Total No. of Questions : 10]

SEAT No. :

P193

[Total No. of Pages : 2

[5871] - 715
B.E. (Computer Engineering)
COMPILERS (Elective - III)
(2015 Pattern) (Semester - II)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates :

1) ***Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) Explain the role of Lexical Analyzer. **[5]**

b) How automatic construction of parser done using YACC? **[5]**

OR

Q2) a) Explain Error detection and recovery in YACC. **[5]**

b) Differentiate between Top-Down and Bottom Up Parsing. **[5]**

Q3) a) Construct LR(0) item-set for following grammar. **[5]**

E -> E + E | E * E| id Where +, *, id are terminals

b) Write a short note on : **[5]**

i) SLR ii) LALR Parser

OR

Q4) a) Explain how syntax translation scheme is implemented with topdown parser. **[5]**

b) What is three address code? What are the different representations for three address code? Write three address code for following statement

a = b * c + d / f - h **[5]**

Q5) a) Explain following storage allocation schemes with proper examples : **[6]**

i) Stack Storage Allocation ii) Static Storage Allocation

iii) Heap Storage Allocation

b) Describe in detail Dynamic Scope. **[6]**

c) Explain translation of OO Constructs. **[6]**

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OR

Q6) a) Explain translation of control structure with proper examples. **[6]**

b) Describe in detail Dangling Pointer. **[6]**

c) Write a short note on : **[6]**

i) Nested Blocks ii) Function call and returns

Q7) a) Write a note on application of Directed Acyclic Graph (DAG) in code generation. **[4]**

b) Show the steps involved on generating the code for the expression : **[4]**

$(x + y)/(p + q)$

c) Explain code generation for control flow statements. **[8]**

OR

Q8) a) Describe in detail about a simple code generator with the appropriate algorithm. **[4]**

b) What is Register Allocation and Assignment problem? **[4]**

c) Explain Issues in code generation. **[8]**

Q9) a) Write a short note on Data flow equations and iterative data flow analysis. **[8]**

b) Explain following optimizations with examples : **[8]**

i) Common sub expression elimination

ii) Strength reduction

iii) Code movement

iv) Variable propagation

OR

Q10) a) Discuss about the following : **[8]**

i) Dead-code Elimination and ii) Code motion.

b) What is code optimization? Differentiate among local, global and loop optimization. **[8]**

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