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

P. Pages : 3

Time : Three Hours

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*0688*

NKT/KS/17/7297

Max. Marks : 80

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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
```

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| | | | |
|---|---|---|---|
| | 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** |

<div align="center">**OR**</div>

| | | | |
|---|---|---|---|
| **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** |

<div align="center">**OR**</div>

| | | | |
|---|---|---|---|
| **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** |

<div align="center">**OR**</div>

| | | | |
|---|---|---|---|
| **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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