

D-2831

Sub. Code

41211

DISTANCE EDUCATION

P.G.D.C.A EXAMINATION, DECEMBER 2019.

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 the following : $(0.6875)_{10} = (?)_2$.
2. State Demorgan's Theorem.
3. Define combinational logic circuit.
4. What is clocked flip-flop?
5. What are closed instruction codes?
6. What is the use of accumulator?
7. What is program counter?
8. Define immediate addressing.
9. What is the significance of cache memory?
10. Differentiate between RAM and ROM.

PART B — ($5 \times 5 = 25$ marks)

Answer **all** questions choosing either (a) or (b)

11. (a) Explain the XNOR gate and its Boolean expression with truth table.

Or

- (b) Briefly explain about canonical sum of product and canonical product of sum with suitable example.
12. (a) Draw and explain the 4:1 multiplexer with its function table.

Or

- (b) Explain the construction of JK flip flop with characteristic table.
13. (a) Discuss the characteristics of a computer system.

Or

- (b) Elucidate about the anatomy of computer with neat diagram.
14. (a) Briefly explain about the various types of CPU registers.

Or

- (b) What is the significance of DMA? Explain.
15. (a) Describe main memory and its functions.

Or

- (b) What do you understand by virtual memory? Explain.

PART C — ($3 \times 10 = 30$ marks)

Answer any **three** questions.

16. Obtain the simplified expression in sum of product form using karnaugh map.

$$F(w, x, y, z) = \sum (2, 3, 12, 13, 14, 15)$$

17. Discuss the design of BCD counter with neat diagram.
18. What are the steps performed by the control unit to fetch and execute instruction? Explain.
19. Write five data transfer, data manipulation and program control instructions and explain their functions.
20. Describe the working principle of magnetic disk with neat diagram.
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41212

DISTANCE EDUCATION

P.G.D.C.A EXAMINATION, DECEMBER 2019.

First Semester

OBJECT ORIENTED PROGRAMMING WITH C++

(CBCS – 2018-19 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. List any two object oriented programming languages?
2. What are tokens? Give an example.
3. What are destructors?
4. Define Array? Give example.
5. What is parent class?
6. What is an 'abstract' class?
7. Define function template.
8. What is file pointer? Explain.
9. List any two error handling functions in C++.
10. What is an exception?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) What is the use of scope resolution operator '::' C++. Give an example.

Or

- (b) Illustrate with an example, how the '*setw*' and '*endl*' manipulators works.

12. (a) What are the special characteristics of static data members? Explain.

Or

- (b) Illustrate with an example the use of '*friend*' function.

13. (a) How will you define and access members of single inheritance? Explain

Or

- (b) Write short note on: function overloading.

14. (a) Write a program to illustrate class template.

Or

- (b) How will you detect end of file in C++? Explain.

15. (a) Distinguish between '*throw*' and '*throws*' in exception handling. Give example.

Or

- (b) When do we use multiple catch handlers? Explain.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Discuss about the basic concepts of Object Oriented Programming.
 17. Elucidate about parameterized constructors with suitable example.
 18. Explain in detail about binary operator overloading. Give example.
 19. Write a C++ program to read a file and write it into another file.
 20. How will you handle exception in C++ using 'try' and 'catch' clause? Give example.
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41213

DISTANCE EDUCATION

P.G.D.C.A. EXAMINATION, DECEMBER 2019.

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. List the types of data structure.
2. How will you initialize two dimensional arrays?
3. What is list? List any two advantages.
4. What are the applications of stack?
5. Define Hashing.
6. What do you meant by strictly binary tree?
7. List the types of searching techniques.
8. What is the role of array in linear search?
9. What is time and space complexity of insertion sort algorithm?
10. Define Algorithm.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) How will you measure time and space complexity of algorithms? Explain.

Or

- (b) Mention various types of primitive data types? Give examples.

12. (a) What is queue? How will you implement queue operations? Explain.

Or

- (b) What is the role of stack in recursion? Explain.

13. (a) How will you represent binary tree? Explain.

Or

- (b) Briefly explain about any one of Hashing techniques.

14. (a) How will you search an element using linear search? Explain with example.

Or

- (b) Elucidate about time and space complexity of linear search technique.

15. (a) How searching algorithm differs from sorting algorithm? Explain.

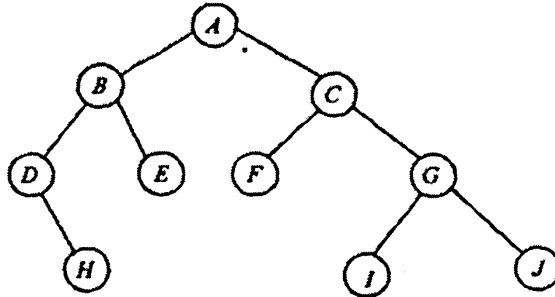
Or

- (b) Write short notes on: Quick Sort.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. What are multi-dimensional arrays? How will you represent multi-dimensional arrays? Give example.
17. Discuss in detail about how to create, insert and delete element from singly linked list.
18. How will you traverse the following binary tree? Explain.



19. Describe the binary tree search technique with suitable example.
20. Explain in detail about sorting numbers using selection sort algorithm with example.

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41221

DISTANCE EDUCATION

P.G.D.C.A. EXAMINATION, DECEMBER 2019.

Second Semester

Computer Applications

SOFTWARE ENGINEERING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer All the questions

1. What is software?
2. What is Waterfall model?
3. Define SRS.
4. What are data modeling concepts?
5. State the uses of Data Design.
6. Why do need interface design?
7. What is Unit testing?
8. Write any two metrics for Testing.
9. Expand RMMM plan.
10. What is Software Quality Assurance?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe Process Framework in detail.

Or

- (b) Explicate the steps involved in incremental process model.

12. (a) How to validate the software requirements? Explain its mechanisms.

Or

- (b) What is flow oriented modeling in software engineering? Narrate its concepts.

13. (a) Write a short note on software architecture.

Or

- (b) Elaborate the steps involved in design evaluation.

14. (a) List and explain the approach available for software testing.

Or

- (b) Describe the mechanisms used for software measurement.

15. (a) Write a short note on Software Risk Projection.

Or

- (b) Illustrate the concepts of Statistical Software Quality Assurance.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Discuss the phases involved in Waterfall Method.
 17. How to build analysis model? Explain its concepts.
 18. Elaborate the principles of User Interface design.
 19. Illustrate the various strategies used in Testing.
 20. Describe the risk strategies in detail.
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D-2835

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41222

DISTANCE EDUCATION

P.G.D.C.A. EXAMINATION, DECEMBER 2019.

Second Semester

Computer Applications

RELATION DATABASE MANAGEMENT SYSTEMS

(CBCS 2018-19 Academic year onwards)

Time : Three hours

Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions

1. What is an ER model?
2. Define DBMS.
3. What is View?
4. What is Cartesian product in relational algebra?
5. Why is the term null value incorrect?
6. Mention the normal forms used in Relational Database.
7. What do mean by concurrent transaction?
8. State the uses of validation based protocol.
9. List the two types of Serializability.
10. Define indexes.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Discuss any two database languages.

Or

- (b) How to construct conceptual designs for large enterprise? Explain them.

12. (a) Write the differences between Tables and View with an example.

Or

- (b) Explicate the different forms of Select operation in RDBMS.

13. (a) What is subquery? Explicate its basic characteristics.

Or

- (b) Discuss the concepts of BCNF.

14. (a) Elaborate the concepts of isolation in RDBMS.

Or

- (b) Narrate the various recovery mechanisms.

15. (a) What is indexing in database? Explicate with an example.

Or

- (b) Differentiate indexing and hashing.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Describe the database system structure in detail.
17. What is relational calculus in RDBMS? Briefly explain its concepts.

18. List and explicate various Join operations with suitable exempts.
 19. Discuss about various validation protocols
 20. What do you mean by performance tuning? Elaborate its mechanisms.
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41223

DISTANCE EDUCATION

P.G.D.C.A. EXAMINATION, DECEMBER 2019.

Second Semester

Computer Application

COMPUTER GRAPHICS

(CBCS – 2018-19 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

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

Answer ALL the questions.

1. List out any two applications of computer graphics.
2. Write the differences between boundary-fill and flood fill algorithms.
3. Define translation parameter.
4. What is meant by viewing transformation?
5. Mention any two basic illumination models.
6. Define surface rendering.
7. What is composite transformations?
8. List out any two uses of viewing pipeline in 3D transformations

9. Define front plane and back plane.
10. Mention any two uses of computer animation languages.

SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL the questions

11. (a) Write short note on the video-display devices.
- Or
- (b) Describe about mid-point circle generation algorithms.
12. (a) Write a short note on various 2D transformation functions.
- Or
- (b) Discuss the following terms:
- (i) Rotation
 - (ii) Reflection.
13. (a) What are the differences between polygon and quadric surfaces.
- Or
- (b) Describe in detail the polygon rendering methods.
14. (a) Write a short note on viewing pipeline.
- Or
- (b) Discuss in detail the general Three-Dimensional Rotations.
15. (a) What is raster animation? Discuss it.
- Or
- (b) How to design a animation sequence? Write its procedure.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain in detail the scan line polygon fill algorithms with an example.
 17. Describe the Sutherland-hodgeman polygon clipping algorithm.
 18. Discuss about Bezier curve and surfaces with example.
 19. Write a brief note on reflection and shear transformations in 3D.
 20. Discuss in detail the back-face detection and depth-buffer algorithms with neat diagram.
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