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2606E368

Candidate's Seat No

Integ. MSc (CS) Semester-4 Examination
Web Application Development
June-2023

Time : 3-00 Hours] **[Max. Marks : 70**

Instructions.

1. Write each section in separate answer sheet.
2. Numbers to the right indicate full marks of the question.
3. Make appropriate assumption whenever necessary.

SECTION – I

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Q-1 Attempt the following (any ten)

1. Which symbol is used to write single line comment and multiline comment in PHP?
2. What are the two differences between a class constant and static method or static property?
3. What is a jagged array? Write one example of jagged array.
4. Explain explode function with its general syntax and example.
5. What do you mean by superglobal variable? Write only name of any two superglobal variables.
6. Differentiate == (= =) and === (= = =) PHP operator with appropriate example.
7. Write only name of any four character classes used in POSIX style regular expression.
8. What is the use of following meta characters insides a character class
   I. ^ II. -
9. Write only name of any four PHP data type.
10. What will be output of the following code:

```
$value = 7.24;
$ceil = ceil($value);
echo "<br> $ceil ";
$floor = floor($value);
echo "<br> $floor ";
```

11. What is difference between require( ) and include( )? What is difference between require( ) and require_once( )?
12. Explain the following PHP functions with appropriate example
    I. strnatcase III.strpos

Q-2 Attempt the following (any three) **15**

1. What are the PHP's strength? Explain any three PHP's strength compare to its competitors.
2. List and explain various logical operator supported by PHP.
3. List and explain any five built-in methods of Exception class.
4. What an interface defines? Are all the methods inside in an interface public? Are all the methods inside in an interface static? Is it compulsory to provide implements of each method defined in an interface? Can a class implement multiple interfaces?
5. Explain the following function with appropriate example.

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i. func_num_args ii. func_get_args iii. shuffle E368-2

SECTION – II

Q-3 **Attempt the following (any four)** **20**

1. What are the advantages of RDBMS compared to flat files?
2. Explain the Web Database Architecture with diagram and stages.
3. Explain following sub query operators with sample example and their description.
   I. ANY II. IN III. SOME IV. ALL V. EXISTS
4. Write only name of any four storage engines supported by MySQL. Explain the default storage engine with its pros and cons.
5. Explain the meaning of following for Object-Oriented concepts in PHP:
   I. class II. object III. Data Abstraction IV. Polymorphism V. Inheritance

Q-4 **Attempt the following (any three)** **15**

1. Why session tracking is difficult with PHP? Explain with appropriate diagram: How PHP keeps track of Session?
2. List and explain four levels of MySQL privilege.
4. List and explain any five File Modes with their name and use.
5. Write name of the grant tables. Each grant table contains which two types of filed? Write the task of each type of field.

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2306E363

Candidate's Seat No _____

Integ. MSc (CS) Semester-4 Examination

Data Structures

June-2023

Time : 3-00 Hours] **[Max. Marks : 70**

Instructions:

- **Write both the Sections in the separate answer book.**
- **Both Sections having equal weightage.**
- **Draw Diagrams wherever necessary.**
- **Make Assumptions wherever necessary.**

SECTION – I

Q-1 **Fill in the blanks: (Any Eleven)** 11

1. The number of machine instructions that a program executes during its execution is called its_____.
2. A complex algorithm is often divided into smaller units called _____.
3. In Circular Link list, Overflow occurs when _____.
4. An edge is called a _____ if removing that edge results in a disconnected graph.
5. The complexity of binary search algorithm is _____.
6. _____ sort uses the divide, conquer, and combine algorithmic paradigm.
7. A B-tree of order _____ can have a maximum of _____ keys and m pointers to its sub-trees.
8. A _____ graph is a connected graph that is not broken into disconnected pieces by deleting any single vertex.
9. The storage requirement of a linked stack with n elements is _____.
10. In Link list, Overflow occurs when _____.
11. _____ allows insertion of elements at either ends but not in the middle.
12. Degree of a leaf node is _____.

Q-2 **Attempt the following : (Any Two)** 12

1. What is dynamic memory allocation? List out the functions available for dynamic memory allocation in C and demonstrate using example.
2. What is Dequeue? Which are the different type of Dequeue? Explain each type in brief.
3. What is doubly linked list? Write an algorithm for following in doubly linked list:
   a. Create Linked List
   b. Insert node at beginning
   c. Insert node at end
   d. Insert node after given node value
   e. Delete Given value node

(P.T.O)

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Q-3 **Attempt the following : (Any Two)** 12

1. Explain the terms infix expression, prefix expression, and postfix expression. Convert the following infix expressions to their postfix equivalents and evaluate postfix expression using stack: 14 / 7 * 3 – 4 + 9 / 2
2. Answer following:
   a) List out the applications of stack. Explain how stack is used in recursion.
   b) Draw the queue structure in each case when the following operations are performed on an empty queue.(Assume Queue is implemented using array of SIZE 10).
   Mention the value of Front and Rear at each step.
   (a) Add A, B, C, D, E, F, G, H, I
   (b) Delete two letters
   (c) Add J
   (d) Add K
   (e) Delete one letter
3. What is searching and sorting? Explain binary search and selection sort with an example. Also mention the time complexity for both algorithms.

SECTION – II

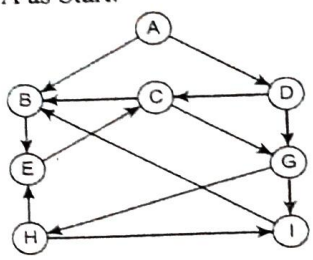
Q-4 **Construct a binary search tree** using following node values and give following answers: 11

32, 22, 42, 19, 25, 48, 39, 9, 44, 47, 26, 73

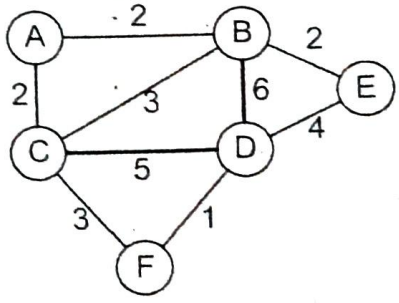
a. What is balance factor?
b. Assign balance factors to each node and Justify the tree is AVL tree or not.
c. IF it is not AVL tree, how you will make it AVL tree?
d. Justify that it is complete binary tree or not?

Q-5 **Attempt the following: (Any Two)** 12

1. Consider the graph given below. Find out its depth-first and breadth-first traversal scheme. Take A as Start:



2. Consider the graph given below. Find the minimum spanning tree of this graph using
   (a) Prim's algorithm, (b) Kruskal's algorithm



3. Explain Dijkstra's algorithm with an example.

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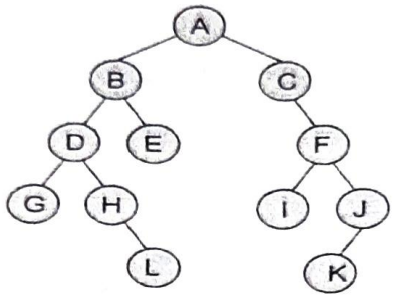
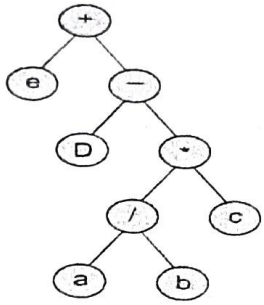
Q-6 **Attempt the following: (Any Three)** **12**

1. Find the in-order, pre-order, post-order, and level-order Traversal for following tree:



2. Evaluate the infix expression derived from below tree, given a = 30, b =10, c = 2, d = 30, e = 10



3. What is M-Way search tree? Explain B and B+ tree.
4. Explain the link and array representation of binary tree.

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2206E358 Candidate's Seat No : 40029

Integ. MSc (CS) Semester-4 Examination

Structured and Object Oriented Analysis & Design

June-2023

Time : 3-00 Hours] **[Max. Marks : 70**

Instructions:

- **Write both the Sections in the separate answer book.**
- **Both Sections having equal weightage.**
- **Draw Diagrams wherever necessary.**
- **Make Assumptions wherever necessary.**

SECTION – I

Q-1 Define the terms (Any 5) **15**

1. Bipolar interview question
2. Nominal scale and interval scale used in questionnaires
3. Validity and reliability
4. Process specification
5. Metadata
6. Derived data

Q-2 Attempt the following (Any 2) **10**

1. With example differentiate between logical and physical DFD.
2. With example explain decision support system.
3. Differentiate between open ended and closed ended questions with examples.
4. State job of system Analysts.

Q-3 Draw level-0, level-1 and level-2(for 2 processes)DFD for the online taxi booking system like 'Uber' and 'OLA' **10**

OR

With reference to system analysis of online taxi booking system like 'Uber' and 'OLA', explain Decision table and Decision tree. Briefly explain the scenario for which you are creating decision tree and decision table.

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SECTION – II

Q-4 With example differentiate between the following (Any 3) **15**

1. Generalization and aggregation
2. Entry and exit activities in state transition diagram
3. Class diagram and instance diagram
4. Scope and visibility

Q-5 Attempt following (Any 2) **10**

1. Explain include and extend with respect to use case diagram
2. Explain nested state diagrams with example.
3. Explain constraints on objects and links
4. Explain any one workaround for multiple inheritances.

Q-6 a) Draw Use case diagram for a system which takes care of Home delivery of Medicine and payment. **10**

b) Draw activity diagram for placing the order based on the doctor's prescription

OR

a) Draw class diagram for a system which takes care of Home delivery of Medicine and payment.

b) Draw Sequence diagram for placing the order based on the doctor's prescription