MCA 5th Semester End Term Examination- 2022

Name of Subject: : COMPILER DESIGN
Paper Code: PCA05C13

Time: 2 Hours   Full Marks: 50

[The figures in the margin indicate full marks for the questions]

SECTION - A (2x5=10)

1. Answer the Followings:
a) How can we generate code from a DAG?.
b) State some compiler construction tools.
c) Define regular expression. Give example.
d) Write the need the Semantic analysis.
e) How you formally define a deterministic finite automata?

SECTION- B (5x4=20)

1.
 a) What is translator? Write down the steps to execute a program.   (2+3=5)
b) Define Ambiguous grammar? Explain it with an Example.

                                                                                                (2.5+.5=5)
2.
a) Write a CFG for the regular expression
             r= 0* 1 (0 + 1) *
b) Construct Deterministic Finite Automata to accept the regular expression :
             (0+1)* (00+11) (0+1)*
3.
 a) Write a short note on   (2+3=5)
i) Ambiguity (with example)
in) Predictive LL(1) parser (working)

b) Write Rules to construct FIRST Function and FOLLOW Function.

4. a) Consider the given grammar   (2+3=5)
        S-> aAb
        A-> cd/c
  and show the backtracking for string W=acb

b) Write the steps to convert Non-D-Deterministic Finite Automata (NDA) into
Deterministic Finite Automata (DFA).

SECTION - C (10×2=20)

1. a) Remove the useless symbol from the given context free grammar: (4+6=10)
             S→ aB/bX
             A→BAd/bSX/a
             B→aSB/bBX
             X→SBD/aBx/ad

b) Convert the given NFA to DFA:

Input/State	0	1
→ q0	{q0,q1}	q0
q1	q2	q1
q2	q3	q3
q3(final state)	(null character)	q2

a) Construct the M-table for given grammar: (5+5=10)
             S→aBDh
             B→cC
             C→ƄC/ε
             D→EF
             E→g/E
             F→f/e

b) Consider the following grammar:
             E→E+T
             E→T
             E→T*F
             T→F
             F→(E)
             F→y
Show the shift-reduce parser action for string yty+y*y.