University of Engineering & Management, Kolkata

2nd Term Examination, November, 2022

Programme Name: B.Tech (CSE / CSE (AIML) / CSE (IOT, CYS, BCT))

Semester: 3rd

Course Name: Data Structure & Algorithms

Course Code: PCCCS301

Full Marks: 30 Date: 1st November, 2022 Time: 9.30 am to 10.30 am

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GROUP – A (10 marks)

Answer the following questions. Each question is of 2 marks 5 x 2 = 10

1. i) A complete binary tree is having 8 nodes, calculate height of the tree.

   ii) Differentiate between full & complete binary tree.

   iii) Differentiate between B-Tree & m way search tree.

   iv) When Adjacency list is better option to represent a Graph?

   v) What is the complexity to add an edge is the graph is represented in Adjacency Matrix.?

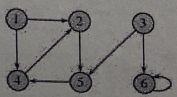
GROUP – B (10 marks)

Answer any two the following questions. Each question is of 5 marks 2 x 5 = 10

2. Convert the given general tree into binary tree:
   (A (B (E, F(G)), C(H, I), D(J (K (L(M))))))

3. Create B-Tree of order 5 from the following lists of data items:
   16,20,22,42,12,30,32,18,10,34,36,14,24,28,40,26
   Also delete 18,20,26

4. Apply Depth First Search on the following graph.



GROUP - C (10 Marks)

Answer any one of the following question. The question is of 10 marks **1 x 10 = 10**

5. Sort the given numbers using height balanced tree: 6, 12, 4, 9, 13, 7, 5, 15, 25, 3, 14, 1.

6. a) State the advantage of B-Tree over Binary Search Tree.
   b) Explain the concept of indexing.
   c) State the different rule of deletion from B-Tree.

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