BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS : BE
BRANCH : CSE

SEMESTER : VI/ADD/BL/VIIIG
SESSION : SP/12

SUBJECT: CS6105 - COMPILER DESIGN

TIME : 3 HOURS

FULL MARKS : 60

INSTRUCTIONS :

1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.

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Q.1 a) With a neat diagram, Explain various phases of a compiler? List various compiler writing tools you know. [6]

b) For the following source language statement, show the output at each of the phases of a compiler. [6]

P = I * R * 23;

Variable P, I and R are of float type

Q.2 a) Discuss the problem n Top Down. How they are Overcome? [4]

b) Construct LL(1) parse table the following Grammar. [8]

S → i CtS |iCtSeS|a

C → b

Is the grammar LL(1)?

Q.3 a) Explain with a suitable example, the techniques used in YACC to resolve shift-reduce and reduce-reduce conflicts. [6]

b) Write a Lex program that count the number of characters, words, lines and identifier in a file. [6]

Q.4 a) How Error Handling and Recovery take place in LR parser of the following grammar [8]

E'→ E, E → E + E |E * E|id.

b) Write syntax directed translation scheme to evaluate arithmetic expression. [4]

Q.5 a) Compare and Contrast static and dynamic type checking. Give an example of the situation in which dynamic checking is really helpful. [4]

b) Discuss the importance of symbol table in Compiler Design. How is the symbol table manipulate at various phases of Compilation. [4]

c) What is activation record? Explain clearly the Components of an activation record. [4]

Q.6 a) Write Sementic action for the following grammar [6]

S → id: = E

E → E + E |E * E|-E|(E)|id

b) Show the annotated parse tree and code generation process for the following grammar. [6]

a AND (b OR c AND NOT D)

Q.7 a) Discuss the various techniques for optimizing transformations with suitable example. [6]

b) Discuss the factors influencing optimization. [6]