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Paper Code: ECS-603

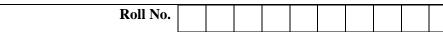
B.Tech. (SEM VI) Back Paper EXAMINATION, 2015-16 **COMPILER DESIGN**

[Time: 3 hrs.]

Note- Attempt All Questions. All Questions carry equal marks.

- 1. Attempt any four of the following:
 - (a) Discuss the role of machine architecture in compiler design.
 - (b) Discuss the challenges in compiler design.
 - (c) Discuss the merits and demerits of single pas compiler and multipas compiler.
 - (d) What is cross compiler?
 - (e) What do you understand by back patching?
 - (f) Discuss the role of look ahead operator with the help of example.
- 2. Attempt any four of the following:
 - (a) Discuss the role of preliminary scanning.
 - (b) Explain how LEX tool can be used in designing lexical analyzer?
 - (c) Explain the input buffer scheme in implementation of lexical analyzer.
 - (d) What do you understand by transition diagram and how it is useful in designing lexical analyzer?
 - (e) Compare the performance of DFA with and without minimized states with respect to runtime complexity and storage space complexity.
 - (f) Discuss three popular data structures used for implementing symbol table.
- 3. Attempt any two of the following:
 - (a) Discuss basic parsing techniques.
 - (b) Explain left recursion. Check the following grammar; if it is left recursive eliminate it. $E \rightarrow E + T/T$
 - T→T*F/F
 - $F \rightarrow (E)/id$
 - (c) Consider the context free grammar
 - $S \rightarrow 0S1|01$ and string 000111
 - (i) Write left most derivation for the string.
 - (ii) Write rightmost derivation for the string.
 - (iii) Draw parse tree for the string.
 - Is the grammar ambiguous or unambiguous? Justify your answer. (iv)
- 4. Attempt any two of the following:
 - (a) Construct a predictive parsing table for the following grammar
 - $S \rightarrow i E + S S1|a$ $S1 \rightarrow e S|\xi$

[10x2=20]



[Max. Marks: 100]

[5x4=20]

[5x4=20]

[10x2=20]

- (b) Define three address code. Write quadruples, Triples and indirect triples for the following expression

 (x+y)*(y+z)+(x+y+z)
- (c) What is loop optimization? Discuss various types of loop optimization with the help of examples.
- 5. Write short notes on any two of the following:

[10x2=20]

- (a) Basic block diagram of compiler along with its working.
- (b) Types of error occurring in each phase of compilation with examples.
- (c) Characteristics of good object code generator.