* U F - 8 0 6 7 *

UF-8067

B. E. - II (Sem. - III) (Comp.) Examination

May\June – 2012

Data & File Structures

Time : **3** Hours] [Total Marks : **100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. - II (Sem. - III) (Comp.)**

Name of the Subject :

☛ **Data & File Structures**

☛Subject Code No. : **8 0 6 7** ☛Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Make assumption whenever required.

(3) Figures on the right indicate maximum marks.

1 (a) Define following terms. **10**

(i) Data Type.

(ii) Complete binary Tree.

(iii) Degree.

(iv) Multigraph.

(v) Path length.

(b) What is base address on an array ? Drive the formula to find out address of any element of three dimensional arrays, for both row major as well as column major order. **10**

2 (a) Write an algorithm or program to delete any node from binary search tree. **8**

(b) Draw and explain Binary expression tree. **7**

OR

2 (a) Explain shortest path algorithm. **7**

(b) Write an algorithm or program to create and display binary search tree. **8**

(c) Write short notes on following : (any **three**) **15**

(i) Conversion of general tree to binary tree.

(ii) Application of graph.

(iii) Compare structure and union.

(iv) Breadth first Traversal.
(v) Spanning trees.

3 Attempt any **ten** from the following : **10**

(i) Define : Space complexity.
(ii) Define : Sparse Matrix.
(iii) What is significance of POP ( ) operation on a STACK?
(iv) Define : Recursion.
(v) What is meaning of Queue Underflow ?
(vi) Define : Circular Queue.
(vii) What is dynamic memory allocation ?
(viii) Define : Field.
(ix) Define : hash collision.
(x) What is use fwrite( ) ?
(xi) Header node of link list contains address of the first node of link list. True/False ?
(xii) While we remove elements from array randomly memory fragmentation occurs. - State True/False.

4 (a) Write a program for inserting and deleting and element in circular queue. **7**

(b) Convert following infix expression to postfix expression. **3**

(i) ((a-b)/c)+d*f
(ii) (a+b-c*(d+e/f))

OR

4 (a) Implement Stack with primitive functions such as - PUSH, POP and display. Write a program to reverse a string using STACK. **7**

(b) Explain various asymptotic notations used for denoting time complexity. **3**

(c) Explain hashing in detail. Also discuss different hash functions in detail. **10**

5 Attempt any **four** : **20**

(i) Explain difference between linear and non-linear data structures with example.
(ii) Define Array. Explain array declaration and initialization in detail. Also list applications of array.
(iii) Write Algorithm for Infix to Prefix conversion.
(iv) Explain priority Queue in detail.
(v) What are the disadvantages of link list ? Explain circular link list in detail.
(vi) List different types of files. Explain Index sequential file in detail.
