Total No. of Questions : 6] **SEAT No. :**

P544 **[Total No. of Pages : 3**

TE/Insem/APR - 145

T.E. (I.T.)

SYSTEMS PROGRAMMING

(2015 Pattern) (Semester - II)

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) Compare single pass and two pass assembler. **[4]**

b) Generate symbol table, literal table, pool table and Intermediate code for the given assembler program. Assume a hypothetical instruction set with every instruction of length 1 byte. **[6]**

```
        START 500
LAB     DS 15
        MOVEM AREG, VAR
        ADD AREG, LAB
        MOVER BREG, ='10'
        SUB BREG, ='5'
        MULT BREG, ='10'
        PRINT VAR
        LTORG
        ORIGIN LAB+3
LOOP    MOVER CREG, ='5'
        LOAD AREG, ='2'
VAR     EQU LOOP
        ORIGIN VAR + 25
        ADD CREG, L1
        STOP
L1      DC '12'
        END
```

OR

P.T.O.

Q2) a) With syntax and example explain types of assembly language statements. **[6]**

b) Explain with example the different types of errors handled in assembler. **[4]**

Q3) a) Explain basic functions of loader w.r.t. BSS loader. **[2]**

b) For the following piece of assembly code generate MNT, MDT and Expanded Code using single pass assembler. **[8]**

```
        MACRO
        ABC &MAIN
        MOVER BREG, ='5'
        MACRO
        EXPO &EXP
        LCL &N
&N      SETA &EXP
        AIF (&N EQ 1).STOP
        MR 0,2
&N      SETA &N-1
.STOP   ANOP
        MEND
        MOVEM AREG, &MAIN
        STORE &MAIN
        MEND
        START
        LOAD 2, BASE
        SR 0,0
        ABC VALUE
        STORE 1, ANS
        EXPO 5
ANS     DS F'10'
BASE    DC 5
        END
```

OR

Q4) a) Generate the ESD, TXT and RLD cards of DLL loader for the give code segment **[6]**

Card	Ref. No.	Rel, Addr.		
1			PROG	START
2			ENTRY	B,C
3			EXTRN	D,E
4		10	B	
5		20	C	
6		24	DC	A(D)
7		28	DC	A(E)
8		32	DC	A(B-C-10)
9		36	END	

b) With syntax and example explain AIF and AGO statements of a macro. **[4]**

Q5) a) Convert the following RE to DFA **[6]**

$(1+\varepsilon)^* .01$

b) With structure explain the various data structures used in lexical analyser. **[4]**

OR

Q6) a) Perform lexical analysis on the given 'C' program **[6]**

```
main()
{
   float volume = 0.0, length, breadth, height;
    clrscr();
   printf("Enter length, breadth and height of cube :\n");
   scanf("%f %f %f ", &length,&breadth,&height);
   volume = length *breadth* height;
   printf("Volume = %f', volume);
   getch();
}
```

b) Write a short note on LEX. **[4]**

▽▽▽▽