Tribhuvan University
Institute of Science and Technology
2074

Bachelor Level/ Third Year/ Fifth Semester/ Science   Full Marks: 60
Computer Science and Information Technology (CSc. 352)   Pass Marks: 24
(Compiler Design and Construction)   Time: 3 hours.

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

Attempt all questions. (10×6=60)

1. Draw block diagram of compiler .Explain different steps in synthesis phase.

2. What is the role of regular expression in lexical analysis? Also give example.

3. What is shift reduction parsing technique? Show shift reduce parsing action for the string a*(a+a), given the grammar.
$$E \rightarrow E + E|E * E|(E)|a$$

4. Find first and follow for the non-terminal in the following grammar.
   S->Aa|bAc|Bc|bBa
   A->d
   B->aA

5. What semantic analysis ?Why is it necessary to perform semantic analysis ?Explain

6. Write Syntax Directed Definition to carry out type checking for the following expression. $E \rightarrow id|E1\ op\ E2|E1\ relop\ E2|E1[E2]|E1 \uparrow$

7. What is the theme of code optimization? What is its importance?

8. Explain different types of loop optimization techniques?

9. Define three address codes. Write three address codes for $a = -b * (a + d)$

10. Discuss the importance of error handler in compiler .How is it manipulated in the different phrases of compilation?