Paper Code – U229-123 (BE-F+FS)

Total No. of Questions – [08]

Total No. of Printed Pages :02

G.R. No.	

DECEMBER 2019/ENDSEM – Backlog Exam

S. Y. B. TECH. (COMPUTER ENGINEERING) (SEMESTER - II)

COURSE NAME: Data Structure and Files

COURSE CODE: CSUA22173

(PATTERN 2017)

Time: [**2 Hours**] [Max. Marks: **50**]

Instructions to candidates:

1) **Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data whereever required**

Q 1. a) Discuss sequential and linked representation of Binary Tree with example. Derive equation for maximum number of nodes in a binary tree of depth k. [6 marks]

OR

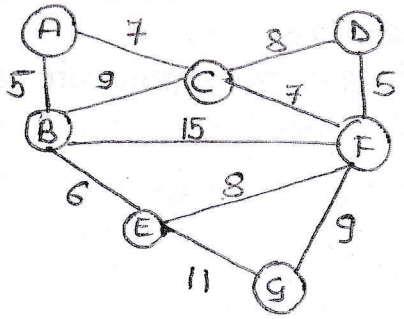
Q 1. b) Write pseudo code for in-order traversal of threaded binary search tree [6 marks]

Q 2. a) Define with example :

1. Complete graph 2. Cycle 3. Minimum Spanning tree [6 marks]

OR

Q 2. b) For graph given below , show stepwise representation of MST using Kruskal's algorithm [6 marks]



Q 3. a) Show stepwise construction of max heap for the data: 40,50,10,60,20,30,70 [6 marks]

OR

Q 3. b) Write short note on : [6 marks]

1. Heap as priority queue
2. Min & Max heap

Q 4. a) What are characteristics of good hash function? List out different techniques to resolve collision in an hash table [4 marks]

OR

Q 4. b) Write a note on OBST [4 marks]

Q 5. a) Write C++ program to perform following functions on sequential file :

1. Create & Display Records
2. Append record [6 marks]

Q 5. b) Write a note on Multi-indexed files [4 marks]

Q 5. c) Distinguish between logical and physical deletion of the records and illustrate it with an example [4 marks]

OR

Q 6. a) What is file? Explain different types of file organizations [6 marks]

Q 6. b) Explain various file opening modes with respect to text and binary files [4 marks]

Q 6. c) Explain inverted files with example [4 marks]

Q 7. a) What is a B Tree? Create a B-Tree of order 5 by insertion of the following sequence of data : 50,85,12,10,6,60,70,80, 37,100,120, 65, 150, 62, 30, 17,15, 28, 75, 78. Draw all the necessary diagrams. [6 marks]

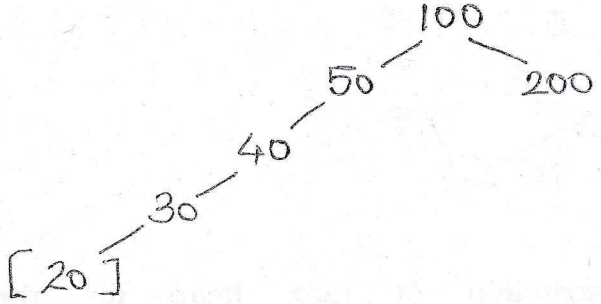
Q 7. b) Draw and compare the detailed node structures of B and B+ tree nodes [4 marks]

Q 7. c) State the properties of RED BLACK Tree [4 marks]

OR

Q 8. a) What is a height balanced tree. Discuss briefly different techniques to height balancing a binary tree [6 marks]

Q 8. b) Explain the splaying to root of node with value 20 [4 marks]



Q 8. c) Illustrate with example Trie data structure [4 marks]