

Roll No. ....

Total Pages : 2

**2141**

**NBCA/M-25**

**OBJECT ORIENTED PROGRAMMING USING C++**

**Paper-B23-CAP/CTS/CAL/CDS-201**

**(CC-A2)**

Time : 3 Hours]

[Maximum Marks : 50

**Note :** Attempt **five** questions in all, selecting at least **one** question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

**Compulsory Question**

1. Differentiate between following :

- (i) Private and public member.
- (ii) Multiple and Multilevel Inheritance.
- (iii) Abstract and Virtual Class.
- (iv) Protected access specifier.
- (v) Run-Time and Compile-Time Polymorphism.

(5×2=10)

**UNIT-I**

2. What are the formatted and unformatted input-output functions with appropriate examples? (10)

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3. Differentiate between the following :
- (a) Structure and union.
  - (b) Call by value and call by reference. (10)

**UNIT-II**

4. (a) Describe static data members and static member function with suitable example. (5)
- (b) What is Destructor? State different rules needed to be considered while defining a destructor for a given class. (5)
5. (a) Explain scope resolution operator and its significance with suitable example. (5)
- (b) What is Constructor Overloading? Explain with example program. (5)

**UNIT-III**

6. What is inheritance? Explain various types of inheritance with suitable example. (10)
7. What do you mean by operator overloading? Explain how binary operator is overloaded with suitable example. (10)

**UNIT-IV**

8. Explain the concept of Exception handling in C++ with suitable example. (10)
9. What is virtual function? Explain its significance. Write program in C++ using virtual function. (10)

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Total Pages : 3

**2142**

**NBCA/M-25**

**INTRODUCTION TO WEB TECHNOLOGIES**

Paper : B23-CAP-202

(CC-B2)

(BCA)

Time : Three Hours]

[Maximum Marks : 50

**Note :** Attempt *five* questions in all selecting *one* question from each unit. Question number 1 is compulsory. All questions carry equal marks.

**Compulsory Question**

1. (a) Describe the process of linking external CSS and JavaScript files to an HTML document.  
(b) Explain the purpose of the HTML <meta> tag.  
(c) What do you understand by the universal selector in CSS?  
(d) Write a note on client side validation using JavaScript.

**UNIT-I**

2. (a) Discuss the importance of keywords and metadata in search engine indexing and ranking algorithms.  
(b) What is URL? Describe the purpose of each component of a URL.

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3. (a) What is a web browser, and how does it function? Name some popular web browsers and describe their key features.  
(b) Write a note on evolution of WWW.

#### UNIT-II

4. (a) How can you merge cells in an HTML table? Provide examples.  
(b) Describe the purpose of form attributes such as action and method in HTML forms.
5. (a) Explain the purpose of an ordered list in HTML. How does it differ from an unordered list? Illustrate.  
(b) Describe the process of creating hyperlinks in HTML. How do you create internal and external links?

#### UNIT-III

6. (a) Describe the difference between content-box and border-box values for the box-sizing property. When would you use each?  
(b) Explain the difference between inline, internal, and external CSS.
7. (a) What is the difference between class and id selectors in CSS? Illustrate.  
(b) What are pseudo-classes and pseudo-elements in CSS? Discuss.

#### UNIT-IV

8. (a) Describe the role of the Document Object Model (DOM) in JavaScript. How do you manipulate HTML elements using JavaScript?  
(b) What is the difference between for in and for of loop in JavaScript? Discuss.
9. (a) Explain the difference between == and === operators in JavaScript.  
(b) Describe the purpose of functions in JavaScript. How do you define and call functions in JavaScript?

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Total Pages : 3

**2144**

**NBCA/M-25**

**MATHEMATICAL FOUNDATIONS FOR**

**COMPUTER SCIENCE-II**

Paper : B23-CAP-204

(CC-M2) (BCA)

Time : Three Hours]

[Maximum Marks : 20

**Note :** Attempt *five* questions in all. Selecting at least *one* question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

**Compulsory Question**

1. (a) What is meant by frequency distribution and cumulative frequency distribution?  
(b) What do you mean by dispersion?  
(c) What is a scatter diagram?  
(d) What is a regression coefficient? (4×1=4)

**UNIT-I**

2. Solve the integral  $\int xe^x dx$ . (4)
3. Explain Pie diagrams, Histograms, Frequency polygons, and Ogives. (4)

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**UNIT-II**

4. The Median and Mode of the following wage distribution are known to be Rs. 33.50 and Rs. 34 respectively. Find the values  $f_3$ ,  $f_4$  and  $f_5$ .

Wages (in Rs.):	0-10	10-20	20-30	30-40	40-50	50-60	60-70	Total
Frequency:	4	16	$f_3$	$f_4$	$f_5$	6	4	230

(4)

5. For a group of 200 candidates, the mean and standard deviation of scores were found to be 40 and 15 respectively. Later on, it was discovered that the scores 43 and 35 were misread as 34 and 53 respectively. Find the corrected mean and standard deviation corresponding to the corrected figures. (4)

**UNIT-III**

6. What is rank correlation? How can handle repeated ranks in this type of correlation? Obtain the rank correlation coefficient for the following data :

X	68	64	75	50	64	80	75	40	55	64
Y	62	58	68	45	81	60	68	48	50	70

(4)

7. Discuss the various methods for finding the correlation using suitable examples. (4)

**UNIT-IV**

8. Find a linear regression equation for the following set of data :

X :	2	4	6	8
Y :	3	7	5	10

(4)

9. Fit a straight line of the form  $Y = AX + B$  to the following data :

X :	0	5	10	15	20	25	30
Y :	10	14	19	25	31	36	39

(4)

**BCA/M-25**

**ADVANCED PROGRAMMING IN-C**

Paper : BCA-121

Time : Three Hours]

[Maximum Marks : 80

**Note :** Question No. 1 is compulsory. In addition, attempt *four* more questions, selecting *one* question from each unit. All questions carry equal marks.

**Compulsory Question**

1. Explain following with example :

- (a) #include.
- (b) Explain Calloc() and malloc().
- (c) Explain gets() and puts().
- (d) Strcmp(). (4×4=16)

**UNIT-I**

2. Define String? Write a program to sort the list of names of students in alphabetic order. (16)

3. Explain following with suitable example :

- (a) String copy and string length.
- (b) Structure.
- (c) Union.
- (d) Array of structures. (4×4=16)

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### UNIT-II

4. Explain following with suitable example.

- (a) Pointer to pointer.
- (b) Pointers and array.
- (c) Pointers and functions.
- (d) Dynamic memory allocation. (4×4=16)

5. (a) What is pointer? How would you declare and initialize a pointer variable? (8)
- (b) Write a program in C to count vowels in string using pointers. (8)

### UNIT-III

6. What is console input output in C? How it is different from file input/output. Write a program in C to read the contents of a file. (16)

7. Explain the following functions in C using suitable examples :

- (a) Fscanf().
- (b) fseek().
- (c) fflush().
- (d) feof(). (4×4=16)

### UNIT-IV

8. (a) What is macro? Explain with suitable example. (8)
- (b) Explain the different command line arguments. (8)

9. Explain the following using suitable example in C :

- (a) #define.
- (b) #error.
- (c) #ifdef.
- (d) #if. (4×4=16)

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Total Pages : 2

BCA/M-25

3661

LOGICAL ORGANIZATION OF COMPUTER-II

Paper-BCA-122

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *five* questions in all. Question No. 1 is compulsory. In addition to compulsory question, attempt *four* more questions, selecting *one* question from each unit.

**Compulsory Question**

1. (a) What do you mean by internal & External interrupt?  
(b) Explain IOP.  
(c) Prove that NAND and NOR are universal gates.  
(d) What do you understand by Sequential Logic and write its properties? (4×4=16)

**UNIT-I**

2. Explain working of JK Flip Flop. What is the disadvantage of JK Flip Flop? 16
3. (a) Elaborate D Type Flip Flop. 8  
(b) What is State Table and State Diagram? Explain in detail. 8

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## UNIT-II

4. a) Differentiate between Synchronous & Asynchronous Counters. 8  
(b) What do you understand by Sequential Circuit? How will you design Registers? 8
5. Explain Register as a Storage Unit. Make shift register to store 1010. Convert it into parallel in parallel out. 16

## UNIT-III

6. (a) Write a note on Hard-Copy Output Devices. 8  
(b) Explain various Magnetic Storage Devices. 8
7. Distinguish ROM and RAM. Explain various types of RAM. 16

## UNIT-IV

8. Discuss the working of DMA in detail with diagram. 16
9. (a) Explain various Instruction Formats with example in detail. 8  
(b) Explain addressing modes. 8
-

9. (a) Prove that the characteristic roots of a Skew-Hermitian matrix are either zero or purely imaginary. (8)

- (b) Diagonalize the matrix, if possible :

$$\begin{bmatrix} 2 & 1 \\ 2 & 3 \end{bmatrix}. \quad (8)$$

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**3662**

BCA/M-25

MATHEMATICAL FOUNDATION-II

Paper : BCA-123

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *five* questions in all, selecting at least *one* question from each Section. Question No. 1 is compulsory.

**Compulsory Question**

1. (a) Construct a truth table for  $\sim p \Rightarrow \sim q$ . (4)  
 (b) Let  $G = \{0, 1, 2, 3, 4, 5\}$ . Find the order of elements of the group  $G$  under the binary operation addition modulo 6. (4)  
 (c) Find a matrix  $Y$  such that  $2A + B + Y = 0$ , where

$$A = \begin{bmatrix} -1 & 2 \\ 3 & 4 \end{bmatrix}, B = \begin{bmatrix} 3 & -2 \\ 1 & 5 \end{bmatrix}. \quad (4)$$

- (d) Prove the following by the principle of Induction for an  $n \in \mathbb{N}$  :

$$1.2 + 2.2^2 + 3.2^3 + \dots + n.2^n = (n - 1)2^{n+1} + 2. \quad (4)$$

**SECTION-I**

2. (a) Using truth table prove that  $p \vee (q \wedge r) \equiv (p \vee q) \wedge (p \vee r)$ . (8)

(b) Using principle of mathematical Induction, prove that for all  $n \in \mathbb{N}$  :

$$(2n + 7) < (n + 3)^2. \quad (8)$$

3. (a) Prove that  $[(p \Leftrightarrow q) \wedge ((q \Rightarrow r) \wedge r)] \Rightarrow r$  is a tautology. (8)

(b) Prove that  $3^{2n+2} - 8n - 9$  is divisible by 64. (8)

### SECTION-II

4. (a) If a group has four elements, show that it must be abelian. (8)

(b) A subgroup H of G is normal iff  $gHg^{-1} \subseteq H$  for all  $g \in G$ . (8)

5. (a) Prove that the intersection of two subrings is a ring. (8)

(b) Find the characteristic of ring  $(\mathbb{Z}_{10}, +_{10}, \times_{10})$ . (8)

### SECTION-III

6. (a) Find the value of  $x$  and  $y$  from the equation

$$2 \begin{bmatrix} x & 5 \\ 7 & y-3 \end{bmatrix} + \begin{bmatrix} 3 & -4 \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} 7 & 6 \\ 15 & 14 \end{bmatrix}. \quad (8)$$

(b) Find the row rank of the matrix

$$\begin{bmatrix} 3 & 4 & 1 & 2 \\ 3 & 2 & 1 & 4 \\ 7 & 6 & 2 & 5 \end{bmatrix}. \quad (8)$$

7. (a) Check whether the following system of equations is consistent or not, if it is consistent then solve the system

$$4x + 3y + 2z = -7$$

$$2x + y - 4z = -1$$

$$x + 2y + z = 1. \quad (8)$$

(b) For what value of  $\lambda$ , does the system

$$\begin{bmatrix} -1 & 2 & 1 \\ 3 & -1 & 2 \\ 0 & 1 & \lambda \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$$

has (i) No solution (ii) Unique solution. (8)

### SECTION-IV

8. (a) Prove that

$$A = \begin{bmatrix} 2 & 6 & 1 \\ 0 & 1 & -6 \\ 3 & 4 & 2 \end{bmatrix}$$

satisfies its characteristic equation. Also find its inverse, if it exists. (8)

(b) Find the characteristic vectors of the matrix

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 0 & -4 & 2 \\ 0 & 0 & 7 \end{bmatrix}. \quad (8)$$

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**3663**

**BCA/M-25**

**OFFICE AUTOMATION TOOLS**

Paper : BCA-124

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *five* questions in all, selecting *one* question from each unit. First question is compulsory.

**Compulsory Question**

1. (a) What is the primary purpose of desktop publishing software?
- (b) What is the advantage of using master pages in desktop publishing software?
- (c) What is PageMaker?
- (d) What are the main advantages of using PageMaker for desktop publishing?
- (e) What is the purpose of spell check in word processing?
- (f) How does word processing software handle document editing compared to pen and paper?
- (g) What is a slide in PowerPoint?
- (h) How do you start a slideshow in PowerPoint?

(8×2=16)

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### UNIT-I

2. (a) How did the release of PageMaker for Windows impact the adoption of desktop publishing in business and education sectors? (8)
- (b) Discuss the key features of PageMaker tailored specifically for the Windows environment. (8)
3. Analyse the role of desktop publishing packages in enabling businesses to create professional-looking marketing materials, such as brochures, flyers, and advertisements. How do these packages contribute to branding and promotional efforts? (16)

### UNIT-II

4. (a) Discuss the importance of leading (line spacing) in text formatting and how it can be adjusted in PageMaker? (8)
- (b) What are the options for aligning text in PageMaker? (8)
5. (a) Explain the process of adjusting the font size in PageMaker. (8)
- (b) How can you modify text content within a publication using PageMaker? (8)

### UNIT-III

6. Explore the key features and functionalities of word processing software, including text editing, formatting, spell checking, grammar checking, and document organization. How do these features contribute to the efficiency and effectiveness of document creation and editing? (16)
7. Explain the concept of Mail Merge in Microsoft Word. How does it allow users to personalize and automate the process of creating bulk documents such as letters, envelopes, and labels? (16)

### UNIT-IV

8. Examine the various tools and functionalities available in PowerPoint for designing and formatting slides. (16)
9. (a) Explain the process of adding animation to objects, text, and slides in PowerPoint. (8)
- (b) Explore the various types of animations available in PowerPoint. (8)

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**3664**

**BCA/M-25**

**STRUCTURED SYSTEM ANALYSIS AND DESIGN**

Paper : BCA-125

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *five* questions in all, selecting *one* question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

**Compulsory Question**

1. (a) Differentiate between open and closed systems.  
(b) Discuss the structure of decision table.  
(c) Differentiate between tangible and intangible costs.  
(d) Differentiate between adaptive and perfective maintenance.

**UNIT -1**

2. (a) Explain the difference between physical and abstract systems, providing examples of each.  
(b) How does the role of a system analyst evolve throughout the different phases of the System Development Life cycle (SDLC)?

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3. (a) Discuss the various phases of the System Development Life Cycle (SDLC) and their significance in system development.
- (b) What are some examples of subsystems within larger systems, and how do they contribute to the overall functionality?

#### UNIT-II

4. (a) How do Data Flow diagrams facilitate understanding and communication of system processes and data flow within a project? Explain using suitable example.
  - (b) Discuss the role of interviews as a fact-gathering technique in system analysis, including best practices for conducting effective interviews.
5. (a) What information does a Data Dictionary contain, and how does it aid in system analysis and design?
  - (b) How do questionnaires contribute to the fact-gathering process, and what are some considerations for designing and administering them?

#### UNIT-III

6. (a) Describe the goals of database design in terms of ensuring data integrity, security, and efficiency.
- (b) What factors should be considered when designing forms within a system, and how does effective form design contribute to data accuracy and user satisfaction?

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7. (a) Discuss the trade-offs between storage efficiency and data access speed in different file organization and database design approaches.
- (b) How do you prioritize between various costs and benefits during a cost/benefit analysis to make informed decisions about system development?

#### UNIT-IV

8. (a) Discuss strategies for reducing maintenance costs in software development projects while maintaining or improving system reliability and performance.
  - (b) Outline the main objectives of system testing and explain how they contribute to the overall success of a project?
9. (a) Discuss the importance of effective planning in testing and how it helps in identifying risks, allocating resources and ensuring thorough test coverage?
  - (b) Explain the goal of quality assurance in software development, and how does it differ from quality control?

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**BCA/M-25**

**PERSONALITY DEVELOPMENT**

Paper : BCA-126

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *five* questions in all, selecting at least *one* question from each unit. Question No. 1 is compulsory.

**Compulsory Question**

1. (a) Identify the causes of personality disorders or deranged personality and explain their effects on personal and professional life. (4)
- (b) What are the best practices for managing and mentoring junior employees in a professional environment? (4)
- (c) Why is clarity of thought important in both group discussions and presentations? How can it be developed? (4)
- (d) How can understanding the intent of an interview help a candidate perform better? (4)

**UNIT-I**

2. (a) Define personality and personal grooming. How do they contribute to an individual's overall impression in professional and social settings? (8)

(b) Discuss how a positive or negative self-concept can impact personal growth and interpersonal relationships. (8)

3. Discuss the significance of etiquette in social and professional interactions. How do cultural differences influence social and dining etiquette in a globalized world? (16)

#### UNIT -II

4. Discuss the importance of teamwork and collaboration in maintaining healthy relationships with colleagues. How can effective conflict resolution skills enhance cooperation and reduce misunderstandings among co-workers? (16)

5. Discuss how to ensure clear communication and respect while working with contract or temporary workers. What challenges may arise in managing contract workers, and how can interpersonal skills help overcome them? (16)

#### UNIT -III

6. Describe the qualities of a good participant in a group discussion. How can one contribute meaningfully without dominating the conversation? (16)

7. What are the essential components of a powerful presentation? Explain how body language, visuals, and voice modulation contribute to it. (16)

#### UNIT-IV

8. Explain different types of interviews. How can time management and goal setting contribute to better interview preparation? (16)

9. (a) What are the key points to include in a professional self-introduction during an interview? How can a well-structured self-introduction set the tone for a successful interview? (8)

(b) What strategies should be followed while addressing a panel of interviewers confidently and respectfully? (8)

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**DATA STRUCTURES AND APPLICATIONS**

Paper-CC-A4:B23-CTS-401

Time Allowed : 3 Hours]

[Maximum Marks : 50

**Note :** Attempt **five** questions in all, selecting **one** question from each Unit. Question No. **1** is compulsory. All questions carry equal marks.

**Compulsory Question**

1. Write short notes on the following : 5×2=10

- (a) How are Data structure traversed ?
- (b) Explain  $\mathcal{O}$  notation for algorithm complexity.
- (c) Give prefix form for  $A/B^C + D$ .
- (d) Given an array of float values in row major representation  $A[1..M][1..N]$ , If base address of this array 800 then find the address of  $A[i][j]$ .
- (e) Compute the total number of nodes in a complete binary tree of height 4.

**UNIT-I**

2. Explain with example on the following :

- (a) Static and Dynamic Data structures. 5

- (b) Non Primitive Data structures. 5
- 3. (a) How memory is allocated to a one dimensional array? 5
- (b) Write an algorithm to add two dimensional arrays a[1..M,1..N] and b[1..M,1..N]. 5

#### UNIT-II

- 4. (a) What are arrays of Characters ? How array of strings are initialized ? 5
- (b) Explain syntax and purpose of following string handling functions:
  - (i) strcmp. (ii) strcat 5
- 5. (a) How a double linked list is organized and how it is different from an array ? 5
- (b) Write an algorithm to traverse a double linked list. 5

#### UNIT-III

- 6. Differentiate between the following :
  - (a) Recursive and Iterative operations. 5
  - (b) Prefix and Postfix polish notation. 5
- 7. How a Dequeue is organized and develop an algorithm for insertion and deletion operations than a dequeue ? 10

#### UNIT-IV

- 8. (a) Explain linked organization of Binary tree in memory. 5
- (b) Write an algorithm to traverse a binary tree in postorder. 5
- 9. Explain the following :
  - (a) Merge Sort. 5
  - (b) Binary Search. 5

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2327

## FRONT-END DEVELOPMENT

Paper-CC-B4:B23-CAP-402

Time Allowed : 3 Hours]

[Maximum Marks : 50

**Note** : Attempt five questions in all, selecting **one** question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

### Compulsory Question

1. Write short notes on the following : 4×2½=10
  - (a) Explain type conversion functions in JavaScript.
  - (b) Differentiate Event Bubbling and Capturing.
  - (c) Explain Regular expression methods with example.
  - (d) Is jQuery is a replacement for JavaScript ? Explain with example.

### UNIT-I

2. Explain the methods of JavaScript creation with examples. 10
3. What is the usage of Regular Expressions ? Explain with examples. 10

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## UNIT-II

4. Explain Window objects and methods with examples. 10
5. What is Event handling ? Explain JavaScript event handlers with examples. 10

## UNIT-III

6. How Cookies helpful in Browser Object Model ? 10
7. How forms are validated ? Explain with examples. 10

## UNIT-IV

8. Explain jQuery events with examples. 10
9. What are the jQuery functions are used to provide effects ? 10

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2328

## COMPUTER GRAPHICS

Paper-CC-C4 : B23-CAP-403

Time Allowed : 3 Hours]

[Maximum Marks : 50

**Note** : Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

### Compulsory Question

1. Answer any Seven of the following questions in brief :
  - (a) What is the purpose of Frame Buffer in a graphics system?
  - (b) Which input device do you commonly use with Graphical User Interface?
  - (c) Describe the equation for drawing a Circle using the polynomial method.
  - (d) Write the equation for drawing Bezier curves.
  - (e) Define homogeneous coordinates and explain their significance in Computer graphics.

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- (f) Perform a composite transformation on a point (5, 5) with translation (2, 3) and a scaling factor of 2.
- (g) Write the matrix for scaling in 3D transformations.
- (h) Write any one equation to illustrate shading.

#### UNIT-I

- 2. (a) Describe any four applications of Computer graphics in different domains.
- (b) Describe the basic principles of a Raster-scan system and how it displays images on a screen?
- 3. (a) Explain the working principle of LCD panels in Computer graphics.
- (b) How do tablets contribute to the field of Computer graphics?

#### UNIT-II

- 4. Given the coordinates of two points  $(x_1, y_1) = (4, 5)$  and  $(x_2, y_2) = (10, 7)$ ; calculate the pixels forming the line using the DDA algorithm.
- 5. Use Bresenham's algorithm to plot the pixels to draw a circle with a radius of 5 and center at (3, 3).

#### UNIT-III

- 6. Describe the process of Rotating objects in Computer graphics. How is rotation about an arbitrary point different from rotation about the origin?

- 7. Describe the Cohen-Sutherland Line Clipping Algorithm and its steps for clipping a line segment against a Rectangular window.

#### UNIT-IV

- 8. Explain the concept of projections in Computer graphics. Differentiate between Orthographic parallel and Perspective projections.
- 9. Describe the Implementation of the depth buffer algorithm for hidden surface removal. What are its Computational requirements?

**3666**

**BCA/M-25**  
**ADVANCED DATA STRUCTURES**  
Paper : BCA-241

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *five* questions in all, selecting at least *one* question from each section. Question No. 1 is compulsory. All questions carry equal marks.

**Compulsory Question**

1. Explain the following in brief :
- (i) Binary Search Tree.
  - (ii) Binary Tree Representation in Computer memory.
  - (iii) Directed Graph.
  - (iv) Path Matrix in a Graph.
  - (v) External Sorting.
  - (vi) Linear Search Complexity.
  - (vii) File Attributes.
  - (viii) Hash Function. (8×2=16)

**UNIT-I**

2. What are the various ways to traverse a tree? Explain one way to traverse a binary tree by writing recursive and non-recursive algorithms and using suitable example.

(16)

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3. Write and explain the algorithms to delete an element from a binary search tree. (16)

#### UNIT-II

4. (a) Discuss the various ways to represent graphs in computer memory using suitable examples. (8)  
(b) Discuss the procedure to insert an edge in an existing graph using suitable example. (8)
5. Write and explain the algorithm to find shortest path using Dijkstra's algorithm. (16)

#### UNIT-III

6. What is Heap sort? Explain by writing its algorithm and using suitable examples. Also comment on its complexity. (16)
7. Write and explain the recursive and non-recursive algorithms to search an element using binary search. (16)

#### UNIT-IV

8. What are the various classifications of a file? Explain in detail using suitable examples. (16)
9. Discuss various ways to handle collisions in hashing in detail. Provide suitable examples. (16)

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ADVANCED PROGRAMMING USING C++

Paper : BCA-242

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt any *five* questions, selecting *one* question from each unit and Question No. 1 is compulsory. All questions carry equal marks.

**Compulsory Question**

1. (a) Why do we need virtual functions? 2
- (b) List operators that can be overloaded. 2
- (c) Explain the concept of protected inheritance using example. 3
- (d) Define different types of streams. 3
- (e) What are limitations of overloading unary increment operator? 3
- (f) Design a template to reverse an array. 3

**UNIT-I**

2. How does polymorphism promote extensibility? Differentiate compile time And run time polymorphism? 8,8
3. Write notes on :
  - (a) Virtual base class.
  - (b) An operator function.
  - (c) Virtual destructor. 6,5,5

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## UNIT-II

4. (a) What are abstract classes? Describe their importance.  
(b) Explain how base class member functions can be invoked in a derived class, if the derived class also has a member function with the same name? 8,8
5. (a) What is type casting conversion for user defined data types? Give example.  
(b) Explain one class type to another class type conversion. 8,8

## UNIT-III

6. Define :  
(a) Multilevel Inheritance.  
(b) Hybrided Inheritance. 8,8
7. (a) How constructors are executed in multilevel inheritance?  
(b) What is a template function ? Can a template be overloaded? 8,8

## UNIT-IV

8. Differentiate :  
(a) a text file and a text file. 8  
(b) seekg() and seekp() file manipulators. 8
9. What is difference between opening a file with :  
(a) using a constructor.  
(b) using open() function. 8,8

BCA/M-25  
E-COMMERCE  
Paper : BCA-243

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *five* questions in all, selecting at least *one* question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

**Compulsory Question**

1. Answer the following :
  - (a) Briefly explain the term E-Commerce with examples.
  - (b) What do the terms B2B and B2C stand for? Give *one* example of each.
  - (c) What is a Secure Electronic Transaction (SET)?
  - (d) Name any *two* applications of E-Commerce in the travel and tourism industry.

**UNIT-I**

2. Compare and contrast E-Commerce practices with traditional business practices. Provide examples.
3. Describe the process of an online credit card transaction. What security protocols ensure safe payments?

## UNIT-II

4. Discuss the impact of E-Commerce on disintermediation and reintermediation in the global market.
5. Explain the concept of government-to-business (G2B) and citizen-to-government (C2G) interactions in E-Governance with suitable examples.

## UNIT-III

6. Explain the success factors of E-Brokers in an online business environment.
7. What are E-Auctions? Explain their benefits, implementation, and impact on businesses and consumers.

## UNIT-IV

8. Discuss the key technologies and architectural models used in B2B E-Commerce.
9. What are the major Internet security and legal issues involved in E-Commerce, especially in the Indian scenario?

**Note :** Students will be required to attempt *five* questions in all selecting *one* question each from Unit-I to Unit-IV. Question No. 1 is compulsory. All questions carry equal marks.

**Compulsory Question**

1. (a) What is entity, tuple and attribute in Relational Database Management System?
- (b) How do we use renaming in relational algebra?
- (c) What is the condition to ensure that the relation is in first normal form?
- (d) What do you mean by transitive functional dependency? State rule.
- (e) What are indexes? How do we create index in SQL?
- (f) Briefly explain any *four* aggregate functions in SQL.
- (g) How should comments be written in PL/SQL code?
- (h) Tell the importance of %TYPE and %ROWTYPE data types in PL/SQL. (8×2=16)

### UNIT-I

2. What are the uses of relational algebra? How relational algebra is different from relational calculus? Explain the following operations with example :
  - (i) Intersection.
  - (ii) Cartesian Product.
  - (iii) Project.
  - (iv) Join.
3. (a) Differentiate between Tuple Relational Calculus (TRC) and Domain Relational Calculus (DRC). How do we express query in TRC and DRC? State example.  
(b) How was Dr. Edgar F. Codd? Discuss 3rd, 7th, 10th and 12th rule of Dr. Codd. (8+8=16)

### UNIT-II

4. (a) What is functional dependency? Differentiate between full and partial functional dependency. State example.  
(b) Why we need decomposition? What is its need? What are the steps involved in decomposing the relations? (8+8=16)
5. Explain Boyce-Codd Normal Form with example. How it is different from 3rd Normal Form? Discuss about insert, update and delete anomalies. 16

### UNIT-III

6. What data types are used in SQL? Write the syntax and example to create relations using primary key, foreign key, check, null and default constraints. 16
7. (a) Write the definition, syntax and example for the following :
  - (i) Alter.
  - (ii) Drop.
  - (iii) Insert.  
(b) How do we write SQL queries using where, group by and order by clause? State example. (8+8=16)

### UNIT-IV

8. (a) Differentiate between PL/SQL and SQL\*Plus. Outline and explore PL/SQL block structure.  
(b) State examples illustrating the use of control structure in PL/SQL. (8+8=16)
9. Why do we use cursors and triggers in PL/SQL? Write the syntax to create trigger (before/after with insert/delete/update) in PL/SQL. 16

UNIT-IV

8. (a) The theory predicts the proportion of beans in the four groups X, Y, Z and W should be 9 : 3 : 3 : 4. In an experiment with 1600 beans the nos. in four groups were 885, 315, 281, 119. Does the experiment result support the theory? (value of chi-square for 3 d.f. at 5% level of significance 7.81). (8)
- (b) What is a Student's t-distribution for means of two different samples? Write its formula and uses? (8)
9. Write notes on : (8)
- (a) Any *four* sampling techniques. (8)
- (b) Two way classification of data with an example. (8)

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Total Pages : 4

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BCA/M-25

COMPUTER ORIENTED STATISTICAL METHODS

Paper : BCA-245

Time : Three Hours] [Maximum Marks : 80

Note : Attempt *five* questions in all, selecting *one* question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) Differentiate an relative frequency and cumulative frequency. (4)
- (b) Write poisson distribution formula and calculate its mean. (4)
- (c) Define aim of linear regression and derive its equations. (4)
- (d) What is the significance of student's t-test ? Write its formula. (4)

UNIT-I

2. Find Mean, Mode and Median for data given below :

Class :	0-4	4-8	8-12	12-16	16-20
Frequency :	21	11	16	18	2

3. (a) For the following distribution :

X :	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-41
F :	10	18	30	41	32	29	10	5

Calculate first four moments  $\mu_1, \mu_2, \mu_3$  and  $\mu_4$  about arithmetic mean  $\bar{X}$  ? (8)

(b) Find standard deviation and coefficient of variation for following data :

X :	1	2	3	4	5	6
F :	4	10	16	25	14	9

(8)

#### UNIT-II

4. (a) Calculate arithmetic mean and variance of Normal Distribution? (8)

(b) Show that coefficient of correlation  $r_{xy}$  is independent on shift of origin and change of scale i.e.,  $r_{xy} = r_{xy'}$  (8)

5. (a) Calculate Karl Pearson's correlation coefficient between student Attendance and their score :

Average attendance (in %) :	50	55	60	70	85	90	95
Score(in %) :	42	36	55	59	60	70	72

(8)

(b) Ten students secured the following marks in English and hindi :

Eng. :	30	42	37	46	34	32	45	39	28	44
Hindi :	42	48	28	39	30	36	43	34	36	39

Compute their ranks in two subjects and coefficient of rank correlation. (8)

#### UNIT-III

6. (a) Find the equation of lines of regressions :

X :	1	2	4	5	7
Y :	12	8	6	9	11

(8)

(b) Find the standard error of estimate of y on x :

X :	2	4	6	8	10
Y :	20	18	22	26	24

(8)

7. (a) Find a relation ship between regression's coefficient and correlation's Coefficient? (8)

(b) Fit an exponential  $Y = AB^x$  for the table :

Y :	0	1	2	3	4
X :	0	1	4	9	12

(8)

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**BCA/M-25**

**MANAGEMENT INFORMATION SYSTEM**

Paper : BCA-246

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *five* questions in all, selecting *one* from each Unit.  
Question No. 1 is compulsory.

**Compulsory Question**

1. (a) What is the difference between a system and a subsystem? (4)
- (b) What is the need of decision-making? (4)
- (c) What is adaptive maintenance? (4)
- (d) What are e-business systems? (4)

**UNIT-I**

2. (a) Distinguish between :
    - (i) Open & Closed Systems.
    - (ii) Deterministic & Probabilistic Systems. (10)
  - (b) Discuss the relevance and role of information in decision-making. (6)
- 
3. What is an information system? Explain the sub-systems of an information system. (16)

## UNIT-II

4. Discuss the importance of management information system. Explain the characteristics and components of management information system. (16)
5. Differentiate between following :
- (a) Structured and Un-Structured Decisions.
  - (b) Formal and Informal Systems. (16)

## UNIT-III

6. (a) Elaborate the symbols used in constructing DFDs. Write basic rules for constructing a DFD. (8)
- (b) What is the difference between analysis and design? How would an analysis determine the users' needs for a system? (8)
7. Discuss the pitfalls in MIS development. Also explain various design problems and the solution strategies for the same. (16)

## UNIT-IV

8. Discuss the following :
- (a) Production Information System.
  - (b) Human Resource/Personnel Management System. (16)
9. What are Decision Support Systems? Explain the characteristics and functions of Decision Support Systems. How is DSS useful in planning and control? (16)

Roll No. ....

Total Pages : 3

**3672**

**BCA/M-25**

**WEB DESIGNING USING ADVANCED TOOLS**

Paper : BCA-361

Time : Three Hours]

[Maximum Marks : 80

**Note :** Question Number 1 is compulsory. Attempt *five* questions in all, selecting at least *one* question from each unit. All questions carry equal marks.

**Compulsory Question**

1. (a) List out any *two* differences between static and dynamic web pages.  
(b) Differentiate == and === .  
(c) What is the main purpose of Macromedia Flash?  
(d) What are the variable naming conventions in VBScript?  
(e) List any two advantages of PHP.  
(f) What are the features of Macromedia Dreamweaver?  
(g) How to use message box in VBScript?  
(h) How to set background color in XML layout?

**UNIT-I**

2. (a) What are variables? How to assign values to variables in VBScript? What is the difference between Implicit and explicit declaration of variables?

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(b) Describe various data types used in JavaScript.  
Comment "JavaScript has dynamic type".

3. (a) What is Dynamic Array? How re-size dynamic arrays in VBScript? Explain with example.  
(b) Explain various build-in functions used in VBScript.

#### UNIT-II

4. (a) How does ASP works? Explain the client server model of ASP.  
(b) What are the various decision-making statements used in ASP?

5. What is PHP? Write some of the key features of PHP.  
Why PHP is known as server side scripting language?  
Differentiate ASP and PHP.

#### UNIT-III

6. (a) How would you give headers to the table columns in HTML? Also explain how to add a border to the table.  
(b) Explain the various types of CSS with examples.

7. Write short note on following :
- (i) Dynamic Positioning.
  - (ii) Mouseovers.
  - (iii) Linking and embedding CSS in HTML.
  - (iv) Layered Object.

#### UNIT-IV

8. How can you apply a DTD to an XML document?  
Describe the basic rules to write XML document?  
Describe the structure of XML document.
9. Explain the different tools of Front page ToolBar. How to add scrollbar in Front page?

BCA/M-25

OPERATING SYSTEM-II

Paper : BCA-362

Time : Three Hours]

[Maximum Marks : 80

**Note :** Students will be required to attempt *five* questions in all selecting *one* question each from Unit-I to Unit-IV. Question No. 1 is compulsory. All questions carry equal marks.

**Compulsory Question**

1. (a) Write the characteristics and requirements of critical region.
- (b) How hash table is used for directory implementation?
- (c) Write short notes on swap space management.
- (d) Define rotational latency and disk access time.
- (e) How do I shutdown, reboot and logout the Linux system from the command-line?
- (f) Use sort and uniq command to sort a file and print unique values using piping in Linux.
- (g) Write about cron command in Linux with example.
- (h) What is a superblock in shell scripting? Differentiate between \$@ and \$\*. (8×2=16)

### UNIT-I

2. (a) What is deadlock and starvation? Explain necessary conditions for a deadlock to occur.
- (b) What is Process Synchronization? Explain the Critical Section problem with example. (8+8=16)
3. (a) What operations can be performed on a semaphore? Write the steps for the Dining Philosopher Problem solution using semaphores.
- (b) Briefly explain different types of directory structures. (8+8=16)

### UNIT-II

4. Write the importance of disk scheduling algorithms? Consider a disk queue with I/O requests on the following cylinders in their arriving order : 37, 56, 98, 32, 108, 78, 44, 78, 67, 69, 100. The disk head is assumed to be at Cylinder 40 and moving in the direction of decreasing number of cylinders. The disk consists of total 150 cylinders. Calculate and show with diagram the disk head movement using SSTF and SCAN disk scheduling algorithms. (16)
5. (a) Write the procedure of remote login. Discuss about NVT character set.
- (b) Explain different types of process migration in distributed system. (8+8=16)

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### UNIT-III

6. Outline and explain the structure of LINUX. What are the features of Linux operating system? How will you differentiate Linux with other operating systems? (16)
7. (a) Write the purpose and syntax of the following Linux commands :
  - (i) awk (ii) grep (iii) touch (iv) nslookup (v) ping (vi) renice.
- (b) Discuss the different types of Redirections and how to use Redirections in Linux? (8+8=16)

### UNIT-IV

8. (a) What are the different type of files? Write file permissions. Provide an example of changing permissions and ownership of a file.
- (b) Define vi Editor and explain its modes. Brief about the commands used in the vi Editor. (8+8=16)
9. (a) How do you assign values to shell variable? Briefly discuss about shell control structures.
- (b) Write a shell program for counting characters, words and line? (8+8=16)

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3

BCA/M-25

COMPUTER GRAPHICS

Paper : BCA-363

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *five* questions in all. Question Number 1 is compulsory. In addition to the compulsory question, attempt *four* more questions, selecting *one* question from each unit. All questions carry equal marks.

**Compulsory Question**

1. Answer any *four* of the following questions in brief :
  - (i) Name one coordinate system used in computer graphics and explain it.
  - (ii) What is the purpose of a lookup table in graphics?
  - (iii) What is scan conversion in computer graphics?
  - (iv) What is the purpose of the decision variable in Bresenham's line algorithm?
  - (v) Explain Shearing using an example.
  - (vi) Explain the concept of window and viewport in 2D viewing.

**UNIT-I**

2. (a) Discuss any *four* applications of computer graphics.  
(b) Compare and contrast random scan and raster scan display systems.

3. (a) Describe the structure and functioning of a color CRT monitor.
- (b) What is a display processor? Explain its role in a graphics system.

#### UNIT-II

4. Explain the Simple DDA line drawing algorithm and compute the points of a line with endpoints at (3, 4) and (10, 7) using this algorithm.
5. (a) Describe the process of drawing a circle using polar coordinates.
- (b) How are polygons filled using the flood fill algorithm?

#### UNIT-III

6. (a) Describe the scaling transformation with its matrix representation and an example.
- (b) What is the difference between reflection and rotation?
7. (a) Derive the composite transformation matrix for a sequence of translation and rotation.
- (b) Explain positioning techniques used for graphical input and give examples of positioning devices.

#### UNIT-IV

8. Explain line clipping using the Cohen-Sutherland algorithm with a suitable diagram and the equations used in it for clipping.
  9. (a) Describe any *three* methods used for 3D display.
  - (b) Write the matrix for 3D rotation about the X, Y, and Z axes, along with suitable diagrams.
-

**BCA/M-25**  
**INTERNET TECHNOLOGIES**  
Paper : BCA-364

Time : Three Hours] [Maximum Marks : 80

**Note :** Attempt *five* questions in all, selecting exactly *one* question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

**Compulsory Question**

1. (a) What are the various ways to search for information on the web?  
(b) What is meant by WWW?  
(c) What is DNS mapping?  
(d) What is a remote procedure call?  
(e) What is meant by web-based mail?  
(f) State the purpose of VoIP.  
(g) What is meant by NAT?  
(h) Comment on e-mail security. (8×2=16)

**UNIT-I**

2. (a) Discuss the client-server architecture in detail. (8)  
(b) Discuss the architecture of TCP/IP in detail. (8)

3. Write short notes on (i) Web Browsers (ii) URL (iii) HTTP (iv) Search Engine. (16)

#### UNIT-II

4. Differentiate between IPv4 and IPv6 working, addressing, and packet formats. (16)

5. Compare between following :

- (i) ARP and RARP. (16)  
(ii) ICMP and IGMP. (16)

#### UNIT-III

6. What are the various for file access and transfer? Explain. (16)

7. (a) What are the major differences between RTSP and RTP? (8)  
(b) If you use a smartphone with a limit on the number of data bytes received each month, would you prefer POP3 or IMAP4? Explain. (8)

#### UNIT-IV

8. (a) Discuss the concept of VPN Addressing and Forwarding. (8)  
(b) Does it make sense to use SNMP to manage all devices? Why or why not? (8)

9. (a) Some organizations use firewalls to isolate groups of users internally. Give examples of ways that internal firewalls can improve network performance and examples of ways internal firewalls can degrade network performance. (8)  
(b) What is meant by IPsec? Explain along with the IPsec authentication header. (8)

BCA/M-25

ADVANCED PROGRAMMING WITH VISUAL BASIC

Paper : BCA-365

Time : Three Hours]

[Maximum Marks : 80

Note : Question No. 1 is compulsory. In addition to that attempt *four* more questions, selecting *one* question from each unit. All questions carry equal marks.

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**Compulsory Question**

1. (a) What is the difference between loading and showing a form?
- (b) What is meant by dynamic forms?
- (c) How can you create a shortcut and access keys to a menu?
- (d) How can you use slider control in VB?
- (e) What is the purpose of EOF and LOF in a file?
- (f) State the purpose of the paint method.
- (g) Enlist the major properties of a DAO control in VB.
- (h) Enlist the major operations that can take place on a database. (8×2=16)

### UNIT-I

2. Differentiate between array and collection. How can you use a collection? Explain by writing a suitable program for creating, using, and manipulating a collection. (16)
3. (a) What is manual drag? How can you perform it? Explain using suitable examples. (8)  
(b) Write a simple VB program using multiple forms. (8)

### UNIT-II

4. Explain the following in detail :
  - (i) Tree View. (16)
  - (ii) Progress Bar. (16)
5. How can you create a menu in VB? Explain the procedure in brief. Also, discuss the procedure to add a dynamic submenu to a menu using suitable examples. (16)

### UNIT-III

6. (a) How can you draw freehand with the mouse in VB? Explain with a suitable example. (8)  
(b) Write a program to draw a smiley face in VB. (8)
7. Describe various types of files in VB. How various operations can be performed on files? Explain with appropriate examples in each case. (16)

### UNIT-IV

8. What do you understand by data controls and data-bound controls? Explain each in detail using suitable examples. (16)
9. Using any method create a project for maintaining, using and manipulating the student database. Show the design and write the requisite coding for the same. (16)

**3677**

**BCA/M-25**  
**PROGRAMMING IN CORE JAVA**  
Paper : BCA-366

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt any *five* Questions. Selecting at least *one* from each unit. Question No. 1 is Compulsory. All Questions carry equal marks.

**Compulsory Question**

1. Explain the following :
  - (a) Operators and expressions in java.
  - (b) Wrapper classes in java.
  - (c) Use of 'super' and 'this' keywords.
  - (d) Different types of Applet.
  - (e) Graphics functions in Applet.

**UNIT-I**

2. Explain various access specifiers in Java? What are static variables and static methods in java? How they are accessed?
3. Explain the following :
  - (a) Java keywords.
  - (b) Identifiers.
  - (c) Loop Structure.

## UNIT-II

4. Write program to find the area of rectangle using  
(i) Function overloading (ii) Inheritance.
5. Discuss different types of Array in java. Write java code to Add and Multiply 2 matrices.

## UNIT-III

6. What are various ways of code reusability in JAVA?  
Discuss package in detail with example.
7. Write program to display your own name using the  
concept of (i) Constructor (ii) Package.

## UNIT-IV

8. Write an Applet program to add two Integers, entered in  
Textfields and their SUM should be displayed in Third  
Textfield.
  9. Can we use Multiple Catch blocks in Exception Handling?  
Write Java code to handle your own exception.
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Total Pages : 03

BCA/M-25

20584

OBJECT ORIENTED PROGRAMMING

USING C++

BCA-301

Time : Three Hours] [Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. Answer the following questions in brief : 4×4=16
- (a) What is class ? How is it different from structure ?
  - (b) Explain different modes of file opening.
  - (c) What is abstract class ? How do you create it in C++ ?
  - (d) What is friend function ? Why do you need it ?

Unit I

2. (a) What is scope resolution operator ? Explain its use with an example. 4
- (b) Differentiate between nested class and local class. 4
- (c) What is static data member ? Explain its use with an example. 8

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3. (a) What is parametrized constructor ? Explain with an example. How can you give default values to parameters in a constructor ? 8
- (b) What is destructor ? Give an example. How is it different from normal member function ? 8

#### Unit II

4. (a) How can you create an array of objects ? Explain with an example. 8
- (b) How can you allocate and deallocate memory dynamically ? Explain with suitable examples. 8
5. (a) How can a function return object ? Explain with an example. 8
- (b) What is operator overloading ? Overload ++ operator to increment distance given in feet and inches. 8

#### Unit III

6. (a) What is dynamic polymorphism ? Explain function overriding with an example. 8
- (b) How can you create basic type to object type ? Explain with an example. 8

7. (a) What is virtual function ? Explain its need with an example. 8
- (b) What are different derivation rules ? Explain. 8

#### Unit IV

8. (a) What is multilevel inheritance ? How is it implemented in C++ ? Explain with an example. 8
- (b) Explain the roles of constructors and destructors in inheritance. 8
9. (a) What is template function ? Explain its use with an example. 8
- (b) Explain use of 'try', 'throw' and 'catch' with suitable examples. 8



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Total Pages : 03

BCA/M-25 20585

WEB DESIGNING

BCA-302

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

### Compulsory Question

1. (a) What are the benefits of using styles compared with placing formatting directly into the text of the Web page ?
- (b) Illustrate the form tag with its attributes.
- (c) What are inline styles ?
- (d) Describe structure of XML document. 4×4=16

### Unit I

2. (a) What do you mean by searching and web casting techniques ? Explain. 8

- (b) Describe the following : 8
- (i) Domain Name
  - (ii) Markup Languages.
3. Explain the complete process of Web publishing. 16

### Unit II

4. (a) Explain different types of linking in HTML. 8
- (b) How to create the tables and frames in HTML ? Explain with examples. 8
5. (a) Write a HTML document containing ordered list. Explain the use of type attribute in it. 8
- (b) Write a short note on the Text Structuring and page layout. 8

### Unit III

6. (a) Explain about cascading style sheets with font and color attributes. 8
- (b) Describe DHTML events in detail. 8
7. (a) Describe the process of embedding of CSS in HTML document. 8
- (b) How can you add a transition to an image in CSS ? Explain with example. 8

### Unit IV

8. (a) Describe the application of XML. 6
- (b) What is the purpose of using Microsoft FrontPage ? Explain various steps to create Microsoft FrontPage. 10

9. Write short notes on the following : 16

- (i) Font face
- (ii) Flow Objects.
- (iii) Scroll Bars
- (iv) Menu Bar.



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Total Pages : 03

BCA/M-25

20586

COMPUTER NETWORKS

BCA-303

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

**(Compulsory Question)**

1. Answer the following : 8×2=16

- (a) What do you mean by gateway ?
- (b) Define PC cards.
- (c) What do you mean by baud rate ?
- (d) Define Switching.
- (e) Explain Modulation.
- (f) What do you mean by Token bus ?
- (g) What is Digital Certificate ?
- (h) What do you mean by flooding ?

## Unit I

2. What do you mean by networking model and explain OSI reference model ? 16
3. Explain the various transmission media used in networking. 16

## Unit II

4. What are the various multiplexing techniques ? Explain. 16
5. (a) Explain the concept of modulation and demodulation. What are its advantages ?  
(b) Compare circuit, message and packet switching. 8×2=16

## Unit III

6. What do you mean by networking protocols ? Explain sliding window and selective repeat protocol. 16
7. (a) Describe the various collision free protocols.  
(b) Explain Aloha. 8×2=16

## Unit IV

8. (a) Explain link state routing and hierarchical routing. 8  
(b) Explain load shedding congestion control techniques. 8
9. What do you mean by Cryptography ? Explain the various encryption methods. 16



Roll No. ....

Total Pages : 02

BCA/M-25

20587

MANAGEMENT INFORMATION SYSTEM

BCA-304

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all. Q. No. 1 is compulsory.

Attempt *four* more questions selecting *one* question from each Unit. All questions carry equal marks.

1. Define the following : 4×4=16
- (i) Deterministic System
  - (ii) Abstract System
  - (iii) Decision Making
  - (iv) Un-structured Decisions.

**Unit I**

2. Explain different types of information in detail. 16
3. Write notes on the following : 4×4=16
- (a) System Boundaries
  - (b) Interface
  - (c) Black Box
  - (d) System Environment.

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P.T.O.

## Unit II

4. Explain various levels of management with their roles. 16
5. Explain Formal and Informal information systems. 16

## Unit III

6. Explain Data Flow Diagram (DFD) as a structured analysis tool. Give its advantages and disadvantages. 16
7. Explain concept of modularisation. Also explain top down design method with its merits. 16

## Unit IV

8. (i) What is e-Commerce ? Explain applications of e-Commerce. 8
- (ii) Differentiate between traditional business practices and e- Commerce practices. 8
9. Write notes on the following :
  - (i) Consumer to Business (C2B) 8
  - (ii) Government to Citizen (G2C). 8



**OBJECT ORIENTED PROGRAMMING  
USING C++**

Paper-CC-A2 : B23-CSD-201

Time allowed : 3 Hours]

[Maximum Marks : 50

*Note* : Attempt five questions in all, selecting one question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

**Compulsory Question**

1. Attempt all questions:
  - (i) Define streams in C++.
  - (ii) Give example of Inline function.
  - (iii) What is structure and class and give their difference?
  - (iv) Define Data Hiding and Encapsulation.
  - (v) Define Recursion and give example to explain.

**UNIT-I**

2.
  - (a) Define major properties of C++ with reference to OOPS.
  - (b) Discuss Formatted I/O Operations.
3.
  - (a) Explain concept of Pointer and make a program to swap two variables using Pointer.

- (b) What are ways to transfer variable using Function?  
Differentiate call by value and call by reference  
using an example.

#### **UNIT-II**

4. Explain type of Constructors and make a program showing default and copy constructor.
5. (a) Explain concept of Friend Function.  
(b) Discuss local class, global class, Scope Resolution Operator and its Uses.

#### **UNIT-III**

6. Explain types of Inheritances and write a program in C++ to show hierarchical Inheritance.
7. Explain concept of String handling explain with program using string manipulation functions.

#### **UNIT-IV**

8. (a) Explain concept of Polymorphism and its types.  
(b) What is Virtual function and Pure Virtual function.
9. Explain concept of Exception Handling. Make a program to explain exception handling.

**INTRODUCTION TO WEB TECHNOLOGY**

Paper-CC-B2 : B23-CSD-202

Time allowed : 3 Hours]

[Maximum Marks : 50

**Note :** Attempt five questions in all, selecting one question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

**Compulsory Question**

1. Attempt all questions: 5×2=10
- (i) Give a brief account of evolution of WWW (World Wide Web).
  - (ii) Write syntax and purpose of external hyperlink in HTML.
  - (iii) What is box position in CSS?
  - (iv) Write HTML code to design a table with 3 rows and 3 columns?
  - (v) Explain Hoisting in JavaScript?

**UNIT-I**

2. (a) What is a search tool in web design? Write different search tools used in HTML. 5
- (b) Write phases of web development? 5

3. Write notes on the following:
- (a) Web client and web server. 5
  - (b) Any five functions of a client-server network. 5

**UNIT-II**

4. Differentiate between a table and a frame in HTML. Also write HTML code for a table design and a frame design. 10
5. Explain the following:
- (a) How can you add a picture in HTML? 5
  - (b) How to design an HTML form? 5

**UNIT-III**

6. (a) What is the core concept of a CSS? What are the two main parts of a CSS syntax? 5
- (b) Write a CSS file and attach it to any 2 HTML web pages? 5
7. (a) What is the normal flow box model in CSS? 5
- (b) Write any five features of CSS3? 5

**UNIT-IV**

8. Write short notes on the following:
- (a) How to create a client program in JavaScript? 5
  - (b) Which language is best for non programmers and why? 5
9. (a) Write a JavaScript program to find the sum of an array. 5
- (b) Differentiate a static web page and a dynamic web page. 5

Roll No. ....

Total Pages : 03

BCA/M-25 20588

COMPUTER GRAPHICS

BCA-305

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. Attempt all questions :
  - (a) Write on Non-Impact Printers.
  - (b) What is covering (exterior clipping).
  - (c) Differentiate between 2-D and 3-D graphics.
  - (d) What do you understand by Transformation ? Write down the matrix for 3-D Rotation w.r.t. Y-axis.

Unit I

2. Explain the various input and output devices used for Computer Graphics.

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P.T.O.

3. (a) Differentiate the Random and Raster Scan in detail with suitable diagram.
- (b) Discuss the LED, Lookup Table and Interlacing.

#### Unit II

4. Explain how Bresenham's algorithm takes advantage of the connectivity of pixels in drawing straight lines on a raster output device. How is it better as comparative with other Line drawing Algorithms ?

5. (a) Write DDA Algorithm for scan converting a line.
- (b) Write Algorithms for Boundary Fill problems.

#### Unit III

6. (a) Discuss the Homogenous Coordinates for with example.
  - (b) Explain the concept of Raster Transformation in brief.
7. Give a brief description of various Pointing and Positioning Devices in Computer Graphics.

#### Unit IV

8. What is clipping ? Explain Mid-Point Subdivision Line Clipping Algorithm with suitable Example.
9. With suitable examples explain all 3D transformations.



Roll No. ....

Total Pages : 03

BCA/M-25 20589

E-COMMERCE

BCA-306

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 (Unit I) is compulsory. All questions carry equal marks.

Unit I

1. (i) Difference between pure and partial e-Mail. 2
- (ii) Explain the importance of JIT delivery. 2
- (iii) List the b2c products. 2
- (iv) List the major services of online travel services. 2
- (v) Describe the advantages of internet based EDI over traditional based EDI. 2
- (vi) Difference between Internet and Intranet. 2
- (vii) Define Global market. 2
- (viii) Explain the Digital signature. 2

## Unit II

2. (a) Describe the framework of e-Commerce. 8  
(b) Explain the Debit cards. What are its advantages and disadvantages ? 8
3. (a) Difference between Symmetric and Asymmetric encryption. What are components required for SET transaction ? 8  
(b) What do you mean by e-Cash ? Explain the various components of e-Cash. 8

## Unit III

4. (a) Explain the critical flow model by using an example. What is its application ? 8  
(b) Explain the Disintermediation and Reintermediation. 8
5. (a) Explain the e-Advocacy model with its applications. 8  
(b) Explain the strategy of traditional Department stores. 8

## Unit IV

6. (a) Explain the e-Brokers. What are the success factors of e-Brokers ? 8

- (b) What do you mean by Online Banking ? Explain. 8
7. (a) Explain the various financial services and explain any *one* of them in detail. 8  
(b) How does online stock trading works and what are its benefits ? 8

## Unit V

8. (a) List the advantages and disadvantages of Application level proxy server. 8  
(b) Explain the marketing issues in B2B. 8
9. (a) Explain the legal aspects of e-Commerce. 8  
(b) Explain the security threats of using internet. What are the benefits of JIT delivery ? 8

- (b) Compute the Return on Capital Employed (ROCE).  
 (c) Interpret the result—how well is the company using its capital to generate operating profit?  
 (d) Suggest two ways the company could potentially improve its ROCE in the next fiscal year.

GHI लिमिटेड ने वर्ष के लिए निम्नलिखित वित्तीय आंकड़े प्रदान किए हैं :

ब्याज और कर से पहले की कमाई (EBIT) : \$250,000

कुल संपत्ति : \$1,200,000

वर्तमान देयताएँ : \$300,000

आपको निम्नलिखित कार्य करने होंगे :

- (क) नियोजित पूंजी (कुल संपत्ति - वर्तमान देयताएँ) की गणना करें।  
 (ख) नियोजित पूंजी पर प्रतिफल (ROCE) की गणना करें।  
 (ग) परिणाम की व्याख्या करें - कंपनी परिचालन लाभ उत्पन्न करने के लिए अपनी पूंजी का कितना अच्छा उपयोग कर रही है?  
 (घ) दो तरीके सुझाएँ जिससे कंपनी अगले वित्तीय वर्ष में अपने ROCE को संभावित रूप से बेहतर बना सके।

8. Explain the concept of a Funds Flow Statement. What are the primary uses of a Funds Flow Statement, and how does it differ from the Cash Flow Statement?  
 निधि प्रवाह विवरण की अवधारणा की व्याख्या कीजिए। निधि प्रवाह विवरण के प्राथमिक उपयोग क्या हैं, और यह नकदी प्रवाह से किस प्रकार भिन्न है?

**Note :** There are eight questions in all. Attempt/five questions including Question No. 1, which is compulsory. Question No. 1 consists of six short answer questions. All questions shall carry equal marks.

**नोट :** कुल आठ प्रश्न हैं। प्रश्न सं. 1 जो अनिवार्य है के साथ कुल पाँच प्रश्न कीजिए। प्रश्न सं. 1 में छः लघु उत्तरीय प्रकार के प्रश्न हैं। सभी प्रश्नों के अंक समान हैं।

**Compulsory Question (अनिवार्य प्रश्न)**

1. Explain briefly :
- (a) What is the purpose of financial statement analysis?  
 (b) What is the primary purpose of financial ratio analysis?  
 (c) Why is a current ratio of less than 1 considered risky?  
 (d) What is the significance of evaluating a company's solvency?  
 (e) What impact does increasing expenses have on profitability ratios?

संक्षेप में व्याख्या कीजिए :

- (क) वित्तीय विवरण विश्लेषण का उद्देश्य क्या है?  
 (ख) वित्तीय अनुपात विश्लेषण का प्राथमिक उद्देश्य क्या है?  
 (ग) 1 से कम का चालू अनुपात जोखिमपूर्ण क्यों माना जाता है?

LMN Corp. ने वित्तीय वर्ष के लिए निम्नलिखित रिपोर्ट की:

निवल आय : 95,000

राजस्व : 850,000

आरंभिक कुल संपत्ति : 700,000

अंतिम कुल संपत्ति : 900,000

शेयर धारकों की इक्विटी : 500,000

निम्नलिखित लाभप्रदता अनुपातों की गणना कीजिए। तब, एक संक्षिप्त विश्लेषण प्रदान करें: ये अनुपात आपको LMN Corp. की कुशलता से लाभ उत्पन्न करने की क्षमता के बारे में क्या बताते हैं?

(क) निवल लाभ मार्जिन

(ख) संपत्ति पर प्रतिफल (ROA)।

(ग) इक्विटी पर प्रतिफल (ROE)।

5. You are a financial analyst comparing two investment projects for your company.

Project A requires an initial investment of \$200,000 and is expected to generate a total return of \$270,000 over 3 years. Project B requires an initial investment of \$150,000 and is expected to generate a total return of \$210,000 over the same period.

You are required to do following tasks :

- Calculate the Return on Investment (ROI) for both Project A and Project B.
- Which project offers the higher ROI?
- Beyond ROI, what other factors should be considered before selecting one of these projects?
- Discuss how ROI might differ if additional costs (such as maintenance or operational expenses) were factored in.

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[P.T.O.]

(घ) किसी कंपनी की शोधन क्षमता का मूल्यांकन करने का क्या महत्व है?

(ङ) बढ़ते खर्चों का लाभप्रदता अनुपात पर क्या प्रभाव पड़ता है?

2. What is the scope of ratio analysis in evaluating a company's financial health, and how does it assist stakeholders in decision-making?

किसी कंपनी के वित्तीय स्वास्थ्य के मूल्यांकन करने में अनुपात विश्लेषण का दायरा क्या है, और यह निर्णय लेने में हितधारकों की किस प्रकार सहायता करता है?

3. How do the Current Ratio and Quick Ratio differ in assessing a company's short term liquidity, and what are the implications of these differences for financial analysis?

किसी कंपनी की अल्पकालिक तरलता का आकलन करने में चालू अनुपात और त्वरित अनुपात कैसे भिन्न होते हैं, तथा वित्तीय विश्लेषण के लिए इन अंतरों के क्या निहितार्थ हैं?

4. LMN Corp. reported the following for the financial year :

Net Income : \$95,000

Revenue : \$850,000

Beginning Total Assets : \$700,000

Ending Total Assets : \$900,000

Shareholders' Equity : \$500,000

Calculate the following profitability ratios. Then, provide a short analysis: What do these ratios tell you about LMN Corp.'s ability to generate profits efficiently?

- Net Profit Margin.
- Return on Assets (ROA).
- Return on Equity (ROE).

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2

आप एक वित्तीय विश्लेषक हैं जो अपनी कंपनी के लिए दो निवेश परियोजनाओं की तुलना कर रहे हैं।

परियोजना A के लिए \$200,000 के प्रारंभिक निवेश की आवश्यकता है तथा इससे 3 वर्षों में \$270,000 की कुल लाभ मिलने की उम्मीद है। परियोजना B के लिए \$150,000 के शुरुआती निवेश की आवश्यकता है और इसी अवधि में कुल 210,000 की रिटर्न मिलने की उम्मीद है। आपको निम्नलिखित कार्य करने होंगे :

- परियोजना A और परियोजना B दोनों के लिए निवेश पर प्रतिफल (ROI) की गणना करें।
- कौन-सी परियोजना उच्च ROI प्रदान करती है?
- ROI के अलावा, इनमें से किसी एक परियोजना को चुनने से पहले किन अन्य कारकों पर विचार किया जाना चाहिए?
- चर्चा करें कि यदि अतिरिक्त लागतों (जैसे रखरखाव या परिचालन व्यय) को शामिल किया जाए तो ROI कैसे भिन्न हो सकता है।

6. You are comparing the financial health of two companies in the same industry :

Item	Company X	Company Y
Net Profit after Tax	\$240,000	\$190,000
Equity Share Capital	\$800,000	\$700,000
Reserves and Surplus	\$200,000	\$300,000

You are required to do following tasks :

- Calculate the Net Worth for each company.
- Compute the Return on Net Worth (RONW) for both companies.
- Which company is utilizing its shareholders' funds more effectively?

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(d) If you were an investor, which company would you prefer based on RONW alone, and what other factors would you also consider?

आप एक ही उद्योग में दो कंपनियों की वित्तीय स्थिति की तुलना कर रहे हैं :

वस्तु	कंपनी X	कंपनी Y
कर के बाद निवल लाभ	\$240,000	\$190,000
इक्विटी शेयर पूंजी	\$800,000	\$700,000
संचय और अधिशेष	\$200,000	\$300,000

आपको निम्नलिखित कार्य करने होंगे :

- प्रत्येक कंपनी के लिए निवल संपत्ति की गणना करें।
- दोनों कंपनियों के लिए निवल संपत्ति पर प्रतिफल (RONW) की गणना करें।
- कौन-सी कंपनी अपने शेयरधारकों के फंड का अधिक प्रभावी ढंग से उपयोग कर रही है?
- यदि आप एक निवेशक होते, तो केवल RONW के आधार पर आप किस कंपनी को पसन्द करते, और किन अन्य कारकों पर आप विचार करते?

7. GHI Ltd. has provided the following financial data for the year:  
Earnings Before Interest and Tax (EBIT) : \$250,000

Total Assets : \$1,200,000

Current Liabilities : \$300,000

You are required to do following tasks :

- Calculate the Capital Employed (Total Assets—Current Liabilities).

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[P.T.O.]

**BBA/M-25**

**24495**

**PRINCIPLES OF MANAGEMENT**

Paper-BBA-108

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *five* questions. Question No. 1 is compulsory. All questions carry equal marks.

**नोट :** पाँच प्रश्न कीजिए। प्रश्न सं. 1 अनिवार्य है। सभी प्रश्नों के अंक समान हैं।

**Compulsory Question (अनिवार्य प्रश्न)**

1. (a) Examine the major contemporary challenges in management which are relevant today.
- (b) Analyze the different types of planning.
- (c) Examine the differences between formal and informal organizations.
- (d) Differentiate between authority, responsibility and accountability.
- (e) Explain the need for performance appraisal.
- (f) Identify the major barriers hampering the effectiveness of communication.
- (क) प्रबंधन में प्रमुख समकालीन चुनौतियाँ जो आज प्रासंगिक हैं, का परीक्षण कीजिए।
- (ख) नियोजन के विभिन्न प्रकारों का विश्लेषण कीजिए।
- (ग) औपचारिक और अनौपचारिक संगठनों के बीच अंतर का परीक्षण करें।

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- (घ) अधिकारी, जिम्मेदारी और जवाबदेही के बीच अंतर कीजिए।  
 (ङ) प्रदर्शन मूल्यांकन की आवश्यकता की व्याख्या कीजिए।  
 (च) संचार की प्रभावशीलता में रुकावट डालने वाली प्रमुख बाधाओं की पहचान करें।

2. Compare and contrast the classical, neo-classical, and behavioural approaches to management. How do these approaches influence modern management practices?  
 प्रबंधन के लिए शास्त्रीय, नव-शास्त्रीय और व्यवहारिक दृष्टिकोणों की तुलना और अंतर कीजिए। ये दृष्टिकोण आधुनिक प्रबंधन प्रथाओं को कैसे प्रभावित करते हैं?

3. Discuss the various stages in the planning process and critically evaluate the limitations of traditional planning in a volatile business environment.

नियोजन प्रक्रिया में विभिन्न चरणों की विवेचना कीजिए और अस्थिर व्यावसायिक वातावरण में पारंपरिक नियोजन की सीमाओं का आलोचनात्मक मूल्यांकन कीजिए।

4. Explain the concept of span of management. Apply Graicunas formula to demonstrate how relationships increase with each additional subordinate?

प्रबंधन की सीमा की अवधारणा की व्याख्या कीजिए। प्रत्येक अतिरिक्त अधीनस्थ के साथ संबंध कैसे बढ़ते हैं यह दर्शाने के लिए ग्रेडकुनस सूत्र का प्रयोग करें?

5. Evaluate various departmentation methods in terms of their advantages, limitations, and suitability in different business contexts.

विभिन्न व्यावसायिक संदर्भों में उनके लाभ, सीमाओं और उपयुक्तता के संदर्भ में विभिन्न विभागीयकरण विधियों का मूल्यांकन करें।

6. Critically analyze the process of delegation. What are the psychological and structural barriers to effective delegation, and how can managers overcome them?

प्रतिनिधिमंडल की प्रक्रिया का आलोचनात्मक विश्लेषण कीजिए। प्रभावी प्रतिनिधिमंडल के लिए मनोवैज्ञानिक और संरचनात्मक बाधाएँ क्या हैं, और प्रबंधक उन्हें कैसे दूर कर सकते हैं?

7. Describe the selection process in detail. Critically assess the validity and reliability of common selection techniques.

चयन प्रक्रिया का विस्तार से वर्णन कीजिए। सामान्य चयन तकनीकों की वैधता और विश्वसनीयता का आलोचनात्मक मूल्यांकन करें।

8. Critically evaluate the role of business ethics and corporate social responsibility in contemporary management. How can ethical leadership shape organizational culture?

समकालीन प्रबंधन में व्यावसायिक नैतिकता और कॉर्पोरेट सामाजिक जिम्मेदारी की भूमिका का आलोचनात्मक मूल्यांकन करें। नैतिक नेतृत्व संगठनात्मक संस्कृति को कैसे आकार दे सकता है?

Roll No. ....

Total Pages : 2

BBA/M-25

24498

UNDERSTANDING SOCIAL BEHAVIOUR

Paper – BBA–111

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *five* questions in all. Question No. 1 is compulsory.  
All questions carry equal marks.

**नोट :** कुल पाँच प्रश्न कीजिए। प्रश्न सं. 1 अनिवार्य है। सभी प्रश्नों के अंक समान हैं।

**Compulsory Question (अनिवार्य प्रश्न)**

1. Short Answer Questions :

- (i) Nature of Sociology.
- (ii) Define Social Institutions.
- (iii) Meaning of Socialization.
- (iv) Concept of Social Change.
- (v) Morale Audit.
- (vi) Meaning of Bureaucracy.

लघु उत्तरीय प्रश्न :

- (i) समाजशास्त्र की प्रकृति।
- (ii) सामाजिक संस्थाओं को परिभाषित कीजिए।
- (iii) समाजीकरण का अर्थ।
- (iv) सामाजिक परिवर्तन की अवधारणा।
- (v) मनोबल लेखा परीक्षा।
- (vi) नौकरशाही का अर्थ।

2. Discuss the fundamental Concepts of Sociology.

समाजशास्त्र की मौलिक अवधारणाओं की विवेचना कीजिए।

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3. What do you mean by Social Structure? Explain various elements of Social Structure with suitable examples.  
सामाजिक संरचना से आपका क्या अभिप्राय है? सामाजिक संरचना के विभिन्न तत्वों की उपयुक्त उदाहरणों के साथ व्याख्या कीजिए।
  4. Elucidate the role of various Agencies in Socialization of a child.  
एक बच्चे के सामाजिकरण में विभिन्न एजेंसियों की भूमिका को स्पष्ट करें।
  5. Critically examine the Social Stratification in India.  
भारत में सामाजिक स्तरीकरण का आलोचनात्मक परीक्षण कीजिए।
  6. Write about the causes and remedies of social problems.  
सामाजिक समस्याओं के कारणों और उपायों के बारे में लिखें।
  7. Explain about cooperation and conflict as Social Processes in our society.  
हमारे समाज में सामाजिक प्रक्रियाओं के रूप में सहयोग और संघर्ष के बारे में व्याख्या कीजिए।
  8. Discuss about various elements of Social Action with suitable examples.  
सामाजिक प्रक्रियाओं के विभिन्न तत्वों की उपयुक्त उदाहरणों के साथ विवेचना कीजिए।
-

(e) Solve for  $x$ ;  $\log_{27} x = \frac{4}{3}$ . 3

(f) Define A.P. 1

(क) उस रेखा का समीकरण ज्ञात करें जिसके अंतःखंडन अक्ष 3 और 4 हैं।

(ख) यदि 12, 5, -2, -9, ..... एक A.P. है। सामान्य पद को ज्ञात कीजिए।

(ग)  $\int \frac{e^x}{1+e^x} dx$  का मूल्यांकन कीजिए।(घ)  $\sqrt{3} + 3 + 3\sqrt{3} + \dots$  11वें पद तक का योग ज्ञात कीजिए।(ङ)  $x$  के लिए हल कीजिए :  $\log_{27} x = \frac{4}{3}$ .

(च) A.P. को परिभाषित कीजिए।

24499

BBA/M-25

BUSINESS MATHEMATICS-II

Paper - BBA-112

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *five* questions in all, Question No. 8 is compulsory.**चेट :** कुल पाँच प्रश्न कीजिए। प्रश्न सं. 8 अनिवार्य है।

1. (a) If  $(-2, 3)$ ,  $(4, -2)$  and  $(4, 5)$  are the mid point of the sides of a triangle. Find the centroid of a triangle. 8
- (b) Find the equation of the line such that it is perpendicular to  $4x - 3y + 7 = 0$  and passes through  $(4, 5)$ . 8
- (क) यदि  $(-2, 3)$ ,  $(4, -2)$  और  $(4, 5)$  त्रिभुज की भुजाओं के मध्य बिंदु हैं। किसी त्रिभुज का केन्द्रक ज्ञात कीजिए।
- (ख) रेखा का समीकरण ज्ञात कीजिए जैसे कि यह  $4x - 3y + 7 = 0$  पर लंबवत है और  $(4, 5)$  से होकर गुजरती है।

2. (a) Solve the equation :

$$1 + 6 + 11 + 16 + \dots + x = 148.$$

(b) The  $(m + n)$ th and  $(m - n)$ th terms of a G.P. are  $p$  and  $q$ , respectively. Show that the  $m$ th term is  $\sqrt{pq}$ . 8

(क) समीकरण को हल कीजिए :

$$1 + 6 + 11 + 16 + \dots + x = 148.$$

(ख) किसी G.P. के पद  $(m + n)$ वाँ और  $(m - n)$ वाँ क्रमशः  $p$  और  $q$  हैं। दर्शाए कि  $m$ वाँ पद  $\sqrt{pq}$  है।

6. (a) Find the effective rate of interest 8% p.a. payable half-yearly. 8
- (b) Evaluate  $\int (2x+3)\sqrt{x^2+4x+3}.dx$ . 8
- (क) अर्ध-वार्षिक रूप से देय 8% प्रति वर्ष की प्रभावी ब्याज दर ज्ञात कीजिए।
- (ख)  $\int (2x+3)\sqrt{x^2+4x+3}.dx$  का मूल्यांकन करें।
7. (a) Evaluate  $\int_1^3 \frac{\log x}{(1+x)^2} dx$ . 8
- (b) If A and G be A.M. and G.M. between two positive numbers. Then prove that  $A > G$ . 8
- (क)  $\int_1^3 \frac{\log x}{(1+x)^2} dx$  का मूल्यांकन कीजिए।
- (ख) यदि A और G दो धनात्मक संख्याओं के बीच A.M. और G.M. हों। तब सिद्ध कीजिए  $A > G$ .

### Compulsory Question

(अनिवार्य प्रश्न)

8. (a) Find the equation of a line whose interception axes are 3 and 4. 3
- (b) If 12, 5, -2, -9, ..... is an A.P. Find general term. 3
- (c) Evaluate  $\int \frac{e^x}{1+e^x} dx$ . 3
- (d) Find the sum of  $\sqrt{3} + 3 + 3\sqrt{3} + \dots$  upto 11th terms. 3

3. (a) Evaluate  $\int \frac{1}{e^x-1} dx$ . 8
- (b) Evaluate  $\int x \log(1+x) dx$ . 8
- (क)  $\int \frac{1}{e^x-1} dx$  का मूल्यांकन कीजिए।
- (ख)  $\int x \log(1+x) dx$  का मूल्यांकन कीजिए।
4. (a) Evaluate  $\int \frac{dx}{(e^x-1)^2}$ . 8
- (b) Evaluate  $\int \frac{x}{\sqrt{(x+1)(x-2)}} dx$ . 8
- (क)  $\int \frac{dx}{(e^x-1)^2}$  का मूल्यांकन कीजिए।
- (ख)  $\int \frac{x}{\sqrt{(x+1)(x-2)}} dx$  का मूल्यांकन कीजिए।
5. (a) Solve:  $\log_2 x + \log_4 x + \log_{16} x = \frac{21}{4}$ . 8
- (b) In how many years will a sum amount to  $2\frac{1}{2}$  times itself at 9% p.a. compound interest? 8
- (क) हल कीजिए :  $\log_2 x + \log_4 x + \log_{16} x = \frac{21}{4}$ .
- (ख) 9% वार्षिक चक्रवृद्धि ब्याज की दर से कितने वर्षों में राशि स्वयं का  $2\frac{1}{2}$  गुना हो जाएगी।

BBA/M-25

24501

HUMAN BEHAVIOUR AT WORK

Paper – BBA–208

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *five* questions in all. Question No. 1 is compulsory.  
All questions carry equal marks.

**नोट :** कुल पाँच प्रश्न कीजिए। प्रश्न सं. 1 अनिवार्य है। सभी प्रश्नों के अंक समान हैं।

**Compulsory Question (अनिवार्य प्रश्न)**

1. Answer in 50-60 words :

- (a) Group at Workplace.
- (b) Group Decision-making.
- (c) Competition.
- (d) Medium in Communication.
- (e) Social Facilitation.
- (f) Interpersonal Trust.

50-60 शब्दों में उत्तर दीजिए :

- (क) कार्यस्थल पर समूह।
- (ख) समूह निर्णय लेना।
- (ग) प्रतिस्पर्धा।
- (घ) संचार में माध्यम।
- (ङ) सामाजिक सुविधा।
- (च) पारस्परिक विश्वास।

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2. Describe characteristics of Group. Discuss Group as a medium of learning.  
समूह की विशेषताओं का वर्णन करें। अधिगम के माध्यम के रूप में समूह की विवेचना कीजिए।
3. Write a detailed note on Group Cohesiveness.  
समूह के सामंजस्य पर विस्तृत टिप्पणी लिखिए।
4. Put an account on Group Think.  
समूह विचार का उल्लेख कीजिए।
5. Show your familiarity with Social loafing.  
सामाजिक आलस्य पर अपनी परिचितता दर्शाएं।
6. Discuss process of Team Building. Describe factors which affect Team Building.  
टीम निर्माण की प्रक्रिया की विवेचना कीजिए। टीम निर्माण को प्रभावित करने वाले कारकों का वर्णन कीजिए।
7. Critically evaluate Interpersonal Communication.  
पारस्परिक संचार का आलोचनात्मक मूल्यांकन कीजिए।
8. Compare and contrast cooperation and competition in group performance.  
समूह प्रदर्शन में सहयोग और प्रतिस्पर्धा की तुलना और अंतर कीजिए।

निम्नलिखित डाटा दो अलग-अलग वर्षों (वर्ष 1 और वर्ष 2) में 5 वस्तुओं की कीमतों और मात्राओं को दर्शाता है :

वस्तु	वर्ष 1 में कीमत	वर्ष 1 मात्रा	वर्ष 2 में कीमत	वर्ष 2 मात्रा
A	10	50	12	60
B	20	30	22	40
C	15	40	18	45
D	25	20	28	25
E	30	10	32	12

आपको वर्ष 1 को आधार वर्ष मानकर वर्ष 2 के लिए मूल्य सूचकांक (लासपेयर्स इंडेक्स) की गणना करनी है।

Roll No. ....

Total Pages : 08

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BUSINESS STATISTICS

B23-BBA-201

Time : Three Hours]

[Maximum Marks : 70

Note : Attempt Five questions in all. Section A, comprising of four short answer type questions carrying 3.5 marks each, is compulsory. Section B is comprising of eight questions (two questions from each Unit) carrying 14 marks each and attempt four more questions, selecting one question from each Unit.

कुल पाँच प्रश्नों के उत्तर दीजिए। खण्ड 'अ' में चार लघु उत्तरीय प्रश्न हैं, जिनमें से प्रत्येक 3.5 अंक का है, जो अनिवार्य है। खण्ड 'ब' में आठ प्रश्न हैं (प्रत्येक इकाई में दो प्रश्न) जिनमें से प्रत्येक 14 अंक का है तथा प्रत्येक इकाई से एक प्रश्न चुनते हुए, चार अन्य प्रश्नों के उत्तर दीजिए।

Section A (खण्ड 'अ')

1. Explain briefly the following : 4×3.5=14  
(a) Define the term Distrust of Statistics with one example.  
(b) What is the difference between Primary and Secondary Data ?

(c) Explain the Empirical relationship among Mean, Median and Mode.

(d) Differentiate between Census and Sampling methods.

निम्नलिखित को संक्षेप में समझाइये :

(अ) 'सांख्यिकी के प्रति अविश्वास' को एक उदाहरण सहित परिभाषित कीजिए ।

(ब) प्राथमिक और द्वितीयक डाटा के बीच क्या अंतर है ?

(स) माध्य, माध्यिका और बहुलक के बीच अनुभवजन्य सम्बन्ध की व्याख्या कीजिए ।

(द) जनगणना और नमूनाकरण विधियों के बीच अंतर बताइये ।

**Section B (खण्ड 'ब')**

**Unit I (इकाई I)**

2. Define Business Statistics. Explain its scope and functions in business decision-making. 14

व्यावसायिक सांख्यिकी को परिभाषित कीजिए । व्यावसायिक निर्णय लेने में इसके क्षेत्र और कार्यों की व्याख्या कीजिए ।

3. Explain the two types of graphs used in Statistics. Discuss their characteristics, merits, and demerits. 14

सांख्यिकी में उपयोग किए जाने वाले दो प्रकार के ग्राफ की व्याख्या कीजिए । उनकी विशेषताओं, गुणों और अवगुणों पर चर्चा कीजिए ।

## Unit II (इकाई II)

4. What is a Moving Average ? How is it used in time series analysis ? Illustrate with a suitable example. 14

चल औसत (मूविंग एवरेज) क्या है ? समय श्रृंखला विश्लेषण में इसका उपयोग कैसे किया जाता है ? उपयुक्त उदाहरण सहित समझाइये ।

5. The following data shows the number of products sold by five stores (Store A, Store B, Store C, Store D, and Store E) over 8 days :

Day	Store A	Store B	Store C	Store D	Store E
1	20	15	18	12	22
2	25	18	20	15	25
3	20	20	22	18	18
4	22	18	20	20	20
5	18	22	18	25	22
6	20	25	22	18	20
7	22	15	25	20	18
8	18	20	20	22	25

You are required to do the following tasks :

(i) Find the mode of sales for each store (Store A, Store B, Store C, Store D, and Store E).

(ii) Interpret the result : Which store has the most frequent sales, and which one has the greatest variability in sales ? 14

निम्नलिखित डाटा पाँच दुकानों (दुकान A, दुकान B, दुकान C, दुकान D और दुकान E) द्वारा 8 दिनों में बेचे गए उत्पादों की संख्या दर्शाता है :

दिन	दुकान A	दुकान B	दुकान C	दुकान D	दुकान E
1	20	15	18	12	22
2	25	18	20	15	25
3	20	20	22	18	18
4	22	18	20	20	20
5	18	22	18	25	22
6	20	25	22	18	20
7	22	15	25	20	18
8	18	20	20	22	25

आपको निम्नलिखित कार्य करने हैं :

- (i) प्रत्येक दुकान (दुकान A, दुकान B, दुकान C, दुकान D और दुकान E) के लिए बिक्री का तरीका ज्ञात कीजिए ।
- (ii) परिणाम की व्याख्या कीजिए : किस दुकान में सबसे अधिक बार बिक्री होती है, और किसकी बिक्री में सबसे अधिक परिवर्तनशीलता है ?

Unit III (₹काई III)

6. The following data represents the monthly profits (in thousands of dollars) of two companies, Company A and Company B, over 6 months :

Month	Company A (Profit in \$000)	Company B (Profit in \$000)
1	30	40
2	35	45
3	40	50
4	50	55
5	60	65
6	65	70

You are required to :

- (a) Calculate the Standard Deviation of the monthly profits for both companies.
- (b) Provide that which company shows greater variability in its monthly profits ? 14

निम्नलिखित डाटा दो कंपनियों, कंपनी A और कंपनी B के 6 महीनों में मासिक लाभ (हजारों डॉलर में) को दर्शाता है :

महीना	कंपनी A (\$000 में लाभ)	कंपनी B (\$000 में लाभ)
1	30	40
2	35	45
3	40	50
4	50	55
5	60	65
6	65	70

आप :

(अ) दोनों कंपनियों के मासिक लाभ के मानक विचलन की गणना करें ।

(ब) बताइये कि कौनसी कंपनी अपने मासिक लाभ में अधिक परिवर्तनशीलता दिखाती है ?

7. Define Skewness and Kurtosis. Explain the empirical relationship among different measures of dispersion. 14

विषमता और कुटोसिस को परिभाषित कीजिए । डिस्पर्सन के विभिन्न उपार्यों के बीच अनुभवजन्य सम्बन्ध की व्याख्या कीजिए ।

#### Unit IV (इकाई IV)

8. You are tasked with selecting a sample from a large group of students. Describe, how would you use systematic sampling ? Explain its advantages and disadvantages compared to simple random sampling. 14

आपको छात्रों के एक बड़े समूह से एक नमूना चुनने का काम सौंपा गया है । वर्णन कीजिए कि आप व्यवस्थित नमूनाकरण का उपयोग कैसे करेंगे और सरल यादृच्छिक नमूनाकरण की तुलना में इसके फायदे और नुकसान की व्याख्या कीजिए ।

9. The following data represents the prices and quantities of 5 items in two different years (Year 1 and Year 2) :

Item	Price in Year 1	Quantity in Year 1	Price in Year 2	Quantity in Year 2
A	10	50	12	60
B	20	30	22	40
C	15	40	18	45
D	25	20	28	25
E	30	10	32	12

You are required to calculate the Price Index (Laspeyres Index) for Year 2 using Year 1 as the base year. 14

**BBA/M-25**  
**MACRO BUSINESS ENVIRONMENT**  
Paper : BBA-209

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *five* questions in all. Question No. 1 is compulsory. All questions carry equal marks (16).

**1. Compulsory Question**

Write short notes on the following :

- |                                       |     |
|---------------------------------------|-----|
| (a) Repo rate and reverse repo rate.  | 03  |
| (b) FDI.                              | 2.5 |
| (c) Mixed economy.                    | 2.5 |
| (d) Limitations of Industrial Policy. | 03  |
| (e) Tariffs.                          | 2.5 |
| (f) Excise Duty.                      | 2.5 |
2. Discuss the growth and achievements of private sector. What are its limitations and challenges?
3. Discuss the FDI trends in India. Explain the factors determining FDI potential of a country.
4. What is Foreign Exchange Management Act? Explain the objectives and provisions of this Act.

5. Write a note on the role of World Bank in international trade. How it helps in ease of doing business across nations?
  6. Explain the relation between monetary and fiscal policy. How monetary policy is helpful in reducing the inflation?
  7. Discuss the highlights of EXIM policy and impact of EXIM policy on India's imports.
  8. Is India's export performance satisfactory in relation to the trade reforms? Suggest some ways to raise India's share in world exports.
-

8. Illustrate with examples how Microsoft Excel can be used to compute :
- Correlation.
  - Regression.

Roll No. ....

Total Pages : 4

24503

BBA/M-25  
BUSINESS STATISTICS-II  
Paper : BBA-210

Time : Three Hours] [Maximum Marks : 80

**Note :** Attempt *five* questions in all. Question Number 1, comprising of six short answer type questions, is compulsory. All questions carry equal marks.

**1. Compulsory Question**

Answer the following briefly :

- Define correlation.
- What is the significance of linear regression in statistical analysis?
- Differentiate between marginal and conditional probability.
- List the components of a time series.
- What do you mean by Type I and Type II errors in hypothesis testing?
- What is the purpose of using Microsoft Excel in statistical computations?

2. A company recorded its monthly advertising spend and sales revenue over one year. The data is as follows :

Month	Advertising Spend (\$'000)	Sales Revenue (\$'000)
Jan	10	80
Feb	12	85
Mar	15	90
Apr	18	95
May	20	100
Jun	22	110
Jul	25	115
Aug	28	120
Sep	30	125
Oct	32	130
Nov	35	140
Dec	38	150

- (a) Calculate the Pearson correlation coefficient ( $r$ ) between advertising spend and sales revenue.
- (b) Based on the correlation, describe the nature and strength of the relationship between advertising and sales.

3. A small bookstore wants to predict its monthly sales based on the amount of money spent on advertising. The following data is collected for the past 5 months :

Month	Advertising Spend (\$)	Sales (\$)
Jan	1,000	5,000
Feb	1,500	6,000
Mar	2,000	7,500
Apr	2,500	8,500
May	3,000	10,000

Use simple linear regression to predict the Sales (dependent variable) based on the Advertising Spend (independent variable).

4. What is Bayes' Theorem? Derive it and explain its application in real-world statistical problems.
5. Define Time Series. Explain how to measure trend and seasonal variations in a time series using appropriate methods.
6. A researcher wants to compare the average heights of plants grown under two different light conditions. She selects two groups of 10 plants each and records the heights (in cm) after 6 weeks of growth.  
**Group 1 (Light Condition A) :**  
 Heights : 25, 28, 27, 30, 29, 28, 31, 32, 30, 29  
**Group 2 (Light Condition B) :**  
 Heights : 24, 22, 23, 21, 25, 20, 22, 23, 24, 22  
 Assume the populations are normally distributed but with unknown variances. At a 5% significance level, test if there is a significant difference in the average heights of plants between the two light conditions.
7. Define the hypothesis. Describe the procedure for testing a hypothesis.

8. Explain Capitalization and capital structure decisions. What are the major Theories of Capital Structure and their practical relevance in today's corporate world?  
पूँजीकरण और पूँजी संरचना निर्णयों की व्याख्या कीजिए। आज के कॉर्पोरेट विश्व में पूँजी संरचना के प्रमुख सिद्धांत और उनकी व्यावहारिक प्रासंगिकता क्या है?

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Total Pages : 4

24505

BBA/M-25

FINANCIAL MANAGEMENT

Paper – BBA-212

Time : Three Hours]

[Maximum Marks : 80

**Note :** There are eight questions in all. Attempt *five* questions including the Question No. 1 which is compulsory. Question No. 1 comprises six short answer questions. All questions shall carry equal marks.

**नोट :** कुल आठ प्रश्न हैं। प्रश्न सं. 1 जो अनिवार्य है, के साथ कुल पाँच प्रश्न कीजिए। प्रश्न सं. 1 में छह लघु उत्तरीय प्रश्न हैं। सभी प्रश्नों के समान अंक होंगे।

### Compulsory Question

(अनिवार्य प्रश्न)

1. (a) How does financial planning support business success?
- (b) Why is Capital Budgeting considered a crucial decision area?
- (c) How does cost of capital affect investment?
- (d) What factors influence a company's decision regarding its capital structure?
- (e) Why is managing each component important?
- (f) Why is financial management important for every business?

(क) वित्तीय नियोजन व्यवसाय की सफलता में कैसे सहायता करता है?

(ख) पूंजी बजट को महत्वपूर्ण निर्णय क्षेत्र क्यों माना जाता है?

(ग) पूंजी की लागत निवेश को कैसे प्रभावित करती है?

(घ) किसी कंपनी की पूंजी संरचना के संबंध में कौन-से कारक निर्णय को प्रभावित करते हैं?

(ङ) प्रत्येक घटक का प्रबंधन क्यों महत्वपूर्ण है?

(च) प्रत्येक व्यवसाय के लिए वित्तीय प्रबंधन क्यों महत्वपूर्ण है?

Attempt any four questions from the following seven questions.  
निम्नलिखित सात प्रश्नों में से कोई से चार प्रश्न कीजिए।

2. Explain the various finance functions performed in an organization. How do these functions impact financial health and decision-making?

किसी संगठन में किए जाने वाले विभिन्न वित्तीय कार्यों की व्याख्या करें। ये कार्य वित्तीय स्वास्थ्य और निर्णय लेने को कैसे प्रभावित करते हैं?

3. What is financial planning? Describe its meaning, nature, important features, key determinants, and the step-by-step process involved.

वित्तीय नियोजन क्या है? इसके अर्थ, प्रकृति, महत्वपूर्ण विशेषताएं, मुख्य निर्धारक और इसमें शामिल चरण-दर-चरण प्रक्रिया का वर्णन कीजिए।

4. What is capital budgeting? Explain its nature, significance, process, and various methods used for evaluating investment decisions with suitable examples.

पूंजी बजटिंग क्या है? इसकी प्रकृति, महत्व, प्रक्रिया और निवेश निर्णयों के मूल्यांकन के लिए उपयोग की जाने वाली विभिन्न विधियों की व्याख्या कीजिए।

5. Define the cost of capital. Why is it significant for financial decisions? Explain the method of computation of different types of cost of capital.

पूंजी की लागत को परिभाषित कीजिए। वित्तीय निर्णयों के लिए यह क्यों महत्वपूर्ण है? विभिन्न प्रकार की पूंजी लागत की गणना की विधि की व्याख्या करें।

6. Discuss the nature, importance, and key components involved in managing working capital efficiently.

कार्यशील पूंजी को कुशलतापूर्वक प्रबंधित करने में शामिल प्रकृति, महत्व और प्रमुख घटकों की विवेचना कीजिए।

7. What are the different Sources of Finance? Elaborate on the short-term, medium-term, and long-term sources available to businesses, with examples.

वित्त के विभिन्न स्रोत क्या हैं? व्यवसायों के लिए उपलब्ध लघुकालिक, मध्यकालिक और दीर्घकालिक स्रोतों को उदाहरणों के साथ स्पष्ट कीजिए।

Roll No. ....

Total Pages : 3

BBA/M-25

24506

PRINCIPLES OF MATERIAL MANAGEMENT

Paper – BBA-213

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *five* questions including the Question No. 1 which is compulsory.

नोट : प्रश्न सं. 1 जो अनिवार्य है, के साथ पाँच प्रश्न कीजिए।

**Compulsory Question (अनिवार्य प्रश्न)**

1. Briefly explain :

- |   |   |
|---|---|
| (a) Nature of material planning.            | 3 |
| (b) System approach to material management. | 3 |
| (c) Material budget.                        | 2 |
| (d) Legal aspects of purchasing.            | 3 |
| (e) Material handling.                      | 2 |
| (f) Material Management Information System. | 3 |

संक्षेप में व्याख्या कीजिए :

- (क) सामग्री नियोजन की प्रकृति।  
(ख) सामग्री प्रबंधन के लिए प्रणाली दृष्टिकोण।  
(ग) सामग्री बजट।  
(घ) खरीदारी के कानूनी पहलू।  
(ङ) सामग्री हैंडलिंग।  
(च) सामग्री प्रबंधन सूचना प्रणाली।

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2. What is meant by Material Management? Elaborate on its key objectives and scope. 16

सामग्री प्रबंधन का क्या अर्थ है? इसके मुख्य उद्देश्यों और कार्यक्षेत्र की भी विवेचना कीजिए।

3. Describe the purchasing procedure in detail. Also, discuss the primary objectives of purchasing along with relevant legal considerations. 16

क्रय प्रक्रिया का विस्तार से वर्णन कीजिए। क्रय के प्राथमिक उद्देश्यों के साथ-साथ प्रासंगिक कानूनी विचारों की भी विवेचना कीजिए।

4. Outline the key stages in the material planning process. Explain how material flow control can be optimized for operational efficiency? 16

सामग्री नियोजन प्रक्रिया में मुख्य चरणों की रूपरेखा तैयार कीजिए। परिचालन दक्षता के लिए सामग्री प्रवाह नियंत्रण को किस प्रकार अनुकूलित किया जा सकता है? व्याख्या कीजिए।

5. Define Value Analysis and Value Engineering. How do they contribute to cost reduction and quality improvement? Illustrate your answer with suitable examples. 16

मूल्य विश्लेषण और मूल्य इंजीनियरिंग को परिभाषित कीजिए। लागत में कमी और गुणवत्ता सुधार में वे कैसे योगदान करते हैं? उपयुक्त उदाहरणों के साथ अपने उत्तर को स्पष्ट कीजिए।

6. Explain the various techniques used in Statistical Quality Control (SQC). 16

सांख्यिकीय गुणवत्ता नियंत्रण (SQC) में उपयोग की जाने वाली विभिन्न तकनीकों की व्याख्या कीजिए।

7. Discuss major inventory control techniques. How effective inventory management facilitate improved material handling and storage operations? 16

प्रमुख इवेंट्री नियंत्रण तकनीकों की विवेचना कीजिए। प्रभावी इवेंट्री प्रबंधन किस प्रकार बेहतर सामग्री प्रबंधन और भंडारण संचालन की सुविधा प्रदान करता है?

8. Give a comprehensive explanation of store management, including its objectives, functions, and role in the overall material management system. 16

स्टोर प्रबंधन का व्यापक विवरण दीजिए जिसमें इसके उद्देश्य, कार्यों और समग्र सामग्री प्रबंधन प्रणाली में भूमिका शामिल हो।

Roll No. ....

Total Pages : 3

24508

BBA/M-25  
BUSINESS LAWS-II  
Paper : BBA-309

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *five* questions including Question No. 1 which is compulsory. All questions carry equal marks.

**नोट :** कुल पाँच प्रश्नों के उत्तर दीजिए जबकि प्रश्न संख्या 1 अनिवार्य है। सभी प्रश्नों के अंक समान हैं।

### Compulsory Question

( अनिवार्य प्रश्न )

1. Write short answer :

- (a) Explain Companies Limited by guarantee.
- (b) Statement in lieu of Prospectus.
- (c) Distinguish between a shareholder and a member.
- (d) Qualifications of a Director of a company.
- (e) Concept of fixed and floating charge.
- (f) Extra ordinary general meeting.

संक्षिप्त उत्तर लिखिए :

- (क) गारंटी द्वारा सीमित कम्पनियों की व्याख्या कीजिए।
- (ख) प्रविवरण के बदले का विवरण।
- (ग) एक अंशधारी और एक सदस्य के बीच भेद।

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- (घ) किसी कम्पनी के निर्देशक की योग्यताएँ।  
 (ङ) स्थिर तथा अस्थिर प्रभार की धारणा।  
 (च) असाधारण आम सभा।

2. Distinguish between a private and a public company. Explain the exemptions and privileges of a private companies.

एक निजी और एक सार्वजनिक कम्पनी के बीच अन्तर स्पष्ट कीजिए। निजी कम्पनी की छूट और विशेषाधिकारों के बारे में बताएँ।

3. Who is a company promoter? Discuss his legal position, liabilities and remuneration.

कम्पनी का प्रमोटर कौन है? उसकी कानूनी स्थिति, देनदारियों और पारिश्रमिक की व्याख्या कीजिए।

4. Define Memorandum of Association and Articles of Association. Explain her significance and context contents of Memorandum of Association.

पार्षद सीमानियम तथा अंतर्नियमों को परिभाषित कीजिए। पार्षद सीमानियम के महत्त्व व विषय-सामग्री को भी बताइए।

5. Define a Director. Explain the legal position of directors of a company. Also discuss the ways of appointment of directors of a company.

एक निर्देशक को परिभाषित कीजिए। किसी कम्पनी के निर्देशकों की कानूनी स्थिति के बारे में व्याख्या कीजिए। कम्पनी के निर्देशकों की नियुक्ति के तरीकों पर भी चर्चा कीजिए।

6. Discuss the provisions of Company Law with regards to holding of Annual general meeting.

वार्षिक आम सभा करने के अधिकार के संदर्भ में कम्पनी कानून के प्रावधानों की विवेचना कीजिए।

7. Explain the borrowing powers of a company? When can a company lawfully borrow money? What are the restrictions in borrowing powers of a company.

एक कम्पनी के ऋण लेने के अधिकार की व्याख्या कीजिए। एक कम्पनी वैधानिक रूप से कब ऋण ले सकती है? कम्पनी द्वारा ऋण लेने के अधिकारों पर क्या प्रतिबंध है?

8. What is meant by winding up of a company. Discuss the different methods of winding up of a company.

कम्पनी के समापन का क्या अर्थ है? कम्पनी के समापन के विभिन्न तरीकों की व्याख्या कीजिए।

8. How do businesses use logistics performance metrics like delivery time, order accuracy, inventory turnover, and transport costs to improve efficiency? Provide examples.

व्यवसाय दक्षता में सुधार के लिए वितरण समय, आर्डर सटीकता, इन्वेंट्री टर्नओवर और परिवहन लागत जैसे लॉजिस्टिक्स प्रदर्शन मेट्रिक्स का उपयोग कैसे करते हैं? उदाहरण प्रदान कीजिए।

Roll No. ....

Total Pages : 4

**24509**

**BBA/M-25**

**LOGISTIC MANAGEMENT**

Paper-BBA-310

Time : Three Hours]

[Maximum Marks : 80

**Note :** There will be eight questions in all. Attempt *five* questions including the Question No. 1 which is compulsory. Question No. 1 will comprise of six short answer questions. All questions shall carry equal marks.

**नोट :** कुल आठ प्रश्न हैं। प्रश्न सं. 1 जो अनिवार्य है, के साथ कुल पाँच प्रश्न कीजिए। प्रश्न सं. 1 में 6 लघु उत्तरीय प्रकार के प्रश्न शामिल हैं। सभी प्रश्नों के अंक समान हैं।

### Compulsory Question

(अनिवार्य प्रश्न)

1. Short Answer Type :

- Define logistics and its significance.
- What is the total cost approach in logistics?
- Differentiate logistics, supply chain, and distribution networks.
- How does warehouse automation improve efficiency?
- Explain the impact of order processing on supply chains.
- What is the role of AI and blockchain in logistics?

लघु उत्तरीय प्रकार :

- (क) सैन्य तंत्र और इसके महत्व को परिभाषित कीजिए।
- (ख) सैन्य तंत्र में कुल लागत दृष्टिकोण क्या है?
- (ग) सैन्य तंत्र, आपूर्ति शृंखला और वितरण नेटवर्क में अंतर करें।
- (घ) वेयरहाउस ऑटोमेशन दक्षता में कैसे सुधार करता है?
- (ङ) आपूर्ति शृंखलाओं पर आर्डर प्रोसेसिंग के प्रभाव की व्याख्या करें।
- (च) सैन्य तंत्र में AI और ब्लॉकचेन की क्या भूमिका है?

2. Explain the key functions of logistics, including transportation, warehousing, order processing, and inventory management. How do these functions work together to improve efficiency and reduce costs?

परिवहन, भंडारण, ऑर्डर प्रोसेसिंग और इन्वेंट्री प्रबंधन सहित लॉजिस्टिक्स के प्रमुख कार्यों की व्याख्या कीजिए। ये कार्य दक्षता में सुधार और लागत को कम करने के लिए एक-साथ कैसे काम करते हैं?

3. Discuss the system approach to logistics. How do logistics components interact to create an efficient supply chain? How does this approach help manage risks in global trade?

लॉजिस्टिक्स के लिए एक प्रणाली दृष्टिकोण की विवेचना कीजिए। एक कुशल आपूर्ति शृंखला बनाने के लिए लॉजिस्टिक्स घटक कैसे परस्पर क्रिया करते हैं?

4. Evaluate the role of customer service in logistics. What strategies, such as fast order fulfillment, tracking, and returns management, can businesses use to improve customer satisfaction?

लॉजिस्टिक्स में ग्राहक सेवा की भूमिका का मूल्यांकन कीजिए। ग्राहक संतुष्टि में सुधार के लिए व्यवसाय किस रणनीति, जैसे कि तेजी से आर्डर पूरा करना, ट्रैकिंग और रिटर्न प्रबंधन का उपयोग कर सकते हैं?

5. Discuss the components of inventory cost, including holding, ordering, and shortage costs. Explain cost control methods like JIT, EOQ, and inventory optimization.

इन्वेंट्री लागत के घटकों जिसमें होल्डिंग, आर्डरिंग और कम लागत शामिल हैं, की विवेचना कीजिए। JIT, EOQ और इन्वेंट्री अनुकूलन जैसी लागत नियंत्रण विधियों की व्याख्या करें।

6. Compare transportation networks such as road, rail, air, and water. Discuss their advantages and disadvantages in terms of cost, speed, and suitability for goods.

सड़क, रेल, वायु और जल जैसे परिवहन नेटवर्क की तुलना करें। माल के लिए लागत, गति और उपयुक्तता के संदर्भ में उनके लाभ और हानियों की विवेचना कीजिए।

7. Explain the importance of sustainable packaging in logistics. Discuss eco-friendly materials, cost implications, and how businesses balance sustainability with affordability?

लॉजिस्टिक्स में सतत पैकेजिंग के महत्व की व्याख्या कीजिए। पर्यावरण अनुकूलन सामग्री, लागत निहितार्थ तथा व्यवसाय किस प्रकार सामर्थ्य के साथ स्थिरता को संतुलित करते हैं? विवेचना कीजिए।

**BBA/M-25**                      **24510**

**PRINCIPLES OF INSURANCE**  
Paper-BBA-311

Time : Three Hours]

[Maximum Marks : 80

**Note :** There are eight questions in all. Attempt *five* questions including Question No. 1, which is compulsory. Question No. 1 consists of six short-answer questions. All questions shall carry equal marks.

**नोट :** कुल आठ प्रश्न हैं। प्रश्न सं. 1 जो अनिवार्य है के साथ कुल पाँच प्रश्न कीजिए। प्रश्न सं. 1 में 6 लघु उत्तरीय प्रकार के प्रश्न हैं। सभी प्रश्नों के अंक समान हैं।

**1. Compulsory Question**  
(अनिवार्य प्रश्न)

Explain briefly :

- (a) Concept of insurance.
- (b) What is the principle of indemnity in insurance?
- (c) Differentiate between life and general insurance.
- (d) What are the primary functions of IRDAI?
- (e) List any *two* important documents required in a general insurance contract.
- (f) Functions of individual insurance agent.

संक्षेप में व्याख्या कीजिए :

- (क) बीमे की अवधारणा।
- (ख) बीमा में क्षतिपूर्ति के सिद्धांत क्या हैं?

- (ग) जीवन और सामान्य बीमा के बीच अंतर स्पष्ट कीजिए।  
 (घ) IRDAI के प्राथमिक कार्य क्या हैं?  
 (ङ) सामान्य बीमा अनुबंध में आवश्यक किन्हीं दो महत्वपूर्ण दस्तावेजों की सूची बनाइए।  
 (च) व्यक्तिगत बीमा एजेंट के कार्य।

2. Explain in brief the nature and classification of insurance. बीमा के प्रकृति और वर्गीकरण को संक्षेप में व्याख्या कीजिए।

3. Discuss the principles of insurance in detail. Illustrate each principle with an appropriate example. बीमा के सिद्धांतों को विस्तार से विवेचना कीजिए। प्रत्येक सिद्धांत को एक उपयुक्त उदाहरण के साथ स्पष्ट कीजिए।

4. What is life insurance? Describe the key features of life insurance plans offered by any *one* public and private companies in India.

जीवन बीमा क्या है? भारत में किसी एक सार्वजनिक और निजी कंपनी द्वारा पेश की जाने वाली जीवन बीमा योजनाओं की मुख्य विशेषताओं का वर्णन कीजिए।

5. What are the different types of general insurance? Compare a general insurance product offered by any *one* public and private sector companies in India.

सामान्य बीमा के विभिन्न प्रकार क्या हैं? भारत में किसी एक सार्वजनिक और निजी क्षेत्र की कंपनियों द्वारा पेश किए जाने वाले सामान्य बीमा उत्पाद की तुलना करें।

6. Explain the IRDA Act, 1999. Explain its key guidelines for life insurance.

IRDA अधिनियम, 1999 की व्याख्या कीजिए। जीवन बीमा के लिए इसके प्रमुख दिशानिर्देशों की व्याख्या कीजिए।

7. Discuss the eligibility, functions, code of conduct and remuneration of corporate agents.

कॉर्पोरेट एजेंटों की पात्रता, कार्य, अचार संहिता और पारिश्रमिक की विवेचना कीजिए।

8. A lady has taken a car insurance policy. Her car is damaged in a flood. Explain the claim process.

एक महिला ने कार बीमा पॉलिसी ली है। बाढ़ में उसकी कार क्षतिग्रस्त हो गई है। दावे की प्रक्रिया की व्याख्या कीजिए।



- (ग) पुस्तक निर्माण बनाम रिवर्स पुस्तक निर्माण।  
 (घ) वित्तीय सेवाओं को विनियमित करने में सेबी की भूमिका।  
 (ङ) म्यूचुअल फंड के फायदे।  
 (च) क्रेडिट रेटिंग प्रक्रिया।

2. Discuss the functions and activities of merchant bankers. Explain the process of issue management.  
 मर्चेन्ट बैंकर्स के कार्यों और गतिविधियों की विवेचना कीजिए। इश्यू प्रबंधन की प्रक्रिया की व्याख्या कीजिए।

3. Explain the meaning and types of financial services. How do financial services contribute to the development of the economic environment?  
 वित्तीय सेवाओं के अर्थ और प्रकारों की व्याख्या कीजिए। वित्तीय सेवाएँ आर्थिक वातावरण के विकास में किस प्रकार योगदान देती हैं?

4. Define leasing and hire purchase. Highlight their features and differences.  
 लीजिंग और किराया क्रय को परिभाषित कीजिए। उनकी विशेषताओं और अंतरों पर प्रकाश डालें।

5. Define factoring. How does factoring work? How do these services help in trade financing?  
 फैक्टoring को परिभाषित कीजिए। फैक्टoring कैसे काम करती है? ये सेवाएँ व्यापार वित्तपोषण में कैसे मदद करती हैं?

6. Explain the structure of mutual funds in India. Discuss various types of mutual funds offered to investors.  
 भारत में म्यूचुअल फंड की संरचना की व्याख्या कीजिए। निवेशकों को उपलब्ध कराए जाने वाले विभिन्न प्रकार के म्यूचुअल फंडों की विवेचना कीजिए।

7. Write notes on the following :

- (a) Exchange Traded Funds (ETFs).  
 (b) Credit Cards and Consumer Finance.

निम्नलिखित पर टिप्पणी लिखिए :

- (क) एक्सचेंज ट्रेडेड फंड (ETFs).  
 (ख) क्रेडिट कार्ड और उपभोक्ता वित्त।

8. Explain the roles of :

- (a) Bankers to an issue.  
 (b) Debenture trustees.  
 (c) Portfolio managers.  
 (d) Stock brokers.

निम्नलिखित की भूमिका की व्याख्या कीजिए :

- (क) किसी इश्यू के बैंकर।  
 (ख) डिबेंचर ट्रस्टी।  
 (ग) पोर्टफोलियो प्रबंधक।  
 (घ) स्टॉक ब्रोकर।

Roll No. ....

Total Pages : 3

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## OPERATING SYSTEMS-II

Paper-BVSD-21

Time Allowed : 3 Hours] [Maximum Marks : 80

Note : Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

### Compulsory Question

1. Answer the following : 4×4=16

- (a) Discuss Relative File access.
- (b) What is Parallel Processing? Discuss ?
- (c) What is Critical Section problem? Explain.
- (d) Discuss various types of Shells in UNIX.

### UNIT-I

- 2. (a) Discuss the functions of File systems. 8
- (b) Differentiate between a Tree and an acyclic Graph. Directory structure. 8

- 3. Briefly discuss various attributes and operations of a File. Also discuss the file protection Mechanisms. 16

## UNIT-II

4. (a) What is the Classical Synchronization problem of Producer-consumer? Discuss the critical section concept with Producer-consumer problem. 10
- (b) Explain Inter-process Communication. What are the various issues while designing Message-passing system? 6
5. (a) What is the purpose of Semaphores in OS? Which are the types of Semaphore? Which kind of problems can be solved using Semaphores? 10
- (b) Explain an algorithm for solving critical section problem for two processes. 6

## UNIT-III

6. (a) Explain the concept of a deadlock in Operating Systems highlighting the necessary conditions for a deadlock to occur. Discuss each condition. 8
- (b) Discuss the role of resource allocation Graphs in characterizing and detecting deadlocks in Concurrent systems. 8
7. (a) Write Banker's algorithm to avoid a deadlock and explain it using an example. 10

- (b) How deadlocks are detected and recovered? Why is deadlock recovery important? 6

## UNIT-IV

8. Discuss the Features, History and Memory Management of Unix. 16
9. Discuss the MS-DOS layer structure along with its features, working and limitations. 16

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Total Pages : 3

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12241

## NETWORKING AND INTERNET

Paper-BVSD-23

Time Allowed : 3 Hours]

[Maximum Marks : 80

**Note** : Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

### Compulsory Question

1. Answer any four of the following questions in brief.  
4×4=16
  - (a) Differentiate between Connection-oriented and Connectionless services in Computer Networks.
  - (b) Discuss File sharing and Web-based Networking applications.
  - (c) What is the role of Describe Digital Subscriber Line (DSL) Service on the Internet?
  - (d) Explain the concepts of Bit rate and Baud rate in Data Communication.
  - (e) Describe any one Encryption method used to Secure Data Transmission in Computer Networks.

(f) Who owns the Internet?

### UNIT-I

2. Define computer communications and networking technologies. Explain the concept of network devices, nodes, and hosts in computer networks. Differentiate between these terms and discuss their functions within a network infrastructure. 16
3. Describe the OSI reference model and its Seven layers. Explain the function of each layer in the model and how they interact to facilitate Communication between Networked Devices ? 16

### UNIT-II

4. (a) Define Digital and Analog Data and signals in the context of Data Communication. 16
- (b) Explain the principles of Satellite Communication and its role in Long-distance Data transmission. 16
5. (a) What is Packet Switching? Distinguish between Virtual circuit and Datagram Packet Switching.
- (b) Discuss how Modulation techniques such as Amplitude Modulation (AM) and Frequency Modulation (FM) are used to transmit analog signals in Modems ? 16

### UNIT-III

6. (a) Explain the concept of framing in the data link layer. Describe any one framing technique.
- (b) Describe how the Cyclic Redundancy Check (CRC) technique is used to detect errors in transmitted data ? 16
7. (a) Describe the principles of token passing protocols, focusing on Token Ring networks.
- (b) Discuss the functions of Bridges, Switches, Routers, and Gateways in Network Communication. 16

### UNIT-IV

8. Describe the Anatomy of the Internet, including its Physical infrastructure. Discuss the components that make up the internet. 16
9. (a) Explain the concept of the Wide Area Information Servers (WAIS) and their role in information retrieval on the internet.
- (b) Discuss the impact of e-commerce on the Internet. 16

Roll No. ....

Total Pages : 3

BVSDE/M-25

12242

## WEB PROGRAMMING - PHP

Paper-BVSD-24

Time Allowed : 3 Hours]

[Maximum Marks : 80

**Note :** Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

### Compulsory Question

1. (a) What is the purpose of the Echo statement in PHP?
- (b) What does the `$_GET` superglobal variable represent in PHP?
- (c) Which symbol is used to denote the start of a PHP code block?
- (d) How do you concatenate two strings in PHP?
- (e) What is the purpose of the include statement in PHP?
- (f) Define the Session in PHP.
- (g) What is the difference between Drop and Delete table?
- (h) Describe `define()`.

12242/K/903/50

P. T. O.

### UNIT-I

2. (a) Describe the evolution of the World Wide Web (WWW) from its inception to the present day. Explain how the WWW has transformed communication?
- (b) Explain different data types supported by PHP.
3. (a) Explain the significance of the Apache Web Server in the context of Web hosting and server-side scripting. Describe its features too.
- (b) Explain various PHP operators with example.

### UNIT-II

4. Describe the fundamentals of PHP functions, including syntax, arguments, and return values. Explain how to declare and call user-defined functions in PHP, specifying function names, parameter lists, and return types?
5. (a) What is the difference between Include and Require? Explain with example.
- (b) Explain the concept of Associative arrays in PHP. Provide an example illustrating the creation and manipulation of an Associative array.

### UNIT-III

6. Explain string handling in PHP and various string manipulation functions available in PHP. Describe common

string operations such as concatenation, substring extraction, searching and replacement. Provide examples for each.

7. (a) Explain the concept of form sanitization in PHP and its role in enhancing security by filtering and cleaning user input.
- (b) Explain the concept of Cookies in PHP and their role in Web development. Discuss how Cookies are created, stored and retrieved in PHP applications?

### UNIT-IV

8. Explain the process of Establishing connectivity between PHP and MySQL databases. Discuss the use of MySQLi and PDO (PHP Data Objects) extensions in PHP for database connectivity. Provide step-by-step instructions on connecting PHP scripts to MySQL databases using both MySQLi and PDO.
9. Write short notes on the following :
  - (a) Indexes.
  - (b) Truncate.
  - (c) PHP Myadmin.
  - (d) Connect and P-connect.

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Total Pages : 3

BVSDM/M-25

12243

RDBMS-II

Paper-BVSD-41

Time allowed : 3 Hours]

[Maximum Marks : 80

*Note* : Attempt five questions in all, selecting one question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

### Compulsory Question

1. Attempt all questions: 8×2=16
- (i) What is the difference between persistent and transient objects?
  - (ii) Differentiate between homogeneous and heterogeneous distributed databases.
  - (iii) Write a brief note on characterization and discrimination.
  - (iv) Differentiate between data centric and document centric XML documents.
  - (v) What is a transaction? Write transaction structure.
  - (vi) Describe Wait / Die deadlock protocol.
  - (vii) List the different sources of database failure.
  - (viii) Write a note on replication and voting.

12243/K/8/50

P.T.O.

### UNIT-I

2. (a) Discuss the various type constructors. How they are used to create complex object structures? 8
- (b) What is multiple inheritance and polymorphism? Write a brief note on type hierarchies and inheritance. 8
3. (a) What is shared-disk architecture of parallel databases? Explain with a neat sketch. What are its benefits and limitations? 8
- (b) What is data replication? Why is data replication useful in DDBMS? What typical units of data is replicated? 8

### UNIT-II

4. (a) Under which criteria a data mining system may be classified. Explain the Life cycle of Knowledge discovery process. 8
- (b) What is data warehouse? Outline a neat sketch and explain the components of data warehouse three tier architecture. 8.
5. (a) What is a mobile database? Explain the mobile computing environment. 8
- (b) What do you mean by temporal databases? Write a precise note on valid time, transaction time and bi-temporal databases. 8

### UNIT-III

6. (a) Explain timestamp based protocol for concurrency control in DBMS. 8
- (b) State an example to differentiate between serializable and non-serializable transactions. 8
7. What do you mean by deadlock? Discuss in detail various control organizations for distributed deadlock detection and avoidance. 16

### UNIT-IV

8. (a) Explain shadow paging and immediate log based recovery method. 8
- (b) Discuss steal / force memory and storage management. 8
9. Explain the followings:
  - (a) Three phase commit. 8
  - (b) Scalability of Replication. 8

Roll No. ....

Total Pages : 2

**BVSDM/M-25**

**12244**

**MANAGEMENT INFORMATION SYSTEM**

Paper–BVSD-42

Time Allowed : 3 Hours]

[Maximum Marks : 80

**Note** : Attempt **five** questions in all, selecting **one** question from each Unit. Question No. **1** is compulsory. All questions carry equal marks.

**Compulsory Question**

1. Attempt the following : 4×4=16
- (a) How do big companies still fail in their use of Information Technology ? What should they be doing differently ?
  - (b) Discuss Moore's law of Microprocessor Power.
  - (c) Discuss the challenges posed by enterprise applications.
  - (d) Discuss the stages in Knowledge Management Value Chain.

**UNIT-I**

2. (a) What is the role of Information System in Business ? 8
- (b) Provide examples of Several major types of Information Systems from your experiences with Business organizations in the Real World. 8

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**P. T. O.**

3. What is a System ? What are different components of an Information System ? Also discuss various Information System resources. 16

#### UNIT-II

4. Discuss the following : 16
- (a) Cloud Computing (b) Grid Computing  
(c) Green Computing (d) Virtualization.
5. What are the principal tools and technologies for accessing Information from databases to improve Business performance and Decision making ? 16

#### UNIT-III

6. Discuss various technologies and tools for security. 16
7. Discuss Supply Chain Management Systems. Also explain various challenges of Supply Chains. 16

#### UNIT-IV

8. Define and describe Fuzzy logic, Genetic algorithms, Neural Networks and Intelligent Agents. Explain how each works and the kinds of problems for which each is suited ? 16
9. (a) Distinguish between Unstructured, Semi-structured and Structured decision. 8
- (b) What is GDSS ? How does it work and how it differs from a DSS ? 8

Roll No. ....

Total Pages : 2

BVSDM/M-25

12245

## JAVA PROGRAMMING

Paper-BVSD-43

Time Allowed : 3 Hours]

[Maximum Marks : 80

**Note** : Attempt **five** questions in all, selecting **one** question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

### Compulsory Question

1. Explain the following :
  - (a) Final and Finally keywords.
  - (b) Wrapper Classes in Java.
  - (c) Use of 'super' and 'this' keywords.
  - (d) Thread Synchronization.
  - (e) Nested Try.

### UNIT-I

2. Explain various access specifiers in Java? What are Static variables and static methods in Java? How they are accessed?
3. Explain the following :
  - (a) Java keywords
  - (b) Identifiers
  - (c) Loop Structure.

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P. T. O.

## UNIT-II

4. Write program to find the area of rectangle using (i) Function overloading (ii) Inheritance.
5. Discuss different types of Array in java. Write java code to Add and Multiply 2 matrices

## UNIT-III

6. What are various ways of code reusability in JAVA? Discuss package in detail with example.
7. Can we use Multiple Catch blocks in Exception Handling? Write Java code to handle your own exception.

## UNIT-IV

8. Differentiate Multiprocessing and Multithreading. Explain creating, resuming and stopping threads in JAVA.
9. Explain Thread life cycle in Java. Discuss Thread Priorities, Thread Synchronization and Interthread Communication.

**VISUAL PROGRAMMING**

Paper–BVSD–44

Time allowed : 3 Hours]

[Maximum Marks : 80

**Note :** Attempt five questions in all, selecting one question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

**Compulsory Question**

1. Attempt all questions: 4×4=16
- (i) Comment on the purpose of immediate window.
  - (ii) Differentiate between function and subroutine.
  - (iii) How can you create a popup menu in VB?
  - (iv) What is meant by Active X Client?

**UNIT–I**

2. Differentiate between: 16
- (a) Visual and Non–Visual Programming
  - (b) Image Box and Picture Box
  - (c) Label Box and Text Box
  - (d) Combo Box and List Box.
3. What are the various categories of projects that can be created in VB? Explain in detail. 16

## UNIT-II

4. How can you create and use arrays in VB? Explain various types of arrays using suitable examples and also enlist the differences between arrays and collection. 16
5. (a) Write a program in VB to create traffic control signal. 8  
(b) What are the various ways to declare constants in VB? Explain using suitable examples. Also discuss the differences between constants and variables. 8

## UNIT-III

6. Create and explain a project in VB to show the use of drag and drop operation by creating two list boxes and dragging an item from a list box to another list box. 16
7. (a) How can you create menus in a form? Explain using suitable examples. 8  
(b) What are the differences between SDI and MDI? Explain in detail. 8

## UNIT-IV

8. What are Active X controls? How can you create an Active X control having its own methods, properties and events? Explain using suitable examples. 16
9. Write a program in VB to read and write the employee records from a database. How can you update the database using VB program? Explain using data access objects. 16

Roll No. ....

Total Pages : 3

VSDQ/M-25

12247

## MOBILE COMPUTING

Paper–BVSD–61

Time Allowed : 3 Hours]

[Maximum Marks : 80

**Note :** Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

### Compulsory Question

1. Write short notes on the following :
  - (a) List any two advantages of Mobile computing.
  - (b) Analyze the challenges in Wireless Communication.
  - (c) What is the role of a MAC protocol?
  - (d) What is the purpose of Advertisement and Discovery in mobile networking?
  - (e) Write any two characteristics of Transaction-Oriented TCP.
  - (f) What is the primary distinction between push-based and pull-based Data delivery mechanisms in Database systems?

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P. T. O.

- (g) Name two routing algorithms commonly used in MANETs.
- (h) Describe any two functionalities of the MAC (Medium Access Control) layer in Mobile Ad hoc Networks.

### UNIT-I

- 2. (a) What is Mobile Computing? Explain its applications in the real world scenario.
- (b) Differentiate between Mobile computing and Wireless networking.
- 3. Compare and contrast the multiple access techniques of SDMA, FDMA, TDMA and CDMA. Discuss their respective advantages and limitations in Wireless communication systems.

### UNIT-II

- 4. (a) Explain the concept of Tunneling in Mobile networking and its role in ensuring transparent communication between Mobile nodes and Home agents.
- (b) Describe the Operation of DHCP (Dynamic Host Configuration Protocol) in Mobile networks.

- 5. Discuss the concept of Transaction-Oriented TCP and its relevance in Mobile networking. Explain how Transaction-Oriented TCP differs from traditional TCP and Mobile TCP, highlighting its advantages and limitations in Mobile communication scenarios?

### UNIT-III

- 6. Describe the concept of Hoarding in Database systems. Explain the techniques used for Hoarding and how they contribute to improving performance in Mobile environments?
- 7. Describe different transactional models in Database systems, such as ACID (Atomicity, Consistency, Isolation, Durability) properties and their significance in ensuring Data integrity and reliability.

### UNIT-IV

- 8. Explain the concept of Protocol stack in Mobile Ad hoc Networks (MANETs), including the protocol architecture and the layers involved.
- 9. (a) Describe the role of J2ME (Java 2 Platform, Micro Edition) in Mobile Ad hoc Networks.
- (b) Discuss the unique challenges and opportunities presented by MANETs in comparison to traditional fixed networks.

Roll No. ....

Total Pages : 3

VSDQ/M-25

12248

**INFORMATION SECURITY**

Paper-BVSD-62

Time Allowed : 3 Hours]

[Maximum Marks : 80

**Note** : Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

**Compulsory Question**

1. Attempt the following : 8×2=16

- (a) Define Cryptography.
- (b) What is the use of Hash function ?
- (c) Define Authentication.
- (d) What is the role of Authentication Protocol in Computer Security ?
- (e) Define Digital Rights Management.
- (f) Why Software Security is important in Modern Computing ?
- (g) What is Honeypot ?
- (h) Define ARP Spoofing.

12248/K/192/100

P. T. O.

### UNIT-I

2. (a) In the context of DES, what are the key differences between Symmetric-key Cryptography and Public-key Cryptography ? 8
- (b) How does the RSA algorithm leverage the properties of Prime numbers, modular arithmetic and the concept of Public-key Cryptography to provide Secure Communication ? 8
3. (a) Discuss Real-world applications of Cryptographic signatures and Non-repudiation in various Sectors. 8
- (b) Explain the Feistel Cipher structure commonly used in Block Ciphers. 8

### UNIT-II

4. (a) Explore the challenges and Best practices in Password-based Authentication. 8
- (b) What are the key considerations in implementing Biometric Authentication Systems ? 8
5. (a) Explain the operation of the Kerberos authentication protocol. 8
- (b) How does an Multiple-level Security model differ from traditional Security Models and what are its Primary objectives in ensuring Data Confidentiality and integrity ? 8

### UNIT-III

6. Explain the Fundamental principles of Operating System Security and the key components involved in Securing an Operating System. 16
7. (a) Discuss the key components of a Digital Rights Management System. 8
- (b) Elaborate the tools and techniques commonly used in Software Reverse Engineering. 8

### UNIT-IV

8. Explain the importance of Email Security in Modern Communication and Business Operations. What are the main threats that email systems face, and why is it crucial to protect emails from unauthorized access ? 16
9. (a) What are the main goals and principles of Network Security ? 8
- (b) Explain the concept of Intrusion detection and prevention systems (IDPS) in Network Security. 8

Roll No. ....

Total Pages : 3

VSDQ/M-25

12249

## SOFTWARE TESTING

Paper-BVSD-63

Time Allowed : 3 Hours]

[Maximum Marks : 80

Note : Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

### Compulsory Question

1. (a) Name some common test metrics used for evaluation.  
(b) Define static analysis.  
(c) Introduce the concepts of OO testing.  
(d) Enumerate some general principles of testing.

### UNIT-I

2. (a) How does understanding Human psychology contribute to improving the effectiveness of Software testing?  
(b) Define the Software quality and its importance in Software testing.

12249/K/196/100

P. T. O.

3. (a) How do test metrics contribute to decision-making and improvement initiatives in Software testing?
- (b) How does Agile methodology impact testing practices in the Software development lifecycle?

#### UNIT-II

4. (a) Explain the cause effect graphing and decision table technique in the context of black box testing.
- (b) How does gray box testing combine elements of both white box and black box testing?
5. (a) Provide examples illustrating the application of intuitive and experience based testing techniques.
- (b) Discuss the role of static analysis in identifying defects in software code.

#### UNIT-III

6. (a) Discuss the importance of test plan prioritization and its impact on project timelines and resources. How can organizations balance the need for thorough testing with budget constraints?
- (b) Explain the importance of Monitoring and controlling test progress. Discuss key metrics and indicators used for Monitoring test progress.

7. (a) Define preventive and reactive approaches to testing. Compare and contrast the advantages and disadvantages of each approach.
- (b) Provide examples illustrating the application of analytical and heuristic testing techniques.

#### UNIT-IV

8. (a) What is the significance of automation in test execution? Discuss the advantages and challenges of automating test execution.
- (b) Discuss common features and functionalities of static testing tools.
9. (a) Explain the importance of test specification tools in the testing process.
- (b) Discuss the process of Introducing test tools into an organization's testing ecosystem.

Roll No. ....

Total Pages : 2

VSDQ/M-25

**12250**

## **LINUX & SHELL PROGRAMMING**

Paper-BVSD-64

Time Allowed : 3 Hours]

[Maximum Marks : 80

**Note** : Attempt **five** questions in all, selecting **one** question from each Unit. Question No. **1** is compulsory. All questions carry equal marks.

### **Compulsory Question**

1. Write brief notes on the following : 4×4=16
- (a) Linux Kernel.
  - (b) Mathematical Commands in Linux.
  - (c) Connecting to Remote Machines.
  - (d) Ipstat Command.

### **UNIT-I**

2. What do you mean by Operating System ? Explain the features and architecture of Linux in detail. 16
3. What are blocks in the File System of Linux ? Explain how the Kernel accesses the files ? 16

**12250/K/195/100**

**P. T. O.**

## UNIT-II

4. Explain the following commands in Linux with suitable examples :  
cat, cp, md, more, less, who, df. 16
5. What do you mean by Filters in Linux ? Show with help of an example how we can use filters and pipes to extract data from files. 16

## UNIT-III

6. (a) How to move content from one file to another using VI Editor ? 8  
(b) Explain the Operation modes used in VI Editor. 8
7. What are the Bulletin boards in Linux ? How can we communicate to other Online users on a Network using Linux commands. 16

## UNIT-IV

8. What do you mean by Administrative Files ? How are they used to identify the activities performed on the system ? Explain. 16
9. (a) What do you mean by Processes in Linux ? How are they created ? 8  
(b) Explain the Init and Run levels. 8

Roll No. ....

Total Pages : 3

NBSD/M-25

12754

## DATA STRUCTURES AND APPLICATIONS

Paper-CC-A4 : B23-CSD-401

Time Allowed : 3 Hours]

[Maximum Marks : 50

**Note** : Attempt **five** questions in all, selecting **one** question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

### Compulsory Question

1. Write short notes on the following :  $5 \times 2 = 10$ 
  - (a) List and explain any two operations performed on Data structures.
  - (b) Why is space complexity important in Algorithm design?
  - (c) How is a linked list represented in Memory?
  - (d) Define a simple queue. How is it different from a stack?
  - (e) Define a Binary search tree (BST).

### UNIT-I

2. (a) Explain best case, average case, and worst-case performance analysis of algorithms with examples.

5

12754/K/979/100

P. T. O.

- (b) Define arrays. Explain in detail the following : 5
- (i) One-dimensional arrays.
  - (ii) Two-dimensional arrays.
  - (iii) Multidimensional arrays. Support your answer with memory representation diagrams.
3. (a) What is a sparse matrix? Discuss the types of sparse matrix representations and their advantages. 5
- (b) Write and explain an algorithm to delete an element from a one-dimensional array. 5

#### UNIT-II

4. (a) Explain basic operations on strings: length, concatenation, and substring with examples. 5
- (b) What is recursion? How is a stack used to implement recursion? Explain. 5
5. Write and explain algorithms for traversing, inserting at beginning, and deleting a node from end in a doubly linked list with proper examples. 10

#### UNIT-III

6. (a) Write and explain the algorithm for the Pop operation in a stack using both array and linked list. 5
- (b) What is Polish notation? Explain prefix, infix and postfix notations with examples. 5

7. What is a Queue? Explain the various types of Queues along with their diagrams and memory representation and suitable examples. 10

#### UNIT-IV

8. (a) Write the algorithm for Inserting a node into a Binary search tree. 5
- (b) Explain the insertion sort algorithm with an example. 5
9. Define a Binary tree. Explain the different types of Tree traversals using suitable examples and write algorithm for any one type of traversal. 10

NBSD/M-25

**12755**

**FRONT-END DEVELOPMENT**

Paper-CC-B4 : B23-CSD-402

Time Allowed : 3 Hours]

[Maximum Marks : 50

**Note** : Attempt **five** questions in all, selecting **one** question from each Unit. Question No. **1** is compulsory. All questions carry equal marks.

**Compulsory Question**

1. Answer the following questions :
  - (a) What is a regular expression?
  - (b) Describe type conversion in JavaScript.
  - (c) How keyup() event is handled in jQuery?
  - (d) List one limitations of client-side validation in forms.
  - (e) Define the Persistent cookies.

**UNIT-I**

2. Explain the concept of objects in JavaScript. How are objects different from primitive data types?

**12755/K/1129/100**

**P. T. O.**

3. Describe different RegExp modifiers. Explain each with example.

### UNIT-II

4. Define event flow in JavaScript. Differentiate between event capturing and event bubbling with a diagram.
5. What is the Document Object Model (DOM)? Explain its importance in JavaScript web development.

### UNIT-III

6. Describe the Window object in JavaScript. List and explain any five commonly used methods or properties of the Window object.
7. How is client-side form validation performed in JavaScript? Write a program to validate email.

### UNIT-IV

8. Explain the basic jQuery syntax with examples. How does it differ from standard JavaScript?
9. Explain event handling in jQuery. Compare .on() with .click() method.

NBSD/M-25

12756

## COMPUTER NETWORKS

Paper-CC-C4 : B23-CSD-403

Time allowed : 3 Hours]

[Maximum Marks : 50

*Note* : Attempt **five** questions in all, selecting **one** question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

### Compulsory Question

1. Answer any four of the following questions in brief:
  - (i) Define a computer network.
  - (ii) What is a network topology?
  - (iii) What does MAC stand for, and why is it important?
  - (iv) What is ARP used for?
  - (v) Which protocol is used to send e-mails?
  - (vi) What is the purpose of an Intrusion Detection System (IDS)?
  - (vii) Discuss any one common threat to network security.

### UNIT-I

2. Discuss the OSI model in detail, explaining the functions of each layer.
3.
  - (a) Describe any two types of transmission media used in computer networks.
  - (b) Discuss the role and working of switches and routers in a network.

12756/K/1260/100

P.T.O.

## UNIT-II

4. Identify the techniques used for error detection and error correction at the Data Link Layer. Explain one method from each category in detail.
5. Describe the concept and process of IP addressing. Also, explain the concept and importance of subnetting. How does it improve network efficiency and management?

## UNIT-III

6. Explain the concept of congestion control and Quality of Service in the context of networks. Describe any one congestion control techniques commonly used in networks.
7. Answer the following questions in brief:
  - (a) Differentiate between FTP and HTTP in terms of functionality.
  - (b) What does DNS stand for, and what is its function?
  - (c) What is the purpose of a web service? Give some examples of web services.

## UNIT-IV

8. Compare symmetric and asymmetric cryptography with suitable examples.
9. List the key principles of wireless communication. Also, discuss the architecture of a cellular mobile network.