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B.E.Fourth Semester (Computer Science Engineering) (C.B.S.)

System Programming

P. Pages : 3 **NKT/KS/17/7297**

Time : Three Hours * 0 6 8 8 * 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. Assume suitable data whenever necessary.

1. a) Explain Pass 1 of Assembler in detail with the help of flowchart and databases. **8**

b) Differentiate between - **5**
i) Open subroutine and closed subroutine.
ii) Pure procedure and Impure procedure.

OR

2. For the following program draw the symbol table, literal table, base table and object code **13**

```
PROG    START   0
        BALR    15, 0
        USING   *, 15
        LR      5, 15
        LH      1, Data 1
        USING   *, 10
        BR      14
DATA 2  DC      F '11'
DATA 1  DC      H '22'
TRS     DC      H '23'
BCK     DS      F
AA      EQU     1
DP      EQU     2
        BALR    2, 0
        USING   * + AA, TRS
        LA      7, = A(BCK)
        BR      6,
        DC      H '64'
        DROP    DP
        L       9, = A(DATA 1)
        A       9, TRS
        LTORG
        ST      Q, = F '100'
        END
```

3. a) What is conditional macro expansion ? Explain in detail with example. **6**

b) What databases are used by the two passes of macro processor ? Explain advantages and disadvantages of combining macro processor with assembler. **7**

OR

4. For the following assembly program prepare MDT, MNT and ALA. Also write expanded source code. **13**

```
MACRO
XYZ     & A
ST      1, & A
MEND
MACRO
MIT     & Z
MACRO
& Z     & W
AR      Y, & W
XYZ     ALL
MEND
ST      & Z, ALL
MEND
PROG    START
        USING   *, 15
        MIT     HELLO
        ST      2, 3
        HELLO   YALE
YALE    EQU     5
ALL     DC      F '3'
        END
```

5. a) Explain relocating loader in detail with advantages and disadvantages. **8**

b) Explain in detail about Dynamic linking and dynamic loading with example. **6**

OR

6. a) Show the entries in ESD, TXT and RLD Cards for the following Prog. **10**

```
JOHN    START
        ENTRY   SUM, DATA
        EXTRN   LOOP, POINTER
        BALR    15, 0
        USING   *, 15
        SR      4, 14
        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) Write short note on link Editor. **4**

7. a) Explain in detail the format of common object file. **8**

b) Write a note on link editor. **5**

OR

8. a) Describe source code control code control system with example. **7**

b) What is symbolic debugger ? Explain in brief. **6**

9. a) Describe in detail the anatomy and types of device driver in UNIX SYSTEM. **13**

OR

10. a) What are the major design issues in the study of device driver ? Elaborate. **6**

b) Write a note on driver memory allocation. **7**

11. What is compiler ? Draw a block diagram of the phases of compiler and indicate the main function of each phase. **14**

OR

12. a) Describe LEX as a tool, for system programming. **7**

b) What is a cross compiler ? Explain how boot strapping can be achieved. **7**

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High expectations are the key to everything.

~ Sam Walton