ALCCS

Code: CS22   **Subject: SYSTEM SOFTWARE**
Time: 3 Hours   **Max. Marks: 100**

MARCH 2010

NOTE:
- **Question 1 is compulsory and carries 28 marks. Answer any FOUR questions from the rest. Marks are indicated against each question.**
- **Parts of a question should be answered at the same place.**

Q.1   a. Explain context-free grammer with the help of a suitable example.

    b. Differentiate between Linking loader and Linkage editor.

    c. How is forward reference resolved in single-pass assembler?

    d. Write a macro that swaps two variables.

    e. List the features of Operator-Precedence Parsing.

    f. Give a regular expression for all strings of a real number and a real number with optional fraction.

    g. What are machine-Dependent features in assembly language?   **(7 × 4)**

Q.2   a. Assemble the following program manually, showing the resultant machine code and symbol table (Instruction set table is given at the end)

	START	101
	READ	N
	MOVER	BREG, ONE
	MOVEM	BREG, TERM
AGAIN	MULT	BREG, TERM
	MOVER	CREG, TERM
	ADD	CREG, ONE
	MOVEM	CREG, TERM
	COMP	CREG, N
	BC	LE, AGAIN
	MOVEM	BREG, RESULT
	PRINT	RESULT
	STOP	
N	DS	1
RESULT	DS	1
ONE	DC	'1'
TERM	DS	1
	END	

    b. Describe two methods for collision handling.   **(12+6)**

Q.3   a. What is the aim of code optimization? How is it achieved? Explain two phases of optimization using suitable examples.

    b. What are the different phases of a compiler? Explain briefly each phase.   **(9+9)**

Q.4 a. Give a parse tree and an AST for the source string a+b*c according to the following grammer rules

> E::=T+E|T
> T::=T∗V|V
> V::= <id>

b. Write an algorithm for naïve top-down parsing

c. Discuss various categories of statement used in assembly language.   **(6+6+6)**

Q.5   a. What is a command dialog? Explain various ways to implement command dialogs. List seven principles to ensure the effectiveness of command dialogs.

b. Explain Overlay structured program.   **(12+6)**

Q.6 a. What is an absolute loader? Explain its role, advantages and disadvantages in brief.

b. Differentiate between a macro call and a procedure call.

c. Explain various Data Structures used by One-Pass Macro Processor.   **(6+6+6)**

Q.7   a. What is an interpreter? How is it different from a compiler? What is the difference between pure and impure interpreters?

b. What is an interactive editor? Describe structure of an editor and its various types.   **(10+8)**

Instruction Set Table

Symbol	Instruction opcode
STOP	00
ADD	01
SUB	02
MULT	03
MOVER	04
MOVEM	05
COMP	06
BC	07
DIV	08
READ	09
PRINT	10