DECEMBER/JANUARY - 2025/26**

CHOICE BASED CREDIT SYSTEM

THIRD SEMESTER - MAJOR

PART-II

Paper - 6 : MATHEMATICAL AND STATISTICAL FOUNDATION

(Under CBCS New Regulation w.e.f the academic year 2024-25)

Time : 3 Hours

Max. Marks : 75

SECTION - A

Answer any Five of the Following questions. Each question carries equal marks.

(5×3=15)

1. Define singular and non-singular matrix. Give one example.

2. If $A = \begin{bmatrix} 0 & 2 & 0 \\ 1 & 0 & 3 \\ 1 & 1 & 2 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 2 & 1 \\ 2 & 1 & 0 \\ 0 & 0 & 3 \end{bmatrix}$ find i) $A + B$ ii) $A - B$

3. How to the determinant of matrix of order 3. Give one example.

4. Find the Rank of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 3 & 4 & 5 \\ 4 & 5 & 6 \end{bmatrix}$

5. If set $A = \{3, 5, 7, 9, 11\}$, $B = \{7, 9, 11, 13\}$, $C = \{11, 13, 15\}$ find $(A \cup B) \cap (B \cup C)$

6. Define mode? Find the mode of the following data 11, 7, 9, 14, 12, 21, 18, 14, 17, 21, 14, 15, 18, 10

7. What is meant by classification of data?

8. Define frequency distribution table?

9. In a survey of 450 people. It was found that 110 play cricket, 160 play tennis and 70 play both cricket as well as tennis. How many play neither cricket nor tennis.
10. The following is the frequency distribution of the number of telephone calls received in 245 successive one - minute intervals at an exchange:

Number of Calls :	0	1	2	3	4	5	6	7
Frequency :	14	21	25	43	51	40	39	12

Obtain the mean number of calls per minute.

SECTION-B

Answer any Five questions. Each question carries equal marks.

(5×12=60)

11. If $A = \begin{bmatrix} 1 & -2 & 3 \\ 2 & 3 & -1 \\ -3 & 1 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 0 & 2 \\ 0 & 1 & 2 \\ 1 & 2 & 0 \end{bmatrix}$, $C = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ show that

$$A + (B+C) = (A+B) + C.$$

12. If $A = \begin{bmatrix} 2 & -1 & 2 \\ 1 & 3 & -4 \end{bmatrix}$, $B = \begin{bmatrix} 1 & -2 \\ -3 & 0 \\ 5 & 4 \end{bmatrix}$ verify i) $(AB)^T = B^T A^T$

13. Solve the following linear equations by using Cramer's rule
 $5x - 6y + 4z = 15$; $7x + 4y - 3z = 19$; $2x + y + 6z = 46$.

14. Solve the following linear equations by using Matrix inversion method
 $2x - y + 3z = 8$; $x + 2y + z = 4$; $3x + y - 4z = 0$.

15. If $A = \{3, 5, 7, 9, 11\}$, $B = \{7, 9, 11, 13\}$, $C = \{11, 13, 15\}$ and $D = \{15, 17\}$:

Find $(A-B)$, $(B-C)$, $(A \cap B)$, $(A \cup B)$, $(A \cup B \cup C \cup D)$, $(A \cap B \cap C \cap D)$

16. In a group of 50 people, 28 have traveled to Europe, 31 have traveled to Asia, and 10 have traveled to both continents. How many people have not traveled to either of the continent?

17. What is the importance of frequency distribution?

18. If the class mid-points in a frequency distribution of age of a group of persons are 25, 32, 39, 46, 53 and 60, find :

- The size of the class interval,
- The class boundaries, and
- The class limits, assuming that the age quoted is the age completed last birthday.

19. Find mean for the following distribution.

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No. of Students	12	18	27	20	17	6

20. Find mean/median/mode of the following distribution

Class interval	0-15	15-30	30-45	45-60	60-75	75-90	90-105
Frequency	8	26	30	45	20	17	4

**FOUR YEAR HONOURS B.C.A. (DATA SCIENCE/AI/BIG DATA/
CLOUD COMPUTING/GENERAL) DEGREE EXAMINATION,
DECEMBER/JANUARY - 2025/26**

THIRD SEMESTER-MAJOR

PART - II

PAPER-7 : JAVA AND DATA STRUCTURES

(Under CBCS New Regulation w.e.f. 2024-25)

Time : 3 Hours

Max. Marks : 75

SECTION -A

Answer any Five of the Following questions. Each question carries equal marks.

(5×3=15)

1. Write any three benefits of Object-Oriented Programming.
2. What are Java Tokens? Give examples.
3. Differentiate between method overloading and method overriding.
4. What is the use of the this keyword in Java?
5. List out different types of errors in Java.
6. What is an Applet? Mention any two features.
7. Define Stack. Write two real-time applications.
8. What are the differences between Arrays and Linked Lists?
9. Define Binary Tree. Write its two applications.
10. What is a Graph? Give two examples of its applications.

SECTION - B

Answer any Five of the following questions. Each question carries equal marks.

(5×12=60)

11. Explain the basic concepts of Object-Oriented Programming with examples.
 12. Discuss Java features and explain the steps to create and execute a Java program.
 13. Explain Constructors in Java. Discuss their limitations with examples.
 14. Describe types of Inheritance in Java. Give suitable examples. *single
multi
hierarchical
hybrid*
 15. Explain the concept of Packages in Java. How do we create and access packages?
 16. What is Exception Handling? Explain try-catch-finally mechanism with an example.
 17. Explain Bubble Sort and Quick Sort algorithms with examples.
 18. Discuss Stacks and Queues. Write algorithms for their implementation using arrays.
 19. Explain Binary Search Trees with insertion and traversal operations.
 20. Explain Graph representations (sequential and linked) with suitable diagrams.
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FOUR YEAR HONOURS B.C.A (ARTIFICIAL INTELLIGENCE)

DEGREE EXAMINATION, DECEMBER/JANUARY - 2025/26

CHOICE BASED CREDIT SYSTEM

THIRD SEMESTER - MAJOR

PART - II - PAPER - 8 : ARTIFICIAL INTELLIGENCE

(Under CBCS New Regulation w.e.f. the academic year 2024-25)

Time : 3 Hours

Max. Marks : 75

SECTION - A

Answer any Five of the Following questions.

(5×3=15)

1. Define Semantic Network with an example.
2. What is the difference between procedural and declarative knowledge?
3. Write any three applications of Natural Language Processing.
4. Define Expert system and mention its two important features.
5. What is backward reasoning in Logic programming?
6. Define phrase structure grammar with an example.
7. What is knowledge representation? Why is it important in AI?
8. Write a short note on Rule - Based Expert System.
9. Define information retrieval.
10. Mention any three categories of Expert Systems.

SECTION - B

Answer any Five questions.

(5×12=60)

11. Explain the approaches to Knowledge Representation with suitable examples.
 12. Discuss Knowledge Representation using Frames. How do they differ from Semantic Networks?
 13. Explain Forward Reasoning and backward Reasoning with suitable diagrams.
 14. Describe Logic Programming and its significance in AI.
 15. Explain Text Classification and Information Extraction in Natural Language Processing.
 16. What is Machine Translation? Explain the challenges involved in it.
 17. Define Expert system. Explain the characteristics features of Expert systems in detail.
 18. Discuss different categories of Expert Systems with examples.
 19. Explain the architecture of Expert Systems with a neat diagram.
 20. Discuss Rule - Based Expert Systems and Truth Maintenance Systems with examples.
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**FOUR YEAR B.Sc. (HONOURS) DEGREE EXAMINATION,
DECEMBER/JANUARY - 2025/26
CHOICE BASED CREDIT SYSTEM
THIRD SEMESTER - MINOR
PART - II : ELECTRONICS
PAPER - 5 : SEMICONDUCTOR DEVICES AND MATERIALS
(Under CBCS New Regulation w.e.f. the academic year 2024-25)**

Time : 3 Hours

Max. Marks : 75

SECTION - A

Answer any Five questions. Each question carries 5 marks.

(5×5=25)

1. What are inorganic and organic semiconductors? Give examples.
2. Explain mobility and factors affecting it in semiconductors
3. Explain avalanche breakdown.
4. What are MIS structures? State their importance.
5. Explain the principle of heterojunction devices.
6. Write short notes on interface states in MOS devices.
7. State the applications of charge-coupled devices.
8. Explain LEDs and their uses.
9. What are 2D materials? Mention any two examples.
10. Compare RC coupled and transformer coupled amplifiers.

SECTION B

Answer All questions. Each question carries 10 marks.

(5×10=50)

11. a) Explain high-field effects in semiconductors.

(OR)

- b) Discuss Energy bands and Carrier Transport of semiconductors.

12. a) With band diagram, explain rectifying MS contact.

(OR)

- b) Discuss I-V and C-V characteristics of MIS structures.

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(1)

[P.T.O.]

13. a) Explain MOSFET characteristics with neat diagrams.

(OR)

b) Write short notes on applications of CCDs in VLSI.

14. a) Explain the working principle of solar cells with neat diagram.

(OR)

b) Write notes on graphene and carbon nanotubes.

15. a) Explain multistage amplifiers and derive overall gain.

(OR)

b) Discuss transformer coupled amplifier frequency response.
