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

System Programming

P. Pages : 3 **NIR/KW/18/3438**

Time : Three Hours * 1 7 7 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.
10. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) What do you mean by operating system? What are the functions and facilities provided by an operating system? **6**

b) What are the goals of system software? Explain the two main views of system software. **7**

OR

2. a) Explain the general machine structure of IBM 360/370 machine along with the instruction formats. **6**

b) What do you understand by assembly language? Write an assembly language to illustrate addition of two numbers. **7**

3. a) Enlist the data bases used by pass - 1 and pass - 2 of assembler. **4**

b) For the source deck given below, produce a symbol table, literal table, base table & write generated machine code :- **10**

```
PRGI      START     0
          USING     *, 15
            LA      15, SETUP
          SR        TOTAL, TOTAL
AC        EQU       2
INDEX     EQU       3
TOTAL     EQU       4
DBASE     EQU       13
SETUP     EQU       *
          USING SETUP,  15
          L         DBASE = A (DATA')
          USING     DAREA, DBASE
          SR        INDEX, INDEX
LOOP      L         AC, DATA , (INDEX)
          AR        TOTAL, AC
          A         AC = F' 15'
          ST        AC, SAVE (INDEX)
```

```
                    A           INDEX, = F '4'
                    C           INDEX, = F'8000'
                    BNE         LOOP
                    LR          1, TOTAL
                    BR          14
                    LTORG
SAVE                DS          2000F
DAREA               EQU         *
DATA'               DC          F '25, 26, 97'.....'
                                [2000 NOS.]

                    END
```

OR

4. a) Draw a detailed flowchart of pass - 2 assembler. Explain in detail each step. **6**

b) Sort the following elements of the table using the sorting techniques given below:- **8**
92, 63, 58, 67, 03, 06, 05, 73, 46
i) Shell sort ii) Radix sort
iii) Address calculation sort.

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

b) Write databases required by pass 1 & pass 2 of macro processor. Draw the format of ALA. **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) Explain the working of a macroprocessor where macro call is made within other macro. **6**

7. a) What is the purpose of relocating loader? Enlist the advantages and disadvantages of relocating loaders. **6**

b) Explain the following:- **any two** **8**
i) Binder
ii) Overlay structures
iii) Direct linking

OR

8. a) Describe the function of each of the following cards:- **8**

i) RLD card ii) ESD card

iii) TXT card iv) END card.

b) Enlist different types of loader schemes and explain any two with suitable diagram. **6**

9. a) Explain different phases of compiler with suitable diagram and example. **8**

b) Enlist the errors in each phase of compilation process. **5**

OR

10. a) What do you mean by cross compiler & boot strapping? **5**

b) Write short note on:- **any two.** **8**

i) LEX tool

ii) YACC compiler writing tool

iii) Databases used in compilation process

11. a) What do you mean by device driver? Explain any two device drivers with neat diagram. **7**

b) What are the steps involved in installing a device driver in UNIX system? Explain any one step in detail. **6**

OR

12. a) What are the major design issues in the designing of a device driver? **6**

b) Write the difference between block device driver and character device driver. **7**

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