

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BE
BRANCH: IT

SEMESTER : V
SESSION : MO/19

SUBJECT: IT5027 DESIGN OF COMPUTER ALGORITHMS

TIME: 3 HOURS

FULL MARKS: 60

INSTRUCTIONS:

1. The question paper contains 7 questions each of 12 marks and total 84 marks.
 2. Candidates may attempt any 5 questions maximum of 60 marks.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
-

- Q.1(a) What is the difference between linear and non linear data structures? [2]
Q.1(b) Explain Asymptotic notations to measure the complexity of algorithms. [4]
Q.1(c) Explain with an example the Analysis of non recursive & recursive algorithms. [6]
- Q.2(a) Define convex hull problems. [2]
Q.2(b) Explain problem reduction technique with an example. [4]
Q.2(c) Discuss Strassens matrices multiplication. [6]
- Q.3(a) What is the difference between DFS and BFS. [2]
Q.3(b) Explain the horner's rule of factorization method with an example. [4]
Q.3(c) Discuss quicksort with an example. [6]
- Q.4(a) What is the purpose of greedy techniques? [2]
Q.4(b) Apply greedy technique to the following instance of Job sequencing with deadlines problem [4]
- | Jobs | Profits | Deadlines |
|------|---------|-----------|
| J1 | 20 | 2 |
| J2 | 15 | 2 |
| J3 | 10 | 1 |
| J4 | 5 | 3 |
| J5 | 1 | 3 |
- Q.4(c) Discuss Huffman coding algorithms with an example. [6]
- Q.5(a) What do you mean by dynamic programming? [2]
Q.5(b) Explain the purpose of Optional binary search trees. [4]
Q.5(c) Discuss Warshall's & Floyd's algorithm with an example. [6]
- Q.6(a) What do you meant by backtracking? [2]
Q.6(b) Explain the purpose of state space tree by taking a suitable example. [4]
Q.6(c) Discuss branch and bound problems. [6]
- Q.7(a) What do you meant by decision trees? [2]
Q.7(b) What is the limitation of algorithmic power? [4]
Q.7(c) Discuss Approximation algorithms for NP-hard problems. [6]

:::::02/12/2019:::::M