

Total No. of Questions : 6]
P513

SEAT No. :
[Total No. of Pages : 3

TE/Insem/APR - 45
T.E. (Information Technology)
SYSTEMS PROGRAMMING
(Semester - II) (2012 Pattern)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates :

- 1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Assume suitable data if necessary.*

Q1) a) For the following piece of assembly language code, show the contents of symbol table, literal table and pool - tab and Intermediate code. Assume size of instruction equal to one. [6]

```
START 315
MOVEM AREG, LABEL
MOVER BREG, = '5'
LABEL ADD CREG, A
MOVER AREG, = '1'
STORE GT, NEXT
BACK EQU LABEL
MOVEM AREG, = '5'
A DS 10
LTORG
MOVER CREG, = '7'
MOVEM BREG, = '1'
ORIGIN BACK +5
LTORG
STORE AREG, = '1'
PRINT B
MOVEM BREG, = '1'
STOP
NEXT DC 8
B DS 5
END
```

PTO.

b) Define : [4]

- i) Assembler
- ii) Macroprocessor
- iii) Compiler
- iv) Loader and Linker

OR

Q2) a) For the following assembly language code, show the contents of macro name table, macro definition table and intermediate code. Finally write down the code after macro expansion. [6]

```
MACRO
INCR & M, &I =, &REG = AREG
MOVER & REG, & M
ADD & REG, & I
MOVEM & REG, & M
MEND
MACRO
CALC &X, &Y = B, &OP = MULT
MOVER AREG, &X
&OP AREG, &Y
MOVEM AREG, &X
MEND
START 100
READ N1
CALC A, OP = ADD
ADD AREG, 21
LDA CREG, 100
SUB CREG A
INCR B, REG = B, I = A
A DS 1
B DS 1
END
```

b) List down the functions of Pass I and Pass II of macroprocessor. [4]

Q3) a) Give the various data structures used in the design of a Two - pass direct linking loader (DLL). [6]

b) What is meant by Overlay? Discuss with examples. [4]

OR

Q4) a) List basic functions of loader and explain how they are performed in absolute loader scheme. [6]

b) What information does the assembler provide the loader in case of the BSS loader. Explain how the functions of loader are performed by the loader. [4]

Q5) a) What is a compiler? Explain the processing of given statement w.r.t all phases of compiler. [8]

$$(b^2 - 4ac)/2a$$

b) Define tokens, patterns and lexemes with example. [2]

OR

Q6) a) Generate Identifier table, Literal Table and Uniform Symbol Table for the given code : [6]

```
main ()
{
    char ch;
    int fp, lp, sump = 0;
    clrscr ();
    printf("Hello World!\n");
    printf("Enter values for FP and LP : \n");
    scanf("%d %d", &fp, &lp);
    sump = fp + lp;
    lp = lp + 1;
    printf("Sump = %d", Sump);
    getch ();
}
```

b) Explain LEX Specification and Generation of Lexical Analyzer by LEX. [4]

