

B. Tech (Third Semester Computer Science & Engineering (C.B.C.S))

Winter – 2022

End Semester Examination

Course Name: Data Structure & Algorithms

Course Code: BCS2304

Time: 3 Hours]



ASD/EFV5/63-7K/1479

[Max. Marks: 60

Instructions to Candidates:

1. All questions carry marks as indicated.
2. All the sub- questions (a, b, c, d, and e) of Que.1 in Section A are compulsory.
3. Solve any two sub-questions in Que. 2 to Que.6 in Section B.
4. Assume suitable data wherever necessary.
5. Use of non-programmable calculator is permitted.

Section A

- Que. 1. (a) List different types of Data Structure. 2 (CO1)
- (b) Write the Working of FRONT & REAR. 2 (CO2)
- (c) What are different applications of Linked List. 2 (CO3)
- (d) Define AVL tree. 2 (CO4)
- (e) How to Create minimum cost spanning tree. 2 (CO5)

Section B

- Que. 2. (a) Write a C function to insert and delete on element on queue. 5 (CO1)
- (b) Explain ADT with Suitable example. 5 (CO1)
- (c) Differentiate between one dimensional & multidimensional array. 5 (CO1)
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- Que. 3. (a) Convert The following infix expression into prefix & postfix using stack 5 (CO2)
- (A+B) - (c ★ (D/E)∧ F)
- (b) Write the C Functions for push and pop operation 5 (CO2)
- (c) Describe the concept of circular queue with suitable example. 5 (CO2)

- Que.4 (a) Show the use of different dynamic memory allocation functions with an example. 5 (CO3)
- (b) Programmer want to design railway coaches in sequence like Engine A1, A2, A3, B1, B2, B3 but he is having only A1, A2, A3, B2 & B3 bogies in hard write C function which wifi add Engine and B1 coach (use doubly linked list) 5 (CO3)
- (c) Write a short note on circular Linked list. 5 (CO3)
- Que. 5. (a) What is Binary Search tree? For the given sequence, create a binary search tree 12, 11, 10, 16, 14, 18, 15, 13, 20, 19 5 (CO4)
- (b) Explain Red Black tree. Also discuss the properties of Red Black tree. 5 (CO4)
- (c) Given the following keys: 10, 70, 60, 20, 110, 40, 80, 130, 100 construct a B Tree of order 5 from the above keys. 5 (CO4)
- Explain step by step.
- Que. 6. (a) Explain various graph traversal techniques with suitable example. 5 (CO5)
- (b) Write a short note on Collision resolution techniques. 5 (CO5)
- (c) Explain various hashing techniques with example. 5 (CO5)

