TKN/KS/16–6008

Third Semester B. Sc. (I. T.) Examination

Paper–II

DATA STRUCTURE

Time : Three Hours] [Max. Marks : 50

N. B. : (1) All questions are compulsory and carry equal marks.
(2) Draw neat and labelled diagram wherever necessary.

1. **EITHER**

(a) Explain with example representation of linked list as an array. 5

(b) Write an algorithm to add node in a single linked list after a given node. 5

OR

(c) Write an algorithm to search given information in the single linked list. 5

(d) How polynomials are represented using the linked list ? Explain with example. 5

2. **EITHER**

(a) Convert following expressions into prifix and postfix notation.

(i) $\frac{a^x + b^y}{a^x - b^y} * \frac{x}{y}$ (ii) $a^{x^{x^x}}$ 5

(b) Write an algorithm for quick sort method using stack. 5

OR

(c) Explain following operations in stack.

(i) PUSH (ii) POP. 5

(d) Write an algorithm to convert infix notation in to prifix notation. 5

3. **EITHER**

(a) What is queue ? Explain its representation in memory. 5

(b) Write an algorithm for insertion sort. 5

OR

(c) What do you mean by collision resolution ? How collisions are resolved ? Explain. 5

(d) Write an algorithm to add node in the queue. 5

4. **EITHER**

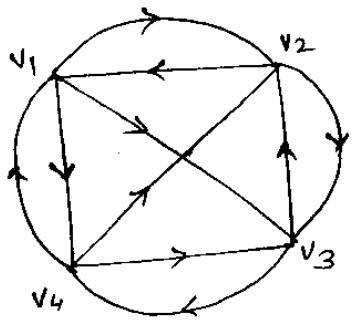
(a) Explain Linked representation and array representation of Binary tree with example. 5

(b) Write an algorithm for Bredth first search (BFS) for a graph. 5

OR

(c) Write an algorithm for inorder traversing of binary tree. 5

(d) Give linked representation of following graph.



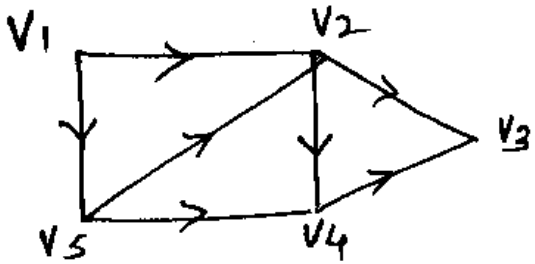
5

5. (a) Write an algorithm to search a given element in the double linked list. $2\frac{1}{2}$

(b) Write an algorithm for calculating the factorial of a given number. $2\frac{1}{2}$

(c) Explain overflow condition and underflow condition in queue. $2\frac{1}{2}$

(d)



Write different paths for vertex V_1 to vertex V_3. $2\frac{1}{2}$