D–5049	Sub. Code
	41211

DISTANCE EDUCATION

P.G. DIPLOMA IN COMPUTER APPLICATIONS
EXAMINATION, MAY 2022

First Semester

DIGITAL COMPUTER ORGANIZATION

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Convert binary number $(1010111)_2$ to decimal number.

2. Define combinational circuit.

3. What do you meant by BCD counter?

4. Write short note on error detection code.

5. What do you meant by flip flop?

6. What is the use of accumulator in basic computer?

7. What do you meant by asynchronous data transfer?

8. Define interrupt.

9. What is cache memory?

10. Write short note on RAM and ROM.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain Demorgan's law.

Or

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

12. (a) Explain half adder with neat diagram.

Or

(b) Discuss about JK flip flop.

13. (a) What are the various memory reference instructions? Give examples.

Or

(b) Draw the design of accumulator logic and explain.

14. (a) Explain Input output processor.

Or

(b) Define addressing mode and explain any five addressing modes.

15. (a) Briefly explain about memory hierarchy.

Or

(b) Explain virtual memory.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Explain the two level implementation of combinational circuit.

17. What is shift register? Explain its various types.

18. Describe the timing and control unit of basic computer.

19. Explain in detail about stack organization.

20. Discuss on memory management hardware.

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41212

DISTANCE EDUCATION

P.G. DIPLOMA IN COMPUTER APPLICATIONS
EXAMINATION, MAY 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 object oriented language. Give examples.

2. What is message passing?

3. What is the role of class and objects in OOPS?

4. Define Inline function.

5. What do you mean by Operator Overloading?

6. What is a Virtual Base Class?

7. What do you mean by copy construction?

8. Define Abstract class.

9. What do you mean by Exception Handling?

10. When do we use Multiple Catch Handlers?

PART B — (5 × 5 = 25 marks)

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

11. (a) Discuss the following:

(i) Formatted I/O Operations

(ii) Unformatted I/O Operations

Or

(b) Describe the features of Object Oriented Programming.

12. (a) Describe Inline function with example.

Or

(b) What is Function? How will you access a member function within a class in C++? Explain with example.

13. (a) What do you mean by operator overloading? Explain with example.

Or

(b) Write about copy constructor with example.

14. (a) Write a note on File streams in C++.

Or

(b) Distinguish between overloaded functions and function Templates.

15. (a) Write a note on exception handling

Or

(b) Write a Program that illustrates the application of multiple Catch Statements.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

All questions carry equal marks.

16. Distinguish between the following terms:

    (a) Data Abstraction and Data Encapsulation

    (b) Inheritance and Polymorphism

17. How to initialize the objects using Constructors? Explain different types of Constructors with example.

18. What are the different forms of Inheritance? Give an example for each.

19. How many file objects would you need to create to manage the following situations:

    (a) To create a text file

    (b) Read and display the contents.

20. Explain in detail about the mechanism of Exception handling. Give example.

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DISTANCE EDUCATION

P.G. DIPLOMA IN COMPUTER APPLICATIONS
EXAMINATION, MAY 2022.

First Semester

DATA STRUCTURES AND ALGORITHMS

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What is primitive data type?

2. Define Time complexity.

3. What are the operations of stack?

4. What is linked list?

5. Define Binary tree.

6. Write short note on hashing.

7. Convert the given expression in reverse polish notation $(A + B) * ((C - D) / E)$.

8. What is the complexity of binary search?

9. Define sorting.

10. Write the difference between bubble sort and quick sort.

PART B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Explain about the various asymptotic notations.

Or

(b) How do you define and initialize array? Explain with example.

12. (a) Explain the operations of single linked list.

Or

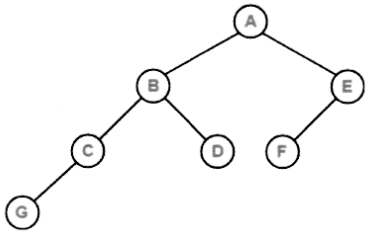
(b) What is Queue? Explain in detail.

13. (a) How do you represent Binary Search tree? Explain.

Or

(b) What are the types of binary type? Explain.

14. (a) Write in order, preorder and post order of the following tree.



Or

(b) Write the recursive algorithm of displaying fibonacci series.

15. (a) Sort the following numbers using Quick Sort

14, 25, 35, 19, 42, 10, 44

Or

(b) What do you meant by tree sort? Explain.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. What is an array? Explain different types of array with examples.

17. Write the algorithm for stack operations and explain.

18. What is doubly linked list? Explain in detail.

19. Explain hashing techniques.

20. Explain different types of sorting and write the complexity of each.

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DISTANCE EDUCATION

P.G. DIPLOMA IN COMPUTER APPLICATIONS
EXAMINATION, MAY 2022.

Second Semester

SOFTWARE ENGINEERING

(CBCS 2018 – 2019 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 role of software?

2. Define process patterns.

3. State validation.

4. What do you mean by data modelling?

5. State system design.

6. Define patterns.

7. What is unit testing?

8. Define software quality.

9. List the software risks.

10. What is software quality assurance?

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

All questions carry equal marks.

11. (a) Describe about the layered technology.

Or

(b) Illustrate the process assessment.

12. (a) Discuss about design and construction.

Or

(b) How do you create a behavioral model?

13. (a) Explain about the Design process and quality.

Or

(b) Evaluate the Interface design step.

14. (a) Explain test strategies for object oriented software.

Or

(b) What are the merits for maintenance?

15. (a) Explain about risk identification.

Or

(b) Illustrate the software reviews.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Discuss about the process framework.

17. Explain about the object oriented analysis.

18. Evaluate the Architectural styles and patterns.

19. Write notes on software code and metrics for testing.

20. Give an account on reactive and proactive basic strategies.

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41222

DISTANCE EDUCATION

P.G. DIPLOMA IN COMPUTER APPLICATIONS
EXAMINATION, MAY 2022.

Second Semester

RELATIONAL DATABASE MANAGEMENT SYSTEM

(CBCS 2018 – 2019 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 is Entity Sets?
3. What is meant by SQL.
4. Define relational data query.
5. What is the structure of a SQL query?
6. Comment on outer join.
7. Define a term recoverability.
8. What is validation based protocol in DBMS?
9. Expand ISAM.
10. Comment on Intuition for Tree Indexes.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Give a note on Database Languages.

Or

(b) Explain the additional features of ER Model.

12. (a) Explain about Join operation with example.

Or

(b) Illustrate on foreign key constraints with example.

13. (a) What are the triggers in SQL? Explain in detail.

Or

(b) List out various aggregate operators in SQL with examples.

14. (a) Explain about ACID properties.

Or

(b) Briefly explain about Buffer management.

15. (a) Write a note on Hash-Based Indexing.

Or

(b) What is the difference between primary index and secondary index?

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Discuss about Relational Model in detail.

17. Illustrate on Relational Algebra.

18. What is normalization? Explain various types of normalization.

19. Explain about Lock-Based protocol.

20. Discuss about B+ Trees with example.

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DISTANCE EDUCATION

P.G. DIPLOMA IN COMPUTER APPLICATIONS
EXAMINATION, MAY 2022.

Second Semester

COMPUTER GRAPHICS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1. Define Pixel.

2. What is Random-Scan system?

3. What is meant by shear Transformation?

4. Define Clipping.

5. What is Spline specifications?

6. Comment on Shadows.

7. Define a term translation.

8. What is projection?

9. Define Morphing.

10. Comment on Back-Face detection.

PART B — ($5 \times 5 = 25$marks)

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

11. (a) Write a short note on video display devices.

Or

(b) Explain Scan-Line polygon fill algorithm.

12. (a) Give a note on viewing pipeline.

Or

(b) Explain various basic transformations.

13. (a) Write a note on Quadric surfaces.

Or

(b) Explain B-Spline curves.

14. (a) Explain about general parallel-projection transformations.

Or

(b) Briefly explain about 3-D composite transformations.

15. (a) Explain about Scan Line method.

Or

(b) Write a note on raster animation.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Discuss about DDA line drawing algorithm in detail.

17. Illustrate on Sutherland-Hodgeman polygon clipping algorithms.

18. What is Bezier Curves? Explain various properties of Bezier curves.

19. Explain about 3-D Clipping.

20. Discuss about Motion specifications.

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