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

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

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

1. Attempt any four of the following: **[5x4=20]**
   (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: **[5x4=20]**
   (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: **[10x2=20]**
   (a) Discuss basic parsing techniques.
   (b) Explain left recursion. Check the following grammar; if it is left recursive eliminate it.
   E→E+T/T
   T→T*F/F
   F→(E)/id
   (c) Consider the context free grammar
   S→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.
      (iv) Is the grammar ambiguous or unambiguous? Justify your answer.

4. Attempt any two of the following: **[10x2=20]**
   (a) Construct a predictive parsing table for the following grammar
   S→ i E+S S1|a
   S1→ e S|ξ
   E→b

(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.