53 (IT 603) CPDG

2017

COMPILER DESIGN

Paper : IT 603

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. *(a)* Explain various compiler construction tools. 10

   (b) Define the following terms : Compiler, interpreter and translator and differentiate between them. 6

   (c) What are the issues in Lexical analysis ? 4

2. *(a)* Find the LALR for the given grammar and parse the sentence $(a+b)*c$. 10

$$E \rightarrow E+T \mid T$$

$$T \rightarrow T*F \mid F$$

$$F \rightarrow (E) \mid id$$

(b) Draw NFA for the regular expression 5+5=10

(i) ab^*/ab

(ii) $(a+b)^* abb^*$

3. (a) How would you convert the following into intermediate code ? Give a suitable example. 10

(i) Assignment statements

(ii) Case statements.

(b) Define a directed acyclic graph. Construct a DAG and write the sequence of instructions for the expression

$$a+a*(b-c)+(b-c)*d$$ 10

4. (a) What is data flow analysis ? Explain data flow abstraction with examples. 10

(b) What is a symbol table ? With an example explain its role in compiler. 10

5. Discuss in detail the process of optimization of basic blocks. Give an example. 20

6. Explain in detail the process of compilation. Illustrate the output of each phase of compilation of the input : 20

$$a=(b+c)*(b+c)*2$$

7. Write short notes on : 10×2=20

(a) NFA to DFA conversion

(b) Cross Compiler.