D–7049	Sub. Code
	41211

DISTANCE EDUCATION

P.G.D.C.A. EXAMINATION, DECEMBER 2022.

First Semester

DIGITAL COMPUTER ORGANIZATION

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Convert the decimal number $(175)_{10}$ to octal number

2. Define Boolean algebra.

3. What is encoder?

4. Write short note on complements.

5. Define instruction code.

6. Write the use of BSA instruction.

7. What is the use of relative addressing mode?

8. Define priority interrupt.

9. What is virtual memory?

10. Write short note on memory hierarchy.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain about sum of products and product of sum.

Or

(b) What is numeric and non-numeric code? Explain.

12. (a) Explain in detail about multiplexer.

Or

(b) How do you represent data in basic computer? Explain.

13. (a) Explain the steps of instruction cycle?

Or

(b) Discuss on different input and output instructions.

14. (a) Explain input output interface.

Or

(b) What are the different types of data transfer instructions? Explain.

15. (a) Differentiate main memory and auxiliary memory.

Or

(b) Explain about cache memory with diagram.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Simplify the following logical expression using K-Map $Y = \sum_m (7,9,10,11,12,13,14,15)$.

17. Explain the following:

(a) BCD counter

(b) Binary counter.

18. Explain various memory reference instructions with example.

19. Explain Direct Memory Access (DMA) in detail.

20. What is associative memory? Explain the functions of associate memory.

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41212

DISTANCE EDUCATION

P.G.D.C.A. EXAMINATION, DECEMBER 2022.

First Semester

OBJECT ORIENTED PROGRAMMING WITH C++

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define Data abstraction.

2. What are predefined console streams?

3. What is constructor? Give its types.

4. Define Virtual function.

5. Define Abstract class.

6. What is friend function?

7. What do you mean by 'this' pointer?

8. Define class template.

9. What do you mean by catching mechanism in exception handling?

10. What are the methods available in memory allocation failure exception?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) What is OOPS? How it is differ from procedural oriented programming?

Or

(b) Describe the hierarchy of console stream classes.

12. (a) Write a C++ program to implement single inheritance with public access specific with your own example.

Or

(b) Differentiate between function overloading and operator overloading.

13. (a) Explain about pure virtual function.

Or

(b) Explain the concept of multilevel inheritance with example.

14. (a) Explain file streams. How to manipulate file streams?

Or

(b) Difference between sequential and random access file with example.

15. (a) Write short note on constructor and destructor.

Or

(b) Write a C++ program to illustrate catching all exceptions.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

All questions carry equal marks.

16. Discuss about following terms with example

    (a) Call by reference

    (b) Call by value.

17. Explain the use of ifstream and ofstream classes for file input and output.

18. Explain the output manipulators: setw(), setprecision() and setfill() with examples.

19. Write a C++ program to demonstrate the working of class template.

20. Describe the role of try, catch, throw in exception handling in example.

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41213

DISTANCE EDUCATION

P.G.D.C.A. EXAMINATION, DECEMBER 2022.

First Semester

DATA STRUCTURES AND ALGORITHMS

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define Data Structure.

2. Write short note on Complexity of algorithm.

3. What is circular queue?

4. What is the difference between linear and nonlinear data structure?

5. Define binary tree.

6. Write short note on tree traversal

7. Convert the given expression in reverse polish notation (X–Y)*((W+Z)/V).

8. What is the complexity of linear search?

9. Write the difference between selection sort and quick sort.

10. Define tree sort.

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain time and space complexity.

Or

(b) Define Array. What are the different types of array?

12. (a) Explain the representation of linked list.

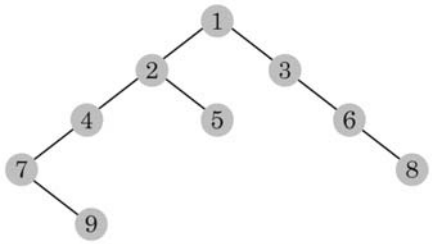
Or

(b) What is stack? Explain in detail.

13. (a) Write an algorithm to implement binary tree.

Or

(b) Write the in order, preorder and post order for the following tree.



14. (a) What is recursion? Write the algorithm to find the factorial of given number using recursion.

Or

(b) Explain about binary search.

15. (a) Sort the following numbers using selection sort 14,27,10,35,19,44,43.

Or

(b) Explain in detail about Radix Sort.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the characteristics of array. How do you define and initialize array? Explain with example.

17. What is queue? What are various operations of queue? Explain with example.

18. Write the algorithm of doubly linked list.

19. Explain about binary tree traversal in detail.

20. Define sorting, what are the different types of sorting and write the algorithm for selection sort.

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41221

DISTANCE EDUCATION

P.G.D.C.A. EXAMINATION, DECEMBER 2022.

Second Semester

SOFTWARE ENGINEERING

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

1. Expand CMMI.

2. What is a process model?

3. List the requirement of engineering tasks.

4. Define behavioural model.

5. What is data design?

6. State the golden rules.

7. What is system testing?

8. Define product metrics.

9. What is risk protection?

10. Define software reviews.

PART B — ($5 \times 5 = 25$ marks)

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

All questions carry equal marks.

11. (a) Describe about the process framework.

Or

(b) Explain about the unified process.

12. (a) Show the requirements of engineering process.

Or

(b) Discuss about data modelling concepts.

13. (a) Evaluate the design concepts.

Or

(b) Write about user interface analytics and design.

14. (a) Explain about the art of debugging.

Or

(b) Discuss about the Software measurement.

15. (a) Explain about the risk refinement.

Or

(b) Describe about the ISO 9000 quality standards.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

All questions carry equal marks.

16. Explain about waterfall model with details.

17. Discuss about scenario based modelling.

18. Elucidate the architecture design.

19. Compare black box testing and white box testing.

20. Evaluate the statistical software quality assurance.

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DISTANCE EDUCATION

P.G.D.C.A. EXAMINATION, DECEMBER 2022.

Second Semester

RELATIONAL DATABASE MANAGEMENT SYSTEMS

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is Database Systems?

2. Define Entity.

3. What do you mean by Primary Key?.

4. What is the use of views in SQL?

5. Comment on Nested Queries.

6. What is Aggregate Operators?.

7. Define Serializability.

8. What does buffer mean in database?

9. Comment on Heap Files.

10. Define B+ Tree.

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain the role of Database Administrators.

Or

(b) Discuss about Entity - Relationship Design.

12. (a) Write a short note on Set operation in Relational Calculus.

Or

(b) Explain about Tuple relational calculus.

13. (a) What are complex integrity constraints? Explain.

Or

(b) Explain about BCNF.

14. (a) Explain about timestamp based protocols.

Or

(b) What is recovery with concurrent transaction? Explain.

15. (a) Write a short note on File Organization.

Or

(b) Explain about indexed and sequential access methods.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Examine various data models with neat diagram.

17. Why integrity constraints are important? Explain in detail.

18. Discuss various types of decomposition in detail.

19. Explain about Advance Recovery system and Remote Backup system.

20. What are the different types of index data structures in DBMS? Explain.

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D–7054

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41223

DISTANCE EDUCATION

P.G.D.C.A. EXAMINATION, DECEMBER 2022.

Second Semester

COMPUTER GRAPHICS

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is cathode-ray tube?

2. Comment on Boundary-Fill algorithm.

3. Define Reflection.

4. What is the 2-D Viewing Functions?

5. Comment on Ellipsoid.

6. Define Polygon Surfaces.

7. What is Scaling?

8. Comment on 3-D Shear transformation.

9. Define Octree Methods.

10. Comment on Outer Join.

PART B — (5 × 5 = 25 marks)

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

11. (a) Give a note on Raster-Scan Systems.

Or

(b) Explain Midpoint circle algorithm.

12. (a) Explain various composite transformations.

Or

(b) Write a short note on Polygon Clipping.

13. (a) Briefly explain about Spline Representations.

Or

(b) List out various basic illumination models.

14. (a) Explain about Viewport Clipping.

Or

(b) Briefly explain about Projections.

15. (a) Write a note on BSP-Tree Methods.

Or

(b) Explain about Kinematics.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Illustrate on Bresenham's Line Algorithm.

17. Discuss about Cohen-Sutherland Line Clipping algorithms.

18. Explain various Polygon-Rendering Methods in detail.

19. Discuss about Three-Dimensional Rotation.

20. Explain various Key frame Systems.

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