B.E. (Information Technology) Fifth Semester (C.B.S.)

System Programming

P. Pages : 3 **TKN/KS/16/7442**

Time : Three Hours * 0 8 6 6 * Max. Marks : 80

Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.

1. a) What is an operating system? State its functions. Explain the different user viewpoints of an operating system. **7**

b) Explain various instruction formats of IBM 360. **6**

OR

2. a) Define system programming explain the various system programs in brief. **7**

b) Explain the deference between. **6**
i) Procedure and program.

ii) Pseudo code and machine code.

3. a) For the following ALP show its symbol table, literal table, base table and generated machine code. **8**

```
PROGRAM 1   START
BEGIN       BALR    15,0
            USING   BEGIN + 4, 15
            SR      4,4
            L       3, = F '5'
LOOP 1      L       2, DATA (4)
            A       2, = F '10'
            ST      2, DATA (4)
            A       4, = F '4'
            BCT     3, * -16
            BR      14
DATA        DC      F '10, 20, 30, 40'.
            END
```

b) Why does assembler require more than one pass over input program? Explain your answer with suitable example. **5**

OR

4. a) Show the results of each pass for the following list using bucket sort and interchange sort. **8**
425, 888, 806, 700, 880, 613, 570, 403, 670, 180, 974, 264.

b) Draw flow chart of pass- 1 assembler. **5**

5. a) What databases are used by the two passes of macro processor? Explain it with format of databases. **7**

b) Discuss the advantages and disadvantages of combining a macro processor with pass-1 of assembler. **6**

OR

6. a) For the following program show MNT, MDT, ALA and expanded assembly language program. **8**

```
            MACRO
            STORE     & ANS
            ST        1, & ANS
            MEND
            MACRO
            TRY       & ADD, & DEST
            SR        1, 1
            MACRO
            & ADD     & A, & AB
            L         1, & A
            A         1, & B
            MEND
& DEST      DS        F
            MEND
ARITH       START     O
            USING     *, 15
            TRY       PLUS, RESULT
            PLUS      N1, N2
            STORE     RESULT
N1          DC        F '4'
N2          DC        F '5'
            END
```

b) What is MACRO? How do you define macro in program? What are the basic task performed by macro? **5**

7. a) Write short note on. **8**
i) GEST and LESA.

ii) Dynamic loading.

b) What are the four basic functions preformed by loader? Explain state names of different loaders. **5**

OR

8. a) Show the entries in ESD, TXT and RLD cards for the following program. **10**

```
JOHN      START
          EXTRN     SUM, DATA
          ENTRY     LOOP, POINTER
          BALR      15, 0
          USING     *, 15
          SR        4, 4
          L         1, FOUR
          A         2, FOUR
          ST        2, FOUR
          BR        14
FOUR      DC        F '4'
LOOP      DC        A (SUM + 4)
POINTER   DC        A (LOOP - DATA)
          DC        A (POINTER - LOOP)
          DC        A (POINTER)
          END
```

b) Explain the following terms: **3**

i) Transfer vector.

ii) Binder.

9. a) What is compiler? Explain in details the phases of compiler with the help of diagram. **10**

b) What is cross compiler? **4**

OR

10. a) What is LEX? Write a LEX program to count the number of identifiers in the input string. **8**

b) What is token? How tokens are specified? explain how tokens are recognized. **6**

11. a) What is device driver? Explain the necessity of device driver. **7**

b) What are the major design issues in the study of device drivers? **7**

OR

12. a) Differentiate between character driver and STREAM driver. **7**

b) Explain Vxd. How Vxd communication takes place? **7**

****