Total No. of Questions : 12]

SEAT No. :

P2815

[Total No. of Pages : 3

[5154]-196

B.E. (Information Technology)

COMPILER DESIGN (Elective - I)

(2008 Pattern) (Semester - I) (414443)

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

Instructions to the candidates:

1) ***Answer three questions from each section.***
2) ***Answers to the two Sections should be written in separate answer-books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) With the help of the block diagram explain phases of the compiler. Also write down output of each phase of the compiler for expression X = Y – Z / 2 where X and Z are of float type and Y is of integer type. **[10]**

b) How lexical analyses detect the errors? Explain with suitable example. **[6]**

OR

Q2) a) Explain Lex specification with example. **[8]**

b) Explain various compiler construction tools for the compiler design. **[4]**

c) Explain difference between phase and pass. **[4]**

Q3) For the following grammar

$E \rightarrow E + T \mid T$

$T \rightarrow T * F \mid F$

$F \rightarrow (E) \mid id$

a) Eliminate left recursion. **[3]**

b) Compute First and Follow. **[6]**

c) Construct Predictive parsing table. **[6]**

d) Show sequence of parsing steps for the string id + id * id. **[3]**

OR

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Q4) Construct SLR parser for the grammar **[18]**

$D' \rightarrow D$

$D \rightarrow$ type tlist;

tlist $\rightarrow$ tlist, id | id

type $\rightarrow$ int | float

Show the sequence of steps for the string float id, id;

Q5) a) What are SDD? Give SDD to translate expressions into syntax tree and draw syntax tree for a * b – 5 + c. **[8]**

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

OR

Q6) a) Explain Bottom up evaluation of inherited attributes. **[8]**

b) Translate following assignment statement into intermediate code **[8]**

Z[i] [j] : = (X [i] [j] * Y[i] [j]) / 10

SECTION - II

Q7) a) Compare static scope with dynamic scope. Illustrate with suitable examples. **[8]**

b) Explain different source language issues. **[8]**

OR

Q8) a) Explain following parameter passing methods with suitable example. **[8]**

i) Call by value

ii) Call by reference

iii) Call restore

iv) Call by name

b) What are symbol tables? Explain in brief the different ways to organize symbol table. **[8]**

Q9) a) With proper examples explain following peephole optimization techniques: **[8]**

i) Elimination of Redundant Instruction.

ii) Elimination Unreachable Code.

iii) Flow of Control Optimization.

iv) Algebraic Simplification.

b) Discuss different issues in code generation phase. **[10]**

OR

Q10)a) With proper examples explain following optimizations: **[10]**

i) Constant propagation.

ii) Variable propagation.

iii) Strength reduction.

iv) Dead code elimination.

v) Common subexpression.

b) Write Quadruple and Triple representation of following expression. **[8]**

x : = y* – z + y * – z + y / z

Q11)a) Explain different features of object oriented programming with example. **[8]**

b) How can overloading and overriding of funcitons in object oriented programming languages handle by Compiler? Explain in detail. **[8]**

OR

Q12)a) Explain different types of polymorphism with examples. **[8]**

b) Explain different types of inheritance with example. **[8]**