Total No. of Questions—8]   [Total No. of Printed Pages—3

Seat
No.

[5559]-208

S.E. (IT) (II Semester) EXAMINATION, 2019
DATA STRUCTURE AND FILES
(2015 PATTERN)

Time : 2 Hours   Maximum Marks : 50

N.B. :— (*i*) Answer *four* questions.
(*ii*) Neat diagrams must be drawn wherever necessary.
(*iii*) Figures to the right indicate full marks.
(*iv*) Assume suitable data, if necessary.

1. (*a*) If the values of A, B, C and D are 2, 3, 4 and 5 respectively, calculate the value of the following postfix expressions :
(*i*) AB * C − D +
(*ii*) ABC + * D −   [6]
(*b*) Construct binary tree from the preorder and inorder traversal.[6]
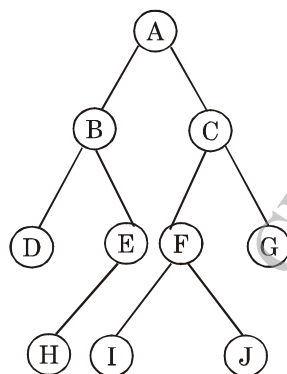Preorder : J C B A D E F I G H
Inorder : A B C E D F J G I H

Or

2. (*a*) Convert the following expression from Infix to Postfix and Prefix. Make use of appropriate data structure :   [6]
2 * 3/ (2 − 1) + 5 * 3
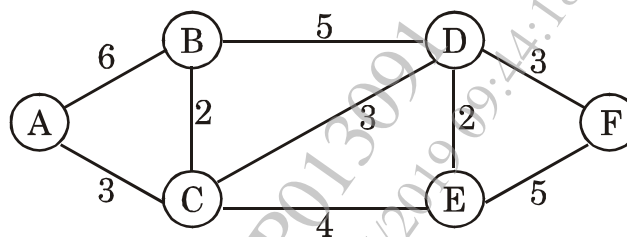(*b*) Traverse a given binary Tree in Inorder, Preorder and Postorder :   [6]

P.T.O.

3. (*a*) Draw the directed graph for the adjacency matrix representation given below : [6]
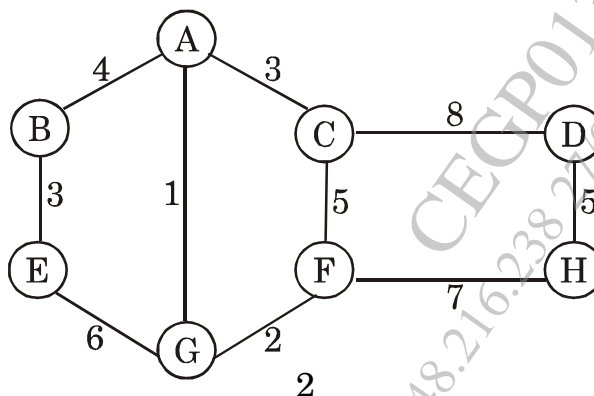
	A	B	C	D	E	F
A	0	3	4	0	2	1
B	0	0	2	0	0	3
C	0	0	0	2	6	1
D	2	6	1	0	1	2
E	0	0	0	0	0	3
F	0	0	0	0	0	0

(*b*) Find the shortest path using Dijkstra algorithm between node A and node F : [6]

Or

4. (*a*) Define the following terms with respect to graph : [6]
(*i*) Path
(*ii*) Adjacent Vertices
(*iii*) Cycle
(*iv*) Loop
(*v*) Degree of vertex
(*vi*) Connected graph.

(*b*) Find minimum spanning tree using Kruskal's algorithm : [6]

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5. (*a*) Create an AVL tree using the following data, show the balance factor : [8]

14, 23, 7, 10, 33, 56, 80, 66, 70

(*b*) Write an algorithm to traverse inorder threaded binary tree in Inorder. [6]

Or

6. (*a*) Construct heap out of the following data read from the Keyboard : [8]

23, 7, 92, 6, 12, 14, 40, 44, 20, 21

(*b*) Compare AVL tree and Red-Black, tree with different parameters. [6]

7. (*a*) What is file ? Explain different types of file organisations.[6]

(*b*) Write C++ Pseudo code for delete operation on sequential file.[6]

Or

8. (*a*) Explain prototype of the following function in C++ with example : [8]

(*i*) seekg

(*ii*) seekp

(*iii*) tellg

(*iv*) tellp

(*b*) Differentiate sequential and index sequential file. [4]