[5254] - 162
B.E. (Computer Engg.)
PRINCIPLES OF COMPILER DESIGN
(2008 Pattern)

Time : 3 Hours]   *[Max. Marks : 100*

Instructions to the candidates :

    1)   *Answer to the two sections should be written in separate books.*

    2)   *Neat diagrams must be drawn whenever necessary.*

    3)   *Assume suitable data, if necessary.*

SECTION - I

Q1) a)   Write the use of yytext, yyleng, yyin, yyout, yylex, yymore, yyless, yywrap. For following grammar -   **[8]**

         $S \rightarrow AB$

    b) $A \rightarrow a \mid b \mid \in$ **[10]**

         $B \rightarrow b \mid c$

         i)   Compute First and Follow sets

         ii)   Construct Predictive Parser

<div align="center">OR</div>

Q2) a)   Explain the role of lexical analyzer. Explain interaction between lexical analyzer and parser. Define lexeme, token, and pattern with suitable example. Construct Predictive Parser for following grammar –   **[8]**

    b) $S \rightarrow iEtSS' \mid a$

         $S' \rightarrow eS \mid \in$ **[10]**

         $E \rightarrow b$

Q3) a)   Construct syntax tree for a - 4 + c.   **[8]**

    b)   Explain type checking and type conversion.   **[8]**

<div align="center">OR</div>

Q4) a)   Explain syntax directed translation and need of semantic analysis.   **[8]**

    b)   Explain L-attributed and S-attributed definitions.   **[8]**

Q5) a) What is backpatching? Explain in detail. **[8]**

b) Write and explain intermediate code for procedure calls. **[8]**

OR

Q6) a) Write SDT for declarative statement and explain the same. **[8]**

b) Write and explain intermediate code for arrays. **[8]**

SECTION - II

Q7) a) What is an activation record? Explain with the help of diagram. **[8]**

b) List and explain static allocation strategies. **[8]**

OR

Q8) a) Explain storage allocation strategies for block structured and non-block structured languages. **[8]**

b) Explain source language issues in run time storage organization. **[8]**

Q9) a) What are the code issues in code generation? **[8]**

b) Write and explain the algorithm to generate code form DAG. **[10]**

OR

Q10)a) Explain code generator-generator concept. **[8]**

b) What is dynamic programming? Explain in detail. **[10]**

Q11)a) Explain principle sources of optimization. **[8]**

b) List and explain optimizing transformations. **[8]**

OR

Q12)a) Explain data flow equations. **[8]**

b) Explain iterative data flow analysis. **[8]**

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