

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]
 $(1+\epsilon)^* .01$

- 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]

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