Tribhuvan University
Institute of Science and Technology
Bachelor of Computer Science and Information Technology
Course Title: Compiler Design and Construction
Model Question Paper

Course No.: CSC-352 **Full Marks: 60**

Pass Marks: 24 **Time: 3 hours.**

(There may be 10 questions each of carrying 6 marks or 5 questions with partitions each of carrying 12 marks in total)

Attempt all questions. [10x6=60]

1. Discuss the phases of compiler construction briefly.

2. Discuss the role of symbol table in compiler design.

3. Why regular expressions are used in token specification? Write the regular expression to specify the identifier like in C.

4. Consider the grammar:
$$E \rightarrow TE'$$
$$E' \rightarrow +TE' | \varepsilon$$
$$T \rightarrow FT'$$
$$T' \rightarrow *FT' | \varepsilon$$
$$F \rightarrow (E) | id$$
Compute the FIRST and FOLLOW for each symbol.

5. Discuss with a suitable example the operation of stack implementation of shift-reduce parsing.

6. Define the L-attributed definitions. How L-attributed definitions are evaluated?

7. Define the process for Bottom-Up Evaluation of Inherited Attributes.

8. Consider the grammar:
$$E \rightarrow E+T | T$$
$$T \rightarrow num.num | num$$
The grammar generates the expression of +to integer or real. Give a syntax-directed definition to determine the type of expression. When two integers are added, the resulting type is integer otherwise, it is real.

9. Write the grammar with semantic rules that translate the C like ***while statement*** into three addresses code representation.

10. How next-use information is useful in code generation? Explain steps of computing next-use information.