FACULTY OF INFORMATICS

B.E. 3/4 (I.T.) II – Semester (Main) Examination, May/June, 2011
COMPILER CONSTRUCTION (Elective – I)

Time : 3 Hours]   [Max. Marks : 75

Note :   Answer **all** questions from Part – **A**. Answer any **Five** questions from Part – **B**.

PART – A   (25 Marks)

1. Differentiate between single pars and multipars compilers.   2
2. What is a crors compiler ?   2
3. What is left recursion ? Remove left recursion from exp → exp+term/term.   3
4. Write LR(o) items for the following grammar   3

    S → aAb / d

    A → AeS / S

5. What is a activation record ? What are its contents ?   3
6. Enumerate the ways, a symbol table be organized.   2
7. What is dynamic loading ? What are its advantages ?   3
8. What are attribute grammars ?   2
9. Define FIRST and FOLLOW sets.   3
10. What is meant by dead code ?   2

PART – B   (50 Marks)

11. (a) Explain about various data structures used in a compiler. Specify where they are used.   5

    (b) Minimize the following DFA.   5

State	input Symbol	
	a	b
→A	B	C
*B	B	D
C	B	C
*D	B	E
E	B	C

Where A is start state B and D are final states.

12. Construct LL(1) parsing table for the following grammar :   10

    exp   → exp addop term / term

    addop → +/–

    term   → term mulop factor / factor

    mulop → *

    factor → (exp) / number.

13. Construct SLR (1) parsing table for the following grammar :   **10**

        S → I / other

        I → if S / if S else S

14. Write the attribute grammar for the following grammar and also draw the parse tree for the string w = float *x*, y.   **10**

        decl   → type var-list

        type   → int / float

        var-list → id, var-list / id

15. (a) Distinguish between static and dynamic storage allocations of a language.   **5**

    (b) Explain how a hash table can be used to implement a symbol table.   **5**

16. (a) Explain about various code optimization techniques with an example.   **5**

    (b) Write three address code and P-code for the following control statements :   **5**

        (i)   if (E) S_1 else S_2

        (ii) while (E) S

17. Write short notes on :   **10**

    (a) Error handling in top-down parsers.

    (b) Code generation from DAGs.

    (c) Semantic analysis.