PVP 14

Code: IT4T4

II B.Tech - II Semester – Regular/Supplementary Examinations
April 2018

AUTOMATA AND COMPILER DESIGN
(INFORMATION TECHNOLOGY)

Duration: 3 hours Max. Marks: 70

PART – A

Answer ***all*** the questions. All questions carry equal marks

11 x 2 = 22

1.

a) What is a preprocessor? Explain various functions of a preprocessor.
b) Describe the role of regular expression in lexical analyzer.
c) List out the various Phases of the compiler.
d) Compute FIRST for the grammar E→E+T/T,T→T*F/F, F→ (E)/id.
e) Explain Left Recursion with an example.
f) Explain about Directed Acyclic Graph.
g) Define LR parser.
h) Explain about Copy Propagation and Dead Code Elimination.
i) Write the quadruples for the expression:
b* – (c – d) + b* a – (c – d)

j) Explain any two advantages and disadvantages of stack and heap storage allocation strategies for strings and records.

k) Explain Peep hole Optimization.

PART – B

Answer any ***THREE*** questions. All questions carry equal marks.

3 x 16 = 48 M

2.a) Construct a DFA for the regular expression10+(0+11)0*1 and optimize the states? 8 M

b) Draw NFA for (a+b)*abb. Convert it into equivalent DFA. 8 M

3. Convert the following grammar into LL(1) grammar and construct the LL(1) Parsing table:S →iEtS | iEtSeS, T→b 16 M

4.a) Write Syntax directed definition for constructing syntax tree for the expressions generated by the following grammar E→E+T/E-T/T T→T*F/F F→(E)/id. Construct syntax tree for a+b*c using the SDD written by you. 8 M

b) What is the use of a dependency graph for annotated parse trees? Explain with an example. 8 M

5.a) What is type expression? Explain the equivalence of type expression with an example. 8 M

b) What are different types of three address code statements? 8 M

6.a) How flow graph and DAG are related with each other? Explain. 8 M

b) What is Flow graph? Explain the concept of loops in flow graphs. 8 M