

C 5369

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Name.....

Reg. No.....

**FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME]
EXAMINATION, APRIL 2021**

Computer Science and Engineering
CS/IT 14 405—SYSTEMS PROGRAMMING

Time : Three Hours

Maximum : 100 Marks

Part A

Answer any eight questions.

- I. 1 Explain about RISC machines.
- 2 Write short notes on AXI assembler.
- 3 Explain the steps followed to design an assembler.
- 4 What are the data structures used in macro processor ? Explain conditional macro expansion.
- 5 Explain any 5 basic functions used while designing the loader.
- 6 Define macros with an example.
- 7 How are external references handled by automatic library search process in loaders ? Explain.
- 8 Explain about OS services.
- 9 Write short notes on virtual machines.
- 10 Explain in brief the basic principles of operating systems.

(8 × 5 = 40 marks)

Part B

Answer all questions.

- II. a) Explain in detail the system software machine architecture.

Or

- b) Explain the assembler design and assembler design options.

- III. a) Explain the following : (i) loaders and linkers (ii) machine dependent loader.

Or

- b) Explain the following basic loader functions : (i) design of an absolute loader (ii) Bootstrap loader.

Turn over

IV. a) Explain in detail the basic macro processor functions.

Or

b) Explain the general design of the macro processor.

V. a) Explain about system calls and system structure in detail.

Or

b) Explain in detail the operating system structure with neat diagram.

(4 × 15 = 60 marks)

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Reg. No. 1EASE17092.....

**FOURTH SEMESTER B.TECH. (ENGINEERING) [2014 SCHEME]
DEGREE EXAMINATION, APRIL 2021**

Computer Science and Engineering

CS/IT 14 404—OBJECT-ORIENTED PROGRAMMING IN JAVA

Time : Three Hours

Maximum : 100 Marks

Part A

Answer any eight questions.

Each question carries 5 marks.

1. What are the four cornerstones in OOP ?
2. What are the features of object oriented programming ? Explain.
3. Write short notes on catching exceptions.
4. Explain about polymorphism.
5. Write a note on final keyword.
6. Describe about inter thread communication.
7. Explain about the features of multi-thread programming in Java.
8. What is multithreading ? Explain.
9. Write short notes on SQL.
10. What is scrollable and updatable result sets.

(8 × 5 = 40 marks)

Part B

Answer all questions.

Each question carries 15 marks.

11. Explain briefly about the object oriented concepts with neat diagram.

Or

12. Explain about Debugging techniques and using a debugger.
13. Explain constructors with examples.

Or

14. Explain in detail about various types of inheritance in Java with neat diagram.

Turn over

15. Explain in detail different states of a thread.

Or

16. What is synchronization ? Explain the different types of synchronization in Java.

17. Explain in detail about design of JDBC.

Or

18. Discuss about basic JDBC programming concepts and query execution.

(4 × 15 = 60 marks)

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**FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME]
EXAMINATION, APRIL 2021**

Computer Science and Engineering

CS/IT 14 403—DATA STRUCTURES AND ALGORITHMS

Time : Three Hours

Maximum : 100 Marks

Part A

Answer any eight questions.

Each question carries 5 marks.

1. Describe the use of sparse matrices.
2. Define feasible solution and optimal solution.
3. What is a Queue ? Explain its operations with example.
4. Write the algorithm for converting infix expression to postfix expression.
5. Differentiate between DFS and BFS.
6. Write the recursive tree traversal algorithm for in order, pre order and post order traversals.
7. Write a short note on AVL trees.
8. Sort the following numbers using Merge sort procedure and discuss the time complexity and space complexity of this Algorithm :
34, 67, 28, 45, 97, 54, 9, 10,60
9. Briefly explain the various Hashing techniques.
- 10 Explain the working of sequential search with an example.

(8 × 5 = 40 marks)

Part B

Answer all questions.

Each question carries 15 marks.

- 11 a) How can the complexity of algorithms be evaluated for different algorithms ? Explain with examples.

Or

- b) What is Recursion ? Explain recursive algorithms with example.

Turn over

12 a) Give the prefix and postfix form of the following given expression :

(i) $(A - B * C - D) / (E + F)$;

(ii) $((A + B) * C - (D - E) ^ (F + G))$; and

(iii) $A + B * (C - D) / P$.

Or

b) Write the algorithm for converting infix expression to postfix expression. Convert the following Infix expression to postfix using stack $(A - (B + C)) * D + (E + F)$.

13 a) State and explain Dijkstra's algorithm with example

Or

b) What is binary search tree ? Construct a binary search tree by inserting the following data sequentially 45, 32, 70, 67, 21, 95, 92, 40

14 a) Sort the following numbers using Quick sort procedure and discuss the time complexity and space complexity of this algorithm :

42, 12, - 8, 98, 67, 83, 08, 104, 07

Or

b) Explain the Bubble Sort, Insertion Sort and External Sort with examples .

(4 × 15 = 60 marks)

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**FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2014 SCHEME)
EXAMINATION, APRIL 2021**

Information Technology Engineering
IT 14 406—DIGITAL DATA COMMUNICATION

Time : Three Hours

Maximum : 100 Marks

Part A

Answer eight questions.

Each question carries 5 marks.

1. Compare BPSK, QPSK and DPSK.
2. Explain signal propagation delay.
3. Elaborate on linear block codes.
4. Explain the use of parity bit in error detection.
5. What is datagram ? Explain its significance in communication.
6. Draw the structure of a switch.
7. Brief about the working of data link layer.
8. What is need for framing ?
9. Define Piggybacking and explain its usefulness.
10. Explain any *two* protocols for noiseless channel.

(8 × 5 = 40 marks)

Part B

Answer all questions.

Each question carries 15 marks.

11. (a) Explain about the unguided media for transmission.

Or

- (b) Explain the various multiplexing techniques in detail.

Turn over

12. (a) Design the encoder for (7, 4) cyclic code generated by $G(P) = p^3 + p + 1$ and verify its operation for any message vector.

Or

- (b) Elaborate in detail on cyclic codes and hamming codes.

13. (a) Describe the various multiplexing techniques in detail.

Or

- (b) Explain about the various circuit switched networks in detail.

14. (a) With a neat sketch, explain the working of HDLC.

Or

- (b) Explain the protocols used for noiseless channel.

(4 × 15 = 60 marks)