Mid-West University

Examinations Management Office

Surkhet,Nepal

End Semester Examinations -2078

Bachelor level/ B.Sc CSIT /5th Semester — Full Marks : 60

Time: 3 hrs — Pass Marks : 30

Subject : Compiler Design (COM454)

Candidates are required to give their answers in their own words as far as practicable. Figures in the margins indicate marks.

Group A

Very short questions(Attempt all the questions) [8 x 2 = 16]

1. Differentiate between 'compiler' and 'interpreter'.
2. What are different compile time errors?
3. State the functions of parser.
4. Define left recursion in a grammar.
5. Why do you require Finite automata, regular expression and CFG in a compiler?
6. Draw the structure of LR- parser.
7. What is strength reduction optimization?
8. What are the advantages of intermediate code representation?

Group B

Short answer questions(Attempt any five question [5 x 4 = 20]

9. How source program analyzed? Explain in brief.
10. Construct syntax tree for regular expression (a | ε) b c* and find firstpos() and laspos() for each node.
11. What is role of lexical analyser? Identify the tokens in the following function: `int gcd( int m, int n) { if (n == 0) return m; else return ( gcd (n, m% n)); }`
12. What do you mean by S-attributed definition and how they are evaluated? Explain with example.
13. What is an operator grammar? Construct operator precedence parsing table forthe grammar: E -> E+E | E*E | id
14. What is three-address code? Generate the Three-address code for: while a>b do x =y +z

Group C

Long answer questions(Attempt any three questions) [3 x 8 = 24]

15. Explain the phases of compiler briefly with neat diagram.
16. Consider the grammar:

    E→TE'
    E'→ +TE'/ε
    T→FT'
    T'→*FT'/ε
    F→(E)/id

    a. Compute the FIRST and FOLLOW for each symbol.
    b. Construct Predictive parsing table.
17. Construct canonical collection of LR(1) items for the grammar:

    $S \rightarrow L = R$
    $S \rightarrow R$
    $L \rightarrow * R$
    $L \rightarrow$ **id**
    $R \rightarrow L$
18. What is peephole optimization? Explain different types of peephole optimization techniques.

THE END