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

System Programming

P. Pages : 3 **AHK/KW/19/2202**

Time : Three Hours * 1 4 6 3 * 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.
10. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) What is an Operating System? State different services provided by an Operating System. **7**

b) What is the difference between : **7**
i) Procedure & Program.
ii) Open Subroutine & Closed Subroutine

OR

2. a) Draw and Explain IBM 360 Machine Architecture in detail. **7**

b) Explain the different types of Instruction formats with suitable example of IBM 360 / 370 system. **7**

3. a) Draw & explain in detail flowchart for Pass – 1 of an assembler design. Which pseudo-op is not processed in pass - 1 of assembler & why? **7**

b) What are the different steps followed for designing two pass assembler? Explain in brief. **6**

OR

4. a) For the following program : **7**

```
JOHN    START
        BALR 15, 0
LOOP    USING *, 15
        L       R1, TWO
        A       R1, TWO
        ST      R1, FOUR
        CLI     FOUR + 3, 4
        BNE     LOOP
        BR      14
R1      EQU     1
TWO     DC      F'2'
FOUR    DS      F'4'
        END
```

i) Show the contents of symbol table at the end of Pass – 1.
ii) Show the contents of base table after Pass – 2.
iii) Generate machine code from Pass – 2 of an assembler.

b) Sort the following elements of the table using the sorting techniques given below :- **6**
81, 52, 48, 22, 95, 04, 77, 16, 65, 32
i) Shell Sort ii) Interchange Sort

5. a) Write features of a macro facility & explain conditional macro expansion. **7**

b) Give the purpose and formats of databases specified by Pass – 1 & Pass – 2 of macro – processor. **6**

OR

6. a) Draw & explain the format of following databases used by macro processor. **7**

i) MDT (Macro Definition Table)

ii) MNT (Macro Name Table)

b) Write the working of a macro processor where macro call is made within other macro. **6**

7. a) Write short notes on : **7**

1) Direct linking loader.

2) Absolute loader.

b) Prepare the ESD, TXT, and RLD cards for the following program : **6**

```
STUDENT   START
          ENTRY A
          EXTRN SOLN, DELTA
          BALR 15, 0
          USING STUDENT +2, 15
          SR 4, 4
          L 4, TWO
          L 5, TWO
          ST 5, SAVE
          BR 14
          DC 5 F′01′
          DC A (A + 10)
SAVE      DC 12 C′0′
A         DC A (DELTA)
TWO       DC F′2′
          DC A (STUDENT – SOLN)
          END
```

OR

8. a) Draw and explain flowchart for Pass – 2 of loader. **7**

b) Describe GEST and LESA for implementing a type Pass – 1 linker. **6**

9. a) What is Compiler? Explain in brief the various database used in lexical phases of compiler. **7**

b) Define YACC in details. **6**

OR

10. a) What is token? How are token specified? Also explain how tokens are recognized. **7**

b) Describe a tool for study of lexical analyser. **6**

11. a) Enlist the various steps involved in installation Unix device driver. **7**

b) What do you mean by device driver? Explain the necessity of Device driver. **7**

OR

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

b) Explain the following entry points and routine for device driver of a line printer : **7**

a) init ( )

b) Open ( )

c) Close ( )

d) Write ( )

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