



PAN AFRICA CHRISTIAN UNIVERSITY

(BACHELOR OF BUSINESS INFORMATION TECHNOLOGY)

END OF TERM EXAMINATION

DEPARTMENT: COMPUTING & INFORMATION TECHNOLOGY

COURSE CODE: BIT 200

CAMPUS: ROYSAMBU

COURSE TITLE: DATA STRUCTURES AND ALGORITHMS

EXAM DATE: DAY OF WEEK, DATE (DDTH MONTH YEAR)

TIME: START HOUR – END 13:00-17:00 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) Briefly explain any TWO application areas for Data structures and algorithms

(2

Marks)

- b) Describe any TWO significance of **recursions** in computing **(4 Marks)**
- c) Illustrate the result of each of the operations ENQUEUE(Q, 4), ENQUEUE(Q, 1), ENQUEUE(Q, 3), DEQUEUE(Q), ENQUEUE(Q, 8), and DEQUEUE(Q) on an initially empty queue Q stored in array Q [1 . . 6]. **(4 Marks)**

SECTION B

(Answer any FOUR (3) questions in this section)

Question 2:

- a) With the aid of real-life use cases, distinguish STACKS from QUEUES **(4 Marks)**
- b) As a junior programmer, explain THREE reason as to why you will prefer using singly-linked lists over doubly-linked lists **(6 Marks)**

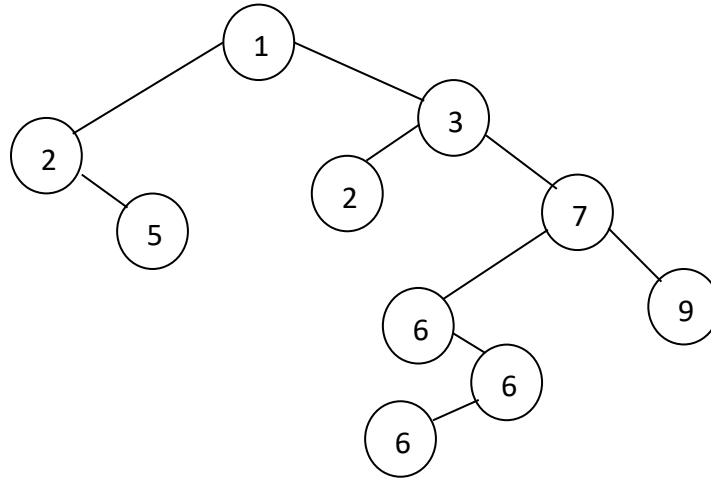
Question 3:

- 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. Search tree **(2 Marks)**
 - iii. Tree traversal **(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
- iii. Post-order

(1 Mark)

(1 Mark)



Question 4:

- a) Describe any THREE desirable features for an ideal algorithm
- b) Explain the significance of sorting in computer applications

(6 Marks)

(4 Marks)

Question 5:

Describe any TWO search techniques found in data structures and algorithms

(10

Marks)

Question 6:

As a software project manager, you prefer your team to build Logical Data Models. Enumerate the reasons that are making this approach the most preferred paradigm

(10 Marks)

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EXAMINATIONS PAPER**



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