B.E. Fifth Semester (Computer Sci. & Engineering) (CGS)

10324 : System Software : 5 KS 03 / 5 KE 03

P. Pages : 2 | AW - 3126

Time : Three Hours | Max. Marks : 80

Notes : 1. Assume suitable data wherever necessary.
2. Illustrate your answer necessary with the help of neat sketches.

1. a) Explain in short phase of compiler with the help of translation of following statements : 7
position = initial + rate * 60

b) Explain token, pattern and lexeme with example. 6

OR

2. a) Write a lex program which identify an identifier. 7

b) Explain input buffering. 6

3. a) Construct an LL(1) parsing table for the following grammar 8

$S \rightarrow aBDh$

$B \rightarrow cC$

$C \rightarrow bC \mid \in$

$D \rightarrow EF$

$E \rightarrow g \mid \in$

$F \rightarrow f \mid \in$

b) Explain the procedure for eliminating left recursive and left factoring with the help of example. 5

OR

4. a) Construct a predictive parsing table for the following grammar, where S is a start symbol 8

$S \rightarrow iEtSS_1 \mid a$

$S_1 \rightarrow eS \mid \in$

$E \rightarrow b$

b) Eliminate left recursion from the grammar 5

$E \rightarrow E+T \mid T$

$T \rightarrow T*F \mid F$

$F \rightarrow (E) \mid id$

5. a) Construct an SLR(1) parsing table for the following grammar 9

$S \rightarrow \theta S\theta \mid 1S1 \mid 1\theta \quad (\theta = \text{zero in digit})$

b) Explain shift reduce parser. 5

OR

6. Construct the LALR parsing table for the following grammar **14**

$S \rightarrow Aa \mid aAc \mid Bc \mid bBa$

$A \rightarrow d$

$B \rightarrow d$

7. a) What is the syntax Directed Definition (SDD) for simple desk calculator write & Explain also constructing annotated parse tree for $1 * 2 + 3n$. **7**

b) What do you mean by syntax tree? Explain the constructing syntax tree for expression $a - 4 + c$. **7**

OR

8. a) What are two types of SDDs? Explain any one in detail. **7**

b) Write down the sequence of instruction for constructing DAG for the expression **7**

$a + a + (a + a + a - (a + a + a + a))$

9. a) Explain Activation tree & Activation Record with example. **6**

b) Explain static and stack storage allocation strategies in detail. **7**

OR

10. a) What do you mean by symbol table and symbol table Entries. Explain hash structure for implementation of symbol table in detail. **7**

b) Explain the division of task between the caller and callee and write the call sequence and return sequence. **6**

11. a) Explain a simple code generator with various possible issues.

b) What is basic block? Explain structure preserving transformation on basic block. Also explain flow graph with example.

OR

12. a) Explain the principle source of code optimization.

b) Assuming a suitable target machine with two registers R_0 & R_1, generate code for the expression $x = (a + b) - ((c + d) - e)$.

****