PVP 14

Code: CS4T1

II B.Tech - II Semester – Regular / Supplementary Examinations
April 2019

COMPILER DESIGN
(COMPUTER SCIENCE & ENGINEERING)

Duration: 3 hours Max. Marks: 70

PART – A

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

11 x 2 = 22 M

1.

a) Write the role of pre-processor in language processing.

b) List any two compiler construction tools along with their use in compiler design.

c) Explain in brief the role of Parser.

d) List out the rules for FIRST and FOLLOW.

e) Construct the LR(0) items for the "dangling-else" grammar.

f) What is significance of lookahead operator in LR parsing?

g) What is meant by register allocation?

h) List the three categories of representation of Three address statements.

i) What are the applications of DAG?

j) Write a short note on Flow graph.

k) Consider the given expression and construct a DAG for "(a + b) x (a + b + c)"

PART – B

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

3 x 16 = 48 M

2. a) Define Compiler. Explain in brief about the synthesis phases of a compiler with an example. 8 M

   b) Explain various error recovery strategies in lexical analysis. 8 M

3. a) Construct the predictive parse table for the given grammar.
   E→E+E, E→E*E , E→(E)/id. 8 M

   b) Justify whether the given grammar is LL(1) or not
   S→aBDh, B→cC, C→bc/Є, D→EF, E→g/Є, F→ f/ Є
   8 M

4. a) Construct SLR parsing table for the following grammar.
   E→ E + T / T T→ T * F / F F→ (E) / a
   8 M

   b) Describe the conflicts that may occur during shift reduce parsing with example. 8 M

5. a) Compare three different storage allocation strategies.
   8 M

b) What is intermediate code?

```
if (a< b+c *20)
{
a =a* b – 50;
d = (a/b) + 25;
print ( a, d );
}
```

For the above code, generate three-address code. 8 M

6. a) Explain in brief about function preserving transformations on basic blocks. 8 M

b) Explain how code motion and strength reduction is used for loop optimization? 8 M