

Reg. No. :

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Question Paper Code: R2D05

B.E./B.Tech. DEGREE EXAMINATION, APRIL / MAY 2025

Second Semester

Computer Science and Business System

R21UCB205-ALGORITHMS AND DATA STRUCTURES

(Regulations R2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

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| 1. Describe the Time Complexity of an Algorithm. | CO1- U |
| 2. Describe the Big-Omega Notation. | CO1- U |
| 3. Compare the LIFO and FIFO. | CO2-App |
| 4. List out the areas of Queue applications. | CO2-App |
| 5. List the advantages of AVL tree. | CO1-U |
| 6. Compare binary tree and binary search tree. | CO2-App |
| 7. Define path ,degree and cycle in a graph. | CO1-U |
| 8. What is Topological sort? | CO1-U |
| 9. Mention Collision Resolution Technique. | CO1-U |
| 10. List the different types of Sorting. | CO1-U |

PART – B (5 x 16= 80 Marks)

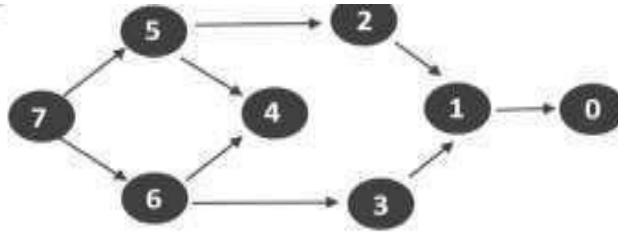
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|--|----------|------|
| 11. (a) Explain in detail about Asymptotic Notations. | CO2-App | (16) |
| Or | | |
| (b) Discuss the Refinement of coding in data structure. | CO2- App | (16) |
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| 12. (a) Write a Program for array insertion and briefly explain the concepts of array. | CO2-App | (16) |
| Or | | |
| (b) Write a Program to calculate Matrix Multiplication | CO2-App | (16) |

13. (a) Construct a Binary Search tree for the following data CO2- App (16)
14,15,4,9,7,18,3,5,16,4,20,17,9,14,5 and perform deletion of any two data orderly.

Or

- (b) Construct a B tree for the following elements CO2-App (16)
1,12,8,2,25,6,14,28,17,7,52,16,48 And 68

14. (a) Find topological ordering for the given graph. CO2-App (16)



Or

- (b) Explain the concept of Breadth First Search with an Example. CO2- App (16)
15. (a) Develop a C Program to Perform Linear and Binary Search with an appropriate Example CO2- App (16)

Or

- (b) Construct Radix sort with the following data 82, 901, CO2-App (16)
100,12,150,77,55,23