Total No. of Questions : 12]

SEAT No. :

P2958

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[5354]-172
B.E. (Computer Engineering)
PRINCIPLES OF COMPILER DESIGN
(2008 Pattern) (Semester - I)

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

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Construct LALR parsing table for the following grammar. **[10]**

$S \rightarrow Aa \mid bAc \mid dc \mid bda$

$A \rightarrow d$

b) With respect to parsing explain the following terminologies **[8]**

i) Ambiguous grammar
ii) Follow rules
iii) precedence and associativity

OR

Q2) a) Explain the following: **[4]**

i) token ii) pattern
iii) lexeme iv) Lexical error

b) Describe in detail about input buffering. **[6]**

c) Design SLR parsing table for following grammar **[8]**

$S \rightarrow aABe$

$A \rightarrow Abc$

$A \rightarrow b$

$B \rightarrow d$

Q3) a) Write a syntax directed definition for constructing syntax tree for expressions. Give example of it. **[8]**

b) What is need of Semantic Analysis? Explain the position of Type Checker with diagram. **[8]**

P.T.O.

OR

Q4) a) Write short notes on: **[8]**

i) Translation schemes

ii) Type system and Type expressions

b) What is mean by 'syntax directed definitions' ? Give syntax directed definition for any example arithmetic expression. **[8]**

Q5) a) How would you generate intermediate code for the flow of control statements? Explain with examples. **[8]**

b) Translate the exp – (a+b)*(c+d)+(a+b+c) into **[8]**

i) Quadruple

ii) Triples

iii) Indirect triples

OR

Q6) a) Generate three address code for the following code fragment **[8]**

```
if(a<b)
        while (c > d)
            x = x + y;
    else
        do
            p = p + q;
        while (e <= f);
```

b) Explain in detail the translation of assignment statements. **[8]**

SECTION - II

Q7) a) Mention the different types of parameter passing. **[8]**

b) When does a dangling reference occur? Give its impact on programs. **[8]**

OR

Q8) a) What are symbol tables? Explain in brief the different ways of organizing the symbol table. **[8]**

b) What do you mean by activation record? With a neat sketch, describe the activation record used by C compiler? **[8]**

Q9) a) What do you meant by 'Next-Use' information ? How it is computed? **[8]**

b) Explain Code generation algorithm in detail from labeled tree. **[8]**

OR

Q10)a) Describe in detail about a simple code generator with the appropriate algorithm **[8]**

b) Discuss various issues in code generation phase. **[8]**

Q11)a) Write an algorithm for copy propogation. **[8]**

b) Write a short note on data flow analysis. **[10]**

OR

Q12)a) What do you mean by a common sub-expression? Discuss the algorithm for elimination of common sub-expression. **[10]**

b) Specify the necessary and sufficient conditions for performing **[8]**

i) Constant propogation

ii) Loop optimization

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