

Total No. of Questions : 10]

SEAT No. :

P3106

[5154]-672

[Total No. of Pages : 3

**B.E.(Computer Engineering)**  
**PRINCIPLES OF MODERN COMPILER DESIGN**  
**(2012 Pattern) (Semester-I) (410442)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Neat diagrams must be drawn wherever necessary.
- 2) figures to the right indicate full marks.

**Q1) a)** Write down the regular expression for the following **[4]**

- i) Comment in C.
- ii) Floating point number.

**b)** Write a Syntax directed translation scheme for Boolean Expression. **[6]**

OR

**Q2) a)** Consider the statement: **[4]**

$$X[i, j] := Y[i+j, k] + z.$$

The maximum dimensions of X are [d1, d2] and of Y are [d3, d4].

Generate three address code.

**b)** What are synthesized and inherited attributes? What are Marker Non terminal symbols? Give example. **[6]**

**Q3) a)** Write a short note on I/P buffering used in Lexical Analyzer. **[4]**

**b)** Check whether the following grammar LL(1) or not. **[6]**

$$E \rightarrow TE'$$

$$E' \rightarrow *TE' / \epsilon$$

$$T \rightarrow FT'$$

$$T' \rightarrow ^T / \epsilon$$

$$F \rightarrow (E) / id$$
**P.T.O.**

OR

- Q4)** a) What is need of Semantic Analysis? Explain the position of Type Checker with diagram. [4]
- b) Show that the following grammar is not SLR (1) [6]
- $$S \rightarrow Aa Ab|B b Ba$$
- $$A \rightarrow \epsilon$$
- $$B \rightarrow \epsilon$$

- Q5)** a) Write a note on application of Directed Acyclic Graph (DAG) in code generation. [6]
- b) Write an algorithm for copy propogation. [6]
- c) Write a short note on Data flow equations and iterative data flow analysis. [6]

OR

- Q6)** a) Describe in detail about a simple code generator with the appropriate algorithm. [6]
- b) Discuss about the following: [6]
- i) Dead-code Elimination and
  - ii) Code motion.
- c) Show the steps involved on generating the code for the expression: [6]
- $$(x+y)/(p+q)$$

- Q7)** a) Discuss source language issues related to Object Oriented languages. [6]
- b) Explain code generation for control flow statements. [6]
- c) Explain Polymorphic typing with respect to Functional languages. [4]

OR

- Q8)** a) Explain following related to Haskell program. [6]
- i) Offside rule.
  - ii) Lists.

- b) Explain following with respect to Functional languages. [6]
- i) Referential transparency.
  - ii) Lazy evaluation.
- c) What is activation record? Explain possible structure of an activation record? [4]
- Q9)** a) Discuss the issues in Tuple Space implementation. [6]
- b) Write short notes on [6]
- i) JIT
  - ii) nmake
- c) Explain following shared variable models [4]
- i) Locks
  - ii) Monitors
- www.sppuonline.com
- Q10)** a) Explain cross compilation using XMLVM. [6]
- b) Discuss following with respect to Parallel object oriented languages. [6]
- i) Object location
  - ii) Object migration
- c) What is interpreter? Explain JVM interpreter. [4]

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