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

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

P. Pages : 2

Time : Three Hours

* 0 7 0 2 *

AW - 2846

Max. Marks : 80

Notes : 1. Assume suitable data wherever necessary.
2. Illustrate your answer necessary with the help of neat sketches.
3. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. a) Explain token, pattern and lexeme with example. **6**

b) Differentiate between front end and back end of compiler. **7**

OR

2. Consider the following program in C : **13**

```
Sum = 0;
for (i = 0; i < 5; i ++)
Sum = Sum + i;
```

Show the inputs and outputs of all the six phases of a compiler. Give the contents of symbol table.

3. a) Explain error recovery strategies in parser. **7**

b) Construct a predictive parsing table for the grammar. **7**

$S \rightarrow AaAb / BbBa$

$A \rightarrow \in$

$B \rightarrow \in$

Test whether the given grammar is LL (1) or not.

OR

4. a) Construct a predictive parsing table for the following grammar. **7**

$S \rightarrow iEtSS' / a$

$S' \rightarrow eS / \in$

$E \rightarrow b$

b) Explain the algorithm for left factoring a grammar with example. **7**

5. Consider the following grammar : **13**

$S \rightarrow CC$

$C \rightarrow cC$

$C \rightarrow d$

Construct the LR (1) parsing table.

OR

6. a) Explain shift reduce parser. 5

b) Construct the SLR parsing table for the following grammar : 8

$S \rightarrow AaAb / BbBa$

$A \rightarrow \in$

$B \rightarrow \in$

SECTION - B

7. a) What are two types of SDDS? Explain any one in detail. 7

b) Construct a DAG for the following expression. Also write sequence of instruction for constructing DAG. $a + a * (b - c) + (b - c) * d$ 6

OR

8. a) What do you mean by dependency graph? Explain by giving suitable example. 7

b) What is the Syntax Directed Definition (SDD) for the simple desk calculator, write and explain. What would be the parse tree for $1 * 2 + 3n$? 6

9. a) Explain stack allocation strategies. 7

b) Explain activation tree and activation record with example. 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) What is sub - division of run - time memory? Describe in brief. 7

11. a) Explain the principle sources of code optimization. 6

b) Explain a simple code generator with various possible issues. 7

OR

12. a) Obtain the machine instruction for : $x = y - z$. 6

b) What is a basic block? What are the structure preserving transformations on basic blocks. Also explain flow graph with example. 7

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