

BANKURA UNIVERSITY

B.Sc(Honours) FOURTH SEMESTER EXAMINATIONS, 2021

Subject: Computer Science (Hons)

Course ID: 41511

Course Title: Analysis and Design of Algorithms

Full Marks: 25

Time: 1 Hr 15 Min

The figures in the margin indicate full marks

Answer all the questions.

UNIT I

1. Answer *any five* of the following questions: (5×1 = 5)

- a) What is algorithm?
- b) Why do we use algorithm?
- c) What is big O notation?
- d) Name an iterative searching technique.
- e) What is the time complexity of quick sort in worst case?
- f) What is the time complexity of binary search in worst case?
- g) What is graph?
- h) What do you mean by spanning tree?

UNIT II

2. Answer *any two* of the following questions: (2×5 = 10)

- a) Describe depth-first search in brief with a suitable example.
- b) Describe decision tree in brief with a suitable example.
- c) Write a short note on Divide and Conquer technique for designing an algorithm.
- d) Write an algorithm to generate the minimum spanning tree of a graph. Explain the algorithm with an example. 2.5x2=5

UNIT III

3. Answer *any one* of the following questions: (1×10 = 10)

- a) Describe insertion sort with a suitable example considering at least 5 inputs.
- b) Write the merge sort algorithm. Explain the algorithm with suitable example. 5+5.

