



PAN AFRICA CHRISTIAN UNIVERSITY

BBIT, BSCIT

END OF TERM EXAMINATION

DEPARTMENT: COMPUTING & INFORMATION TECHNOLOGY

COURSE CODE: BIT 200

CAMPUS: ROYSAMBU

COURSE TITLE: DATA STRUCTURES AND ALGORITHMS

EXAM DATE: FRIDAY
TIME: START HOUR – END 17:30-20:30 HRS

INSTRUCTIONS

- This exam script has **TWO (2)** sections.
- Read all questions carefully before attempting.
- Answer All questions in Section **A** and any other THREE questions in Section **B**.
- None programmable calculators permitted
- Calculators on phones, tablets and computers are NOT permitted in Theory Papers

SECTION A

(Answer ALL questions in this section)

Question 1:

- a) Explain any TWO application areas for Data structures and algorithm **(2 Marks)**
- b) Describe the concept of searching as found in data structures and algorithms

(2

Marks)

- c) Distinguish STACKS from QUEUES, using everyday use cases, **(2 Marks)**
- d) Describe the concepts of tree and forest as found data structures and algorithms

(4

Marks)

SECTION B (Answer any THREE (3) questions in this section)

Question 2

- a) Illustrate the result of each of the operations ENQUEUE (Q, 5), ENQUEUE (Q, 6), ENQUEUE (Q, 5), DEQUEUE(Q), ENQUEUE (Q, 8), and DEQUEUE(Q) on an initially empty queue Q stored in array Q [1... 7].

(4

Marks)

- b) Describe any THREE desirable features for an ideal algorithm **(6 Marks)**

Question 3

- a) Describe any TWO search techniques found in data structures and algorithms

(4

Marks)

- b) Explain THREE sorting mechanism implementable in computer systems

(6

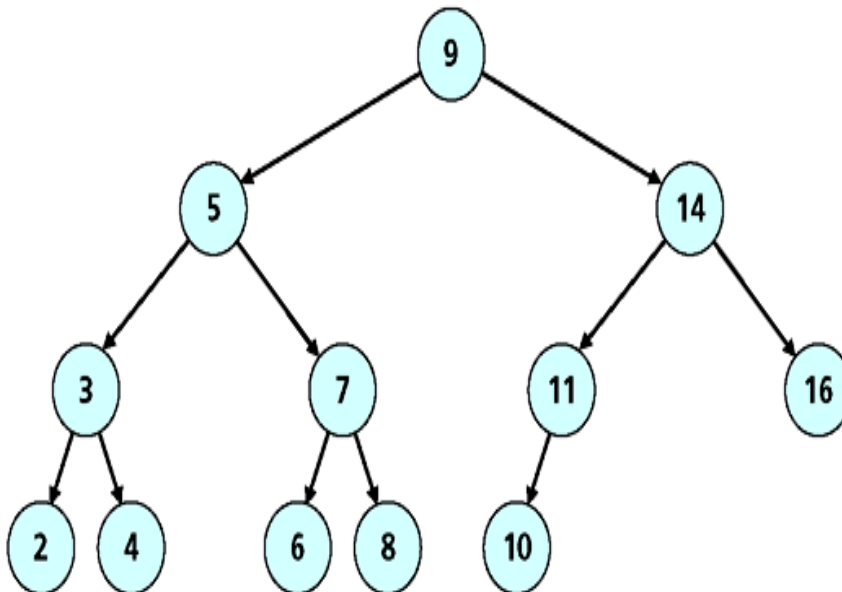
Marks)

Question 4

- a) Describe any TWO advantages of recursions in computing **(4 Marks)**
- b) As a programmer, explain THREE reasons as to why you would prefer using doubly-linked lists over singly-linked lists **(6 Marks)**

Question 5

- a) State the criteria for constructing a complete binary tree **(1 Mark)**
- b) Define the following terms as used in data structures
- i. Tree size **(2 Marks)**
 - ii. Tree traversal **(2 Marks)**
 - iii. Search tree **(2 Marks)**
- c) Traverse the tree given below using the sequences given. List the elements in the nodes in the order of their respective traversals.
- i. Pre-order **(1 Mark)**
 - ii. in-order **(1 Mark)**
 - iii. Post-order **(1 Mark)**



Question 6

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EXAMINATIONS PAPER**



Logical Data Models are gaining preference in software development. Explain
FIVE reasons that are making this approach the most preferred paradigm

(10 Marks)

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