Roll Number: _____

Thapar Institute of Engineering and Technology, Patiala
Computer Science & Engineering Department

BE-CSE
Oct. 19, 2019
Time: 03 Hours; MM: 100

UCS802: Compiler Construction
Name of Faculty: Ms. Shalini Batra

Attempt all questions. Attempt all parts of a question at same place. Assume any missing data

Q1. Explain each phase of compiler in detail with examples. (20)

Q2. a) Convert the following Regular Expression into a NFA and then into DFA using Thompsons or Syntax tree method followed by subset construction.

$a(a/b)^* ab$ (10)

b) Compare and contrast NFA and DFA with examples. (6)

c) Convert the following into NFA using Thompson's construction : $aba^* bb^*a$ (4)

Q3. a) What are synthesized and inherited attributes? Explain with example. (8)

b) What are triples, quadruples and indirect triples? Explain with example. (6+3)

c) Consider the following Grammar $E \rightarrow E + E / E * E / E - E / id$ (3)

Give the annotated parse tree for $8*2+9$

Q4. a) Compare and contrast top-down and bottom up parsing techniques with example. (8)

b) Give the rules for generating FIRST and FOLLOW set. (3+3)

c) What is left recursion and immediate left recursion? Explain with example. (6)

Q5. a) Consider the following grammar :

$E \rightarrow E + T / T$; $T \rightarrow T^* F / F$; $F \rightarrow (E) / id$

Generate the SLR Set of items for the above grammar . (7)

b) Explain any **two** parameter passing schemes. (6)

c) What is activation record? Discuss the block diagram of activation record in detail. (2+5)

Q5. a) Explain any **two** storage allocation strategies in detail. (10)

b) Any **two** code optimization techniques with example. (10)