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SEAT No. :

P5505

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BE/Insem/Oct.-81
B.E. (Computer Engg.)
PRINCIPLES OF MODERN COMPILER DESIGN
(2012 Pattern) (Semester - I)

Time :1 Hour] *[Max. Marks :30*

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.***

Q1) a) Explain the role of Lexical analyzer in compilation process? **[4]**

b) What information is stored in symbol table? What are the issues in the design of symbol table? **[4]**

c) Explain the following **[2]**

i) Lexeme

ii) Lexical error

OR

Q2) a) Define the phase and a pass of a compiler? list machine dependent and machine independent phases of a compiler. **[4]**

b) Explain storage allocation strategies. **[4]**

c) Explain the meaning of following symbols in LEX. **[2]**

i) ? ii) [ ]

iii) $ iv) /

Q3) a) Computer first and follow sets for the following. **[6]**

Terminals = {id, nam, (,), ; , if, else,, , $}

Nonterminals = {S', S, L, C, E}

Start symbol = S

P.T.O.

Rules = (0) $S' \rightarrow S\ \$$

(1) $S \rightarrow id\ \{L\};$

(2) $S \rightarrow if\ (E)\ S\ else\ S$

(3) $L \rightarrow \varepsilon$

(4) $L \rightarrow EC$

(5) $C \rightarrow \varepsilon$

(6) $C \rightarrow ,EC$

(7) $E \rightarrow id$

(8) $E \rightarrow num$

b) Explain type conversion. **[2]**

c) Explain shift reduce and reduce - reduce conflict. **[2]**

OR

Q4) a) With respect to parsing explain the following terminologies. **[4]**

i) Ambiguous grammar

ii) Follow rules

b) Construct canonical LR parsing table for **[6]**

$S \rightarrow AB$

$A \rightarrow aA$

$A \rightarrow a$

$B \rightarrow Bb$

$B \rightarrow b$

Q5) a) Define synthesized and inherited attributes. **[2]**

b) Explain intermediate code forms. **[2]**

c) Generate three address code for following. **[6]**

```
While (a < b)
{
    if (p < q and m>n)
    {
        x = x +1;
    }
    else
    x = x – 1;
}
```

OR

Q6) a) Define the following terms with example **[4]**

i) Dependency graph

ii) L - atlributed definition

b) Generate three address code, Guadruples, Triples and indirect triple for the following

S = (a + b)/ (c - d) * (e + f) **[6]**