Roll No. ....

Total Pages : 03

BT-6/M-19   **36114**

ESSENTIALS OF INFORMATION TECHNOLOGY
CSE-304N

Time : Three Hours]   [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Discuss about the various steps involved in analysis of an algorithm.

    (b) What are computation problems ? Discuss its various classifications.   8+7=15

2. (a) Write Quick sort algorithm to sort data from a particular list. How its time complexity is obtained ?

    (b) What do you mean by Queue ? Discuss different types of queues.   8+7=15

40/4) L-36114   P.T.O

Unit II

3. (a) Describe the role of a parser in a compiler. How different types of errors can be handled by a parser ?   8

    (b) Differentiate between regular expression and CFG   7

4. (a) Write down an algorithm for detecting unreachable entries in a LR parsing table.   7½

    (b) Construct error-correcting LR parser for the following grammar :

stmt → *if* e *then* stmt
          | *if* e *then* stmt *else* stemt
          | *while* e *do* stmt
          | *begin* list end
          | s

list → list; stmt
       | stmt.   7½

Unit III

5. (a) Construct the DAG for the following basic block :

$$D : = B * C$$
$$E : = A + B$$
$$B : = B * C$$
$$A : = E - D$$

    8

L-36113   2

(b) Explain machine dependent and machine independent code generation. What are their advantages ?   7

6. What do you mean by Intermediate Code ? How can you generate intermediate code for declarative and assignment statements ? Explain with appropriate examples.   15

Unit IV

7. What is loop optimization ? Explain various kinds of loop optimization with the help of suitable examples. 15

8. (a) How heap storage management is done ? Explain.   7½

    (b) What do you mean by data-flow analysis ? Explain using suitable examples.   7½