

**MCA INTEGRATED  
(SEM III) THEORY EXAMINATION 2022-23  
OBJECT ORIENTED PROGRAMMING IN C++**

**Time: 3 Hours****Total Marks: 70****Note: 1.** Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

**1. Attempt all questions in brief. 2 x 7 = 14**

- (a) Give the difference between abstract class and abstraction?
- (b) Define string and pointer? WAP for string function in C++?
- (c) What do you meant by New, Delete operator?
- (d) WAP in C++ for class declaration?
- (e) Define Static and Dynamic Binding with example?
- (f) WAP for Scope Resolution Operator in C++?
- (g ) Define data types in C++?

**SECTION B**

**2. Attempt any three of the following: 7 x 3 = 21**

- (a) Explain the concept function overloading with proper example?
- (b) WAP for Hybrid Inheritance in C++?
- (c) Explain the various concepts of OOPs?
- (d) What do you meant by virtual function? WAP for call by value in C++?
- (e) Define Array of Object? WAP for array of object in C++?

**SECTION C**

**3. Attempt any one part of the following: 7 x 1 = 7**

- (a) Give the difference between Procedural programming and Object Oriented Programming?
- (b) Explain Aggregation and Association? WAP for multiple inheritance in C++?

**4. Attempt any one part of the following: 7 x 1 = 7**

- (a) Explain C++ garbage collection in C++ with example?
- (b) What do you meant by Constructor and its uses? WAP for Copy Constructor in C++?

**5. Attempt any one part of the following: 7 x 1 = 7**

- (a) Explain Private, Protected and Public Modifiers? WAP for Binary Operator Overloading with example?
- (b) What do you meant by Constructor Overloading? WAP for constructor overloading in C++?

6. Attempt any *one* part of the following:

7 x 1 = 7

- (a) Explain the concept of Template? WAP for template in C++?
- (b) What do you mean by Polymorphism? WAP for Unary Operator Overloading in C++?

7. Attempt any *one* part of the following:

7 x 1 = 7

- (a) What do you mean by Exception Handling? Explain the various streams classes of C++?
- (b) How friend function differ from inline function? WAP for friend function in C++?

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**MCA (Integrated)**  
**(SEM III) THEORY EXAMINATION 2022-23**  
**INTRODUCTION TO WEB DESIGNING**

**Time: 3 Hours****Total Marks: 70****Note:** Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

**1. Attempt *all* questions in brief. 2 x 7 = 14**

- (a) What are the Data Transmission Modes in a network?
- (b) Differentiate the Internet and Intranet.
- (c) List the popular terms of Internet.
- (d) How do you write a file name in HTML?
- (e) List the attributes used for body tag.
- (f) Define the frameset in HTML.
- (g) What is a DTD in XML?

**SECTION B**

**2. Attempt any *three* of the following: 7 x 3 = 21**

- (a) What are the different types of networks? Explain any two with examples.
- (b) Summarize the History and Evolution of the Internet.
- (c) Illustrate how HTML has changed over time?
- (d) Write a code in HTML to show the img tag with explanation of all possible attributes.
- (e) What are the basic rules while writing XML? Show the needed code also.

**SECTION C**

**3. Attempt any *one* part of the following: 7 x 1 = 7**

- (a) Explain about network topology and types of network topology.
- (b) Illustrate differentiation between TCP and UDP.

**4. Attempt any *one* part of the following: 7 x 1 = 7**

- (a) "Internet can play a lead role in higher education", Justify the statement with proper example.
- (b) Demonstrate the parts of Internet Explorer.

5. Attempt any *one* part of the following:

7 x 1 = 7

- (a) Express how you write an HTML program?
- (b) Demonstrate the following-
  - (i) Heading tag in HTML
  - (ii) Marquee tag in HTML

6. Attempt any *one* part of the following:

7 x 1 = 7

- (a) Write a code in HTML to show your class time-table.
- (b) Write a code in HTML to show the use of different types of anchor tags.

7. Attempt any *one* part of the following:

7 x 1 = 7

- (a) Express the difference between HTML and XML with suitable examples.
- (b) Write a short note on following-
  - (i) XML Element
  - (ii) XML Schema

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**MCA (Integrated)**  
**(SEM III) THEORY EXAMINATION 2022-23**  
**ACCOUNTING AND FINANCIAL MANAGEMENT**

**Time: 3 Hours****Total Marks: 70****Note:** Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

**1. Attempt all questions in brief. 2 x 7 = 14**

- (a) Define cash flow statement.
- (b) What do you understand by balance sheet?
- (c) Define accounting equation.
- (d) What do you mean by the term journal?
- (e) Define patents.
- (f) Explain current ratio.
- (g) Define accountancy.

**SECTION B**

**2. Attempt any three of the following: 7 x 3 = 21**

- (a) Discuss the various advantages of cash flow statement.
- (b) Clearly draw format of schedule of changes in working capital.
- (c) Explain the concept of gross and networking capital.
- (d) Differentiate between bookkeeping and accounting.
- (e) What do you understand by Solvency ratios? Explain the various solvency ratios

**SECTION C**

**3. Attempt any one part of the following: 7 x 1 = 7**

- (a) What do you understand by the term fund flow statement? Discuss its advantages.
- (b) Clearly draw a format of cash flow statement.

**4. Attempt any one part of the following: 7 x 1 = 7**

- (a) Explain the various accounting concepts.
- (b) Discuss the various accounting conventions along with their need.

**5. Attempt any one part of the following: 7 x 1 = 7**

- (a) Discuss the various limitations of ratio analysis.
- (b) Explain the concept of Comparative balance sheet and trend analysis.

**6. Attempt any one part of the following: 7 x 1 = 7**

- (a) Discuss the various rules of Journalizing a transaction.
- (b) Clearly draw a format of trading and profit and loss accounts.

**7. Attempt any one part of the following: 7 x 1 = 7**

- (a) Differentiate between fund flow and cash flow statement.
- (b) Explain the concept assets and liabilities with examples.

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**(SEM III) THEORY EXAMINATION 2022-23**  
**INFORMATION SYSTEMS**

**Time: 3 Hours****Total Marks: 70****Note: 1.** Attempt all Sections. If require any missing data then choose suitably.

**SECTION A**

**1. Attempt all questions in brief. 2 x 7 = 14**

- a. Explain the term “Information “and “Data”.
- b. What are the advantages of Control Processes?
- c. What do you understand by EDP?
- d. Explain the nature of Planning.
- e. What are Un-Structured decisions?
- f. Explain the term Internet, Intranet and extranet.
- g. Explain the role of database in Information System.

**SECTION B**

**2. Attempt any three of the following: 7 x 3 = 21**

- a. Explain why information systems are so important for business today.
- b. Explain how the decision-making process works.
- c. What do you mean by planning? Explain its types.
- d. How do you understand the Cyber Crimes? How can the prevented? Discuss.
- e. Describe the Customer Relationship Management and it processes.

**SECTION C**

**3. Attempt any one part of the following: 7 x 1 = 7**

- (a) What do you understand by Information? What are the characteristics of Information?
- (b) What do you understand by System? Discuss the types and characteristics of System?

**4. Attempt any one part of the following: 7 x 1 = 7**

- (a) Describe different types of decisions with examples.
- (b) Discuss the objectives and characteristics of MIS.

**5. Attempt any one part of the following: 7 x 1 = 7**

- (a) Discuss the role of Planning in modern business organization.
- (b) Explain the Controlling Process in details.

**6. Attempt any one part of the following: 7 x 1 = 7**

- (a) What do you mean by E-commerce and How E-commerce helps the organization?
- (b) Describe the key differences between E-commerce and E-business.

**7. Attempt any one part of the following: 7 x 1 = 7**

- (a) State the challenges of managing information systems in today's business environment.
- (b) Describe the ERP Architecture in details.

**MCA (INTEGRATED)**  
**(SEM III) THEORY EXAMINATION 2022-23**  
**APPLIED LINEAR ALGEBRA**

Time: 3 Hours

Total Marks: 70

Note: Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

1. Attempt all questions in brief.

2 x 7 = 14

- (a) What do you mean by Ring with Zero divisors?
- (b) Define the Vector Spaces. Give axioms.
- (c) What do you mean by Linear Independence of vector?
- (d) Define the Linear Transformation.
- (e) Define the term Linear Span?
- (f) What do you mean by Orthogonal set of vectors?
- (g) Write down the properties of Linear functional.

**SECTION B**

2. Attempt any three of the following:

7 x 3 = 21

- (a) Show that:  $(2, -5, 4)$  can not be expressed as a linear combination of  $(1, -3, 2)$  and  $(2, -1, 1)$  in  $V_3(R)$ .
- (b) Find the Matrix of Linear Transformation  $T$  in the Basis set  $\{(1, 0, 1), (-1, 2, 1), (2, 1, 1)\}$ ? Where linear transformation  $T: R^3 \rightarrow R^3$  defined by  $T(x, y, z) = (3x + z, -2x + y, -x + 2y + 4z)$ .
- (c) Prove that "The relation of isomorphism in any set of vector spaces over a field  $F$  is an equivalence relation."
- (d) In an inner product space  $V(F)$ , Prove that:  $(a\alpha + b\beta, \gamma) = \bar{a}(\alpha, \gamma) + \bar{b}(\beta, \gamma)$
- (e) If  $U(F)$  be a vector space over  $F$  and  $T: U \rightarrow F$  defined as:  $T(\alpha) = 0, \forall \alpha \in U$ , then show that  $T$  is linear functional.

**SECTION C**

3. Attempt any one part of the following:

7 x 1 = 7

- (a) Prove that: A commutative ring  $R$  with unity is an Integral domain, if and only if, for a no-zero element  $\in R$ .
- (b) Show that the set of vectors  $\{(1, 2, 0), (0, 3, 0), (-1, 0, 1)\}$  in  $V_3(R)$  are linearly independent.

4. Attempt any one part of the following:

7 x 1 = 7

- (a) What do you mean by Rang and kernel of Linear Transformation. If  $T: R^2 \rightarrow R^3$  defined by  $T(x, y) = (x - y, y, x + y)$ . Then find Range and Kernel of linear transformation.

- (b) Prove that: If  $U(F)$  and  $V(F)$  are two vector spaces and  $T$  is linear transformation from  $U$  into  $V$ , then range of  $T$  is sub-space of  $V$ .

5. Attempt any one part of the following:

7 x 1 = 7

- (a) Describe explicitly the linear transformation  $T: R^2 \rightarrow R^2$  such that:  $T(2,3) = (4,5)$  and  $T(1,0) = (0,0)$ .
- (b) If  $T$  is an Invertible linear transformation on a vector space  $V(F)$ . Then Prove that  $T$  possesses unique inverse.

6. Attempt any one part of the following:

7 x 1 = 7

- (a) If  $\alpha, \beta$  are vectors in an inner product space, then show that:  

$$\|\alpha + \beta\|^2 + \|\alpha - \beta\|^2 = 2\|\alpha\|^2 + 2\|\beta\|^2$$
- (b) If  $\alpha = (x_1, y_1)$ ,  $\beta = (x_2, y_2) \in V_2(R)$  defined by  $\langle \alpha | \beta \rangle = (x_1 y_1 - x_2 y_1 - x_1 y_2 + 2x_2 y_2)$ , then prove that  $V_2(R)$  is an inner product space with the inner product  $\langle \alpha | \beta \rangle$ .

7. Attempt any one part of the following:

7 x 1 = 7

- (a) Find the character equation of the matrix:  $A = \begin{bmatrix} 2 & 1 & 1 \\ 1 & 2 & 1 \\ 0 & 0 & 1 \end{bmatrix}$ ,  
 Also find the eigen values.

- (b) Prove that: The Dual space of an  $n$ -dimensional vector space is  $n$ -dimensional.

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