

M.Sc. (Final) Examination, 2020

COMPUTER SCIENCE

MCS-202

(Data Structure)

श्री जैन (पी.जी.) कॉलेज, बीकानेर

Time allowed : Three hours

Maximum Marks : 50

SECTION – A

(Marks 2 × 10 = 20)

Answer all **ten** questions (Answer limit **50** words). Each question carries **2** marks.

खण्ड – अ

(अंक 2 × 10 = 20)

समस्त दस प्रश्नों के उत्तर दीजिए (उत्तर सीमा 50 शब्द) । प्रत्येक प्रश्न 2 अंक का है ।

SECTION – B

(Marks 3 × 5 = 15)

Answer all **five** questions. Each question has internal choice (Answer limit **200** words). Each question carries **3** marks.

खण्ड – ब

(अंक 3 × 5 = 15)

समस्त पाँच प्रश्नों के उत्तर दीजिए । प्रत्येक प्रश्न में विकल्प का चयन करें (उत्तर सीमा 200 शब्द) । प्रत्येक प्रश्न 3 अंक का है ।

SECTION – C

(Marks 5 × 3 = 15)

Answer any **three** questions out of **five** (Answer limit **500** words). Each question carries **5** marks.

खण्ड – स

(अंक 5 × 3 = 15)

पाँच में से किन्हीं तीन प्रश्नों के उत्तर दीजिए (उत्तर सीमा 500 शब्द) । प्रत्येक प्रश्न 5 अंक का है ।

SECTION – A

(2 × 10 = 20)

- (i) What are the different applications of linked list ?
- (ii) Explain Algorithm ?
- (iii) Differentiate between stack and Queue.
- (iv) Explain Array Representation of Queue.

- (v) Discuss Binary Search with its properties.
- (vi) Apply Merge sort on following unsorted Array.
(14, 33, 27, 10, 35, 19, 42, 44)
- (vii) Explain Trees in Data Structure.
- (viii) Give application of Binary Tree.
- (ix) Differentiae between Directed and Undirected Graph.
- (x) Discuss in brief various terminologies used in Graph ?

SECTION – B

(3 × 5 = 15)

2. Explain types of Asymptotic Notations.

OR

Discuss advantages and disadvantages of linked list over Array.

3. Discuss all primitive operations on Stack.

OR

Convert the following Infix to Prefix and Postfix.

$$(A + B) * C - (D - E) * (F + G)$$

4. Draw a chart illustrating time and space complexity of all sorting Algorithm.

OR

What is Linear Searching ? Give its features.

5. Explain linked list representation of Binary Tree.

OR

Define AVL Tree with its advantages.

6. Discuss weighted graph with its properties.

OR

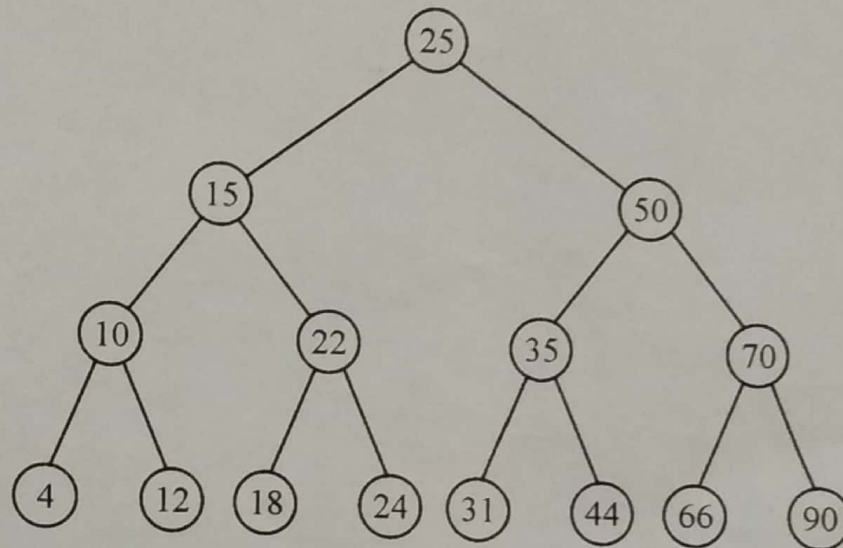
Explain Adjancey Matrix.

SECTION – C

(5 × 3 = 15)

Answer any **three** :

7. Explain in detail circular and two way list.
8. Explain various types of Queue used in Data Structure.
9. Discuss all internal sorting with an example.
10. Write the Tree Traversal sequence for Infix, Prefix and Postfix for the given Binary Search tree.



11. Explain the Graph traversal DFS and BFS with example.
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