**D–6899**

| Sub. Code |
| --- |
| 31511 |

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION.

MAY 2021 EXAMINATION

&

MAY 2020 ARREAR EXAMINATION

First Semester

Computer Application

DIGITAL COMPUTER ORGANIZATION

(CBCS 2018-19 Academic Year onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Subtract -72 from -50 using 2's complement method.
2. Simplify Y=(A+B)(A+C')(B'+C').
3. Define the term 'Half adder'.
4. State the basic operation of a decoder.
5. List the four phases of instruction cycle.
6. Mention the purpose of accumulator and program counter.
7. What is the need for interface between I/O device and CPU?
8. Define the term peripherals. Mention its types.

9. What is the purpose of Main memory?

10. Write the uses of virtual memory.

PART B — (5 × 5 = 25 marks)

Answer ALL questions, Choosing either (a) or (b).

11. (a) Describe the fundamentals of Boolean algebra.

Or

(b) Write short notes on Quine-Mckluskey method.

12. (a) Perform D to T flip-flop conversion.

Or

(b) Describe briefly about BCD counter.

13. (a) Brief on computer registers.

Or

(b) Draw and explain the design of basic computer.

14. (a) Write short notes on stack organization.

Or

(b) What is Direct Memory Access? Explain briefly.

15. (a) Discuss about associative memory.

Or

(b) Brief on memory management hardware.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Simplify the following Boolean function using K–map F $F(w, x, y, z) = \sum m(0,1,2,4,5,6,8,9,12,13,14)$.

17. With neat block diagram, explain the operation of shift register.

18. Detail on different addressing modes.

19. Explain in detail about various addressing modes.

20. Discuss on cache mapping techniques.

---

**D–6900**

| Sub. Code |
| --- |
| 31512 |

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION.

MAY 2021 EXAMINATION

&

MAY 2020 ARREAR EXAMINATION

First Semester

OBJECT ORIENTED PROGRAMMING AND C++

(CBCS 2018-19 Aca. Year onwards & 2020-21 Aca.Year onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

1. What is the need for streams?

2. What is manipulator? Write two manipulators in C++.

3. Define the terms class and object.

4. What is 'this' pointer?

5. How will you overload Unary and Binary operators using Friend function?

6. What is an abstract class?

7. Draw the hierarchy of file stream classes.

8. List any two ios functions.

9. What is meant by Exception?

10. Write the functions that handle uncaught exceptions.

PART B — (5 × 5 = 25 marks)

Answer ALL questions, Choosing either (a) or (b).

All questions carry equal marks.

11. (a) Briefly explain about object oriented programming paradigm.

Or

(b) Write short notes on formatted I/O.

12. (a) What do you mean by inline function? Explain with example code.

Or

(b) Explain copy constructor with suitable example.

13. (a) Describe Pure Virtual function with an example.

Or

(b) What is function overloading? Give an example.

14. (a) Explain with example how can a class template be created.

Or

(b) What is file? Write an example program for sequential access.

15. (a) Write short notes on catching exception. Give an example.

Or

(b) Write a program to throw exception from overloaded operator function.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

All questions carry equal marks.

16. Describe the basic concepts of Object Oriented Programming.

17. Describe the concept of call by reference & return by reference with program code.

18. Define the term Inheritance. Explain multilevel and hierarchal inheritance with program code.

19. Explain the concept of function template with examples.

20. Explain the use of try, catch and throw for exception handling in C++ through examples.

———————

**D–6901**

| Sub. Code |
| --- |
| 31513 |

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION.

MAY 2021 EXAMINATION

&

MAY 2020 ARREAR EXAMINATION

First Semester

Computer Application

DATA STRUCTURE AND ALGORITHMS

(CBCS 2018-19 Aca.Year onwards & 2020-21 Aca.year onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

1. Define the term data structure?

2. Define and write the characteristics of Algorithm.

3. What is a circular queue? Write the conditions of circular queue.

4. Differentiate between Array and Linked list.

5. What are ancestors and descendants?

6. What do you mean by the term Strictly Binary Tree?

7. State the applications of linear and binary search techniques.

8. What is the time complexity of binary search?

9. What is the best case time complexity of quick sort?

10. What is meant by external sorting?

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, Choosing either (a) or (b).

All questions carry equal marks.

11. (a) Explain briefly about various types of data structure.

Or

(b) How do you find the complexity of an algorithm? What is the relation between the time and space complexities of an algorithm? Justify your answer with an example.

12. (a) Explain the various applications of stack.

Or

(b) Convert the following Infix Expression to postfix using stack. A*B-(C+D)+E

13. (a) Explain the insertion and deletion operations of binary tree with example.

Or

(b) Write a recursive algorithm for binary tree traversal with an example.

14. (a) Compare working principle of binary search and linear search technique with example.

Or

(b) Write a program to search a number within a given set of numbers using binary search.

15. (a) Explain tree sort technique with an example.

Or

(b) Explain selection sort with illustration.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

All questions carry equal marks.

16. Define the term array. How are two-dimensional arrays represented in memory? Explain how address of an element is calculated in a two dimensional array.

17. Write an algorithm to perform the following operation on a doubly linked list.

(a) Insert new node at the beginning of the list.

(b) Insert new node at Middle.

(c) Delete a node at middle and at last.

(d) Count the number of nodes.

18. What is Hashing? Explain Different Hash function methods in detail.

19. Write short note on :

(a) Linear search

(b) Binary search.

20. Discuss on Bubble Sort with the help of an example.

———————

**D–7086**

| Sub. Code |
| --- |
| 31514 |

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION - MAY 2021

First Semester

Computer Application

DISCRETE MATHEMATICS

(CBCS 2020 – 21 Academic Year onwards)

Time : Three hours Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Construct the truth table for $\neg P \wedge \neg Q$.

2. Give the power set of $\{1, \emptyset\}$.

3. Show whether the relation $\{\langle 1,2\rangle, \langle 2,3\rangle, \langle 1,3\rangle, \langle 1,2\rangle\}$ is transitive.

4. Define equivalence relation with an example.

5. Find $\lceil -3.74 \rceil$ and $\lfloor -3.74 \rfloor$.

6. Let $f, g : \mathbb{R} \to \mathbb{R}$ defined by $f(x) = x^2 - 2$ and $g(x) = x + 4$. Find $f \circ g$.

7. Define permutation with an example.

8. What are the generators of $(\mathbb{Z}_6, +6)$?

9. Define digraph with an example.

10. If A and B are two indepedent events then $P(A \cap B)$ =?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions Choosing either (a) or (b).

11. (a) Write an equivalent formula for

$P \wedge (Q \rightleftharpoons R) \vee (R \rightleftharpoons P)$ which does not contain the biconditional.

Or

(b) If $A = \{\alpha, \beta\}$ and $\{1,2,3\}$, what are $A \times B, B \times A, A \times A, B \times B$, and $(A \times B) \cap (B \times A)$?

12. (a) Let A = {a, b, c}. If R is the relation of proper inclusion on $\rho$(A), then give the matrix of R.

Or

(b) Show that every equivalence relation on a set generates a unique partition of the set.

13. (a) Show that any function from a finite set to itself is one-to-one if and only if onto.

Or

(b) Show that $f(A \cap B) \subseteq f(A) \cap f(B)$. Under what condition will $f(A \cap B) = f(A) \cap f(B)$?

14. (a) Show that if every element in a group is its own inverse then the group must be abelian.

Or

(b) Show that the kernal of every group homomorphism is a normal subgroup.

15. (a) Show that a simple graph is a tree if and only if it is connected, but the deletion of any of its edges produces a graph that is not connected.

Or

(b) If $f(x) = \begin{cases} k(2x+3) & if\ 0 \le x \le 2 \\ 0 & otherwise \end{cases}$ is the p.d.f. of the continuous random variable $X$. Find $k$ and also find the distribution function $f(x)$.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Show that $(x)(P(x) \vee Q(x)) \Rightarrow (x)P(x) \vee (\exists x)Q(x)$.

17. Let $R = \{\langle 1,2\rangle, \langle 3,4\rangle, \langle 2,2\rangle\}$ and

$S = \{\langle 4,2\rangle, \langle 2,5\rangle, \langle 3,1\rangle, \langle 3,1\rangle\}$. Find $R \circ S, S \circ R,$ $R \circ (S \circ R), (R \circ S) \circ R, R \circ R, S \circ S, R \circ R \circ R$.

18. If $f : X \to Y$ and $g : Y \to Z$ are bijective then show that $g \circ f$ is bijective and $(g \circ f)^{-1} = f^{-1} \circ g^{-1}$.

19. Prove that every finite group of order n is isomorphic to a permutation group of degree n.

20. One factory $F_1$ produces 1000 articles, 20 of them being defective, second factory $F_2$ produces4000 articles, 40 of them being defective and third factory $F_3$ produces 5000 articles, 50 of them being defective. All these articles are put in one stock pile. One of them is chosen and found to be defective. What is the probability that it is from factory $F_1$.

———————

**D–7097**

| Sub. Code |
| --- |
| 31521 |

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION - MAY 2021

Second Semester

Computer Application

ACCOUNTING AND FINANCIAL MANAGEMENT

(CBCS 2020–21 Academic Year onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks

1. What is meant by business entity concept?

2. What is a trial balance?

3. What is acid test ratio?

4. What is marginal costing?

5. What is contribution?

6. What is break-even chart?

7. What is standard costing?

8. What is a sales budget?

9. What is optimum capital structure?

10. What is stable dividend policy?

PART B — (5 × 5 = 25 marks)

Answer ALL the questions. Choosing either (a) or (b).

All questions carry equal marks

11. (a) Mr. Raman has the following transactions in the month of July. Write journal entries and post them into the ledger:

| Date | | Particulars |
|---|---|---|
| July | 1 | Raman started business with a capital of Rs.75,000 |
| | 1 | Purchased goods from Mohan on credit Rs.25,000 |
| | 2 | Sold goods to Somu Rs.20,000 |
| | 3 | Purchased goods from Ashok Rs.15,000 |
| | 6 | Sold goods to Karthik for cash Rs. 16,000 |
| | 8 | Goods returned to Mohan Rs.2,000 |
| | 11 | Bought furniture for Rs. 15,000 |
| | 14 | Cash paid to Mohan Rs.10,000 |
| | 15 | Goods returned from Somu Rs.3,000 |
| | 16 | Goods taken by Raman for domestic use Rs.3,000 |

17 Bought machinery for Rs. 18,000

20 Cash sales Rs.15,000

31 Rent paid Rs.5,000

31 Salaries paid Rs.20,000

Or

(b) State the managerial uses of ratio analysis.

12. (a) Distinguish between management accounting and cost accounting.

Or

(b) Prepare a Cost Sheet showing Cost and Profit from the following information:

| | Rs. |
|---|---|
| Materials purchased | 2,00,000 |
| Wages | 1,00,000 |
| Direct expenses | 20,000 |
| Opening stock of materials | 40,000 |
| Closing stock of materials | 60,000 |

Factory overhead is absorbed at 20% on wages. Administration overhead is 25% on the works cost. Selling and administration overheads are 20% on the cost of production. Profit is 20% on sales.

13. (a) You are required to prepare a production budget for the year ending June 2000 from the following information:

| Product | Budgeted Sales quantity Units | Actual Stock on 31.12.1999 Units | Desired Stock on 30.6.2000 Units |
|---|---|---|---|
| S | 20,000 | 4,000 | 5,000 |
| T | 50,000 | 6,000 | 10,000 |

Or

(b) Distinguish between standards and estimate.

14. (a) The following are the cash inflows and outflows of a certain project.

| Year | Outflows | Inflows |
|---|---|---|
| 0 | 1,75,000 | – |
| 1 | 5,50,000 | 35,000 |
| 2 | | 45,000 |
| 3 | | 65,000 |
| 4 | | 85,000 |
| 5 | | 50,000 |

The salvage value at the end of 5 years is Rs.50,000. Taking the cutoff rate as10%, calculate Net Present Value.

| Year | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| P.V. | 0.909 | 0.826 | 0.751 | 0.683 | 0.621 |

Or

(b) What is internal rate of return? What are its merits and demerits?

15. (a) What is cost of capital? How overall cost of capital is calculated?

Or

(b) What are the assumptions of Walter's model?

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

All questions carry equal marks

16. The following are the summarized Balance Sheets of Malar Industries Ltd., as on 31st December 1989 and 1990:

Balance Sheet

| Liabilities | 1989 Rs. | 1990 Rs. | Assets | 1989 Rs. | 1990 Rs. |
|---|---|---|---|---|---|
| Capital: | | | Fixed Assets | 41,000 | 40,000 |
| 7% Redeemable | – | 10,000 | Less: Depreciation | 11,000 | 15,000 |
| preference shares | | | | 30,000 | 25,000 |
| Equity shares | 40,000 | 40,000 | Current Assets: | | |
| General reserve | 2,000 | 2,000 | Debtors | 20,000 | 24,000 |
| Profit & Loss a/c | 1,000 | 1,200 | Stock | 30,000 | 35,000 |
| Debentures | 6,000 | 7,000 | Prepaid expenses | 300 | 500 |
| Current Liabilities: | | | Cash | 1,200 | 3,500 |
| Creditors | 12,000 | 11,000 | | | |
| Provision for tax | 3,000 | 4,200 | | | |
| Proposed dividend | 5,000 | 5,800 | | | |
| Bank overdraft | 12,500 | 6,800 | | | |
| | 81,500 | 88,000 | | 81,500 | 88,000 |

Prepare:

(a) Statement showing changes in working capital

(b) A Statement of Sources and Application of Funds

17. From the following information

| | Rs. |
|---|---|
| Present Sales | 1,00,000 |
| Variable Cost | 60,000 |
| Fixed Cost | 20,000 |

Ascertain the effect of 10% reduction of selling price on:

(a) P/V Ratio

(b) Break Even Point

Also calculate the Sales required to maintain the Profit at the present level.

18. Prepare a flexible budget for overheads on the basis of the following data. Ascertain overhead rates at 50%, 60% and 70% capacity.

| | At 60% Capacity Rs. |
|---|---|
| Variable overheads: | |
| Indirect material | 6,000 |
| Indirect labour | 18,000 |
| Semi-variable Overheads: | |
| Electricity (40% fixed, 60% variable) | 30,000 |
| Repairs (80% fixed, 20% variable) | 3,000 |

Fixed Overheads:

| | |
|---|---|
| Depreciation | 16,500 |
| Insurance | 4,500 |
| Salaries | 15,000 |
| Total overheads | 93,000 |
| Estimated direct labour hours | 1,86,000 |

19. Critically explain the factors affecting the requirement of working capital.

20. Describe the factors affecting dividend policy.

**D–6903**

| Sub. Code |
| --- |
| 31522 |

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION.

MAY 2021 EXAMINATION

&

MAY 2020 ARREAR EXAMINATION

Second Semester

Computer Applications

RELATIONAL DATABASE MANAGEMENT SYSTEMS
(RDBMS)

(CBCS 2018-19 Aca.Year onwards & 2020-21 Aca.Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Expand and write the purpose of the term DBMS.
2. Give the levels of data abstraction.
3. What is candidate key?
4. Write the use of rename operation.
5. What is trigger?
6. List out the desirable properties of decomposition.
7. What are the properties of transaction?
8. What are the types of serializabilty?
9. What are called secondary indices?
10. Define the term search key.

PART B — (5 × 5 = 25 marks)

Answer ALL questions, Choosing either (a) or (b).

11. (a) Discuss the role of DBA and different database end users.

Or

(b) Write short notes on various types of attributes in ER model.

12. (a) Discuss on tuple relational calculus

Or

(b) Give a note on domain relational calculus.

13. (a) Define BCNF. How does it differ from 3NF?

Or

(b) Brief on functional dependency concepts.

14. (a) Write short notes on concurrency.

Or

(b) Describe the timestamp based protocols.

15. (a) Give a note on comparison of file organizations.

Or

(b) Briefly explain about ISAM.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. With a neat diagram, explain the structure of DBMS.

17. Explain various integrity constraints giving examples.

18. Explain five SQL commands and their use, through examples.

19. Discuss on recovery and atomicity.

20. Explain B+ tree indexing.

———————

**D–6904**

| Sub. Code |
| --- |
| 31523 |

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION.

MAY 2021 EXAMINATION

&

MAY 2020 ARREAR EXAMINATION

Second Semester

Computer Applications

COMPUTER GRAPHICS

(CBCS 2018-19 Aca.Year onwards & 2020-21 Aca.Year onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. What is Computer graphics?

2. Write any two characteristics of video display devices.

3. Why we do rotation in computer graphics?

4. What is two dimensional computer graphics?

5. What is space partitioning representation in computer graphics?

6. What are the three different classification of curves?

7. What is called a shear in 3d Geometric transformation?

8. What are the three types of orthographic projection?

9. What are the two approaches to remove hidden surface problem?

10. What is the purpose of frame buffer method?

PART B — (5 × 5 = 25 marks)

Answer ALL the questions, Choosing either (a) or (b).

11. (a) Briefly discuss about cathode ray tube with a neat sketch.

Or

(b) Write short notes on flood fill algorithm.

12. (a) Elaborate on the translation operation with necessary diagrams and matrix.

Or

(b) What is text clipping? Explain with a neat diagram.

13. (a) Bring out the advantages and disadvantages of polygon meshes.

Or

(b) Write short notes on the following:

(i) Explicit curves,

(ii) Parametric curves.

14. (a) What is reflection? Explain with a neat structure.

Or

(b) What are the two basic projection methods? Explain.

15. (a) Explain briefly about the area sub division method with its diagram.

Or

(b) Write short notes on A- buffer method.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Write and explain in detail about the DDA line drawing algorithm.

17. Elaborate in detail the cohen-sutherland line clipping algorithm with a neat diagram.

18. List out the properties of B-Spline curves with a neat structure.

19. Discuss in detail about polygon clipping with a neat structure.

20. Describe in detail about the different types of animation techniques with illustrations.

———————

**D–7098**

| Sub. Code |
| --- |
| 31524 |

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION - MAY 2021

Second Semester

VISUAL PROGRAMMING WITH .NET

(CBCS 2020–21 Academic Year onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is called as work area in visual studio?
2. What is the use of Toolbar?
3. List the branching statements in VB.Net.
4. What is inheritance? Write the use of class inheritance.
5. What is meant by interface snippet?
6. Write the use of solution explorer.
7. What is the purpose of Watch window?
8. How the tables are connected through foreign keys?

9. Write the procedure to connect the combo box with data source.

10. What is called as Web service?

PART B — (5 × 5 = 25 marks)

Answer ALL questions. Choosing either (a) or (b).

11. (a) Explain Solution Explorer and Status bar in Visual Studio.

Or

(b) Discuss about windows projects and web protects.

12. (a) Write an overview on Visual Studio code editor.

Or

(b) Write a program to display names of 10 fruits using abstract class inheritance.

13. (a) Explain the procedure to apply array and generic in visual studio.

Or

(b) Brief on Assembly Referencing.

14. (a) Explain the debugging techniques in visual studio.

Or

(b) Write the procedure to create student database application in VS.

15. (a) Discuss in detail about Managing windows for controls.

Or

(b) Discuss in detail about WCF service hosting.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Explain the visual studio 2010 environments.

17. How to write and use methods in VB.Net? Explain.

18. Detail on Project Compilation in Visual Studio.

19. Elaborate on Application state inspection.

20. Explain the step by step procedure to build the desktop application with WPF.

———————