Total number of printed pages–4

3 SEM BCA (CBCS) ISS 3·4

2024

(December)

COMPUTER APPLICATION

Paper : 3·4

(Introduction to System Software)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following : 1×5=5

   (a) What is an interpreter ?

   (b) Give *two* examples of utility program.

   (c) What is booting in operating system ?

   (d) Define device driver.

   (e) What is virtual memory ?

Contd.

2. Answer the following : ***(any four)*** 3×4=12

(a) Differentiate between a macro and subroutine.

(b) What are the databases used by Pass I and Pass II of an assembler ?

(c) Explain the various compiler construction tools.

(d) What is the primary function of a linker ? How does it differ from a loader ?

1+2=3

(e) Explain the layered organisation of system software.

3. Answer the following : 5×3=15

(a) What are the functions of Pass I and Pass II of an assembler ?

(b) Explain the working of a Macro Processor with example.

(c) Explain the concept of relocation in the context of loaders. Why is it necessary ?

3+2=5

4. Answer the following : ***(any four)*** 7×4=28

(a) Discuss the evolution of operating systems from batch operating systems to modern architecture.

(b) Explain the various phases of a compiler.

(c) Describe the linking process in brief. What are the various steps involved in transforming object files into an executable program ? 2+5=7

(d) Given the source program :

```
        START   100
A       DS      3
L1      MOVER   AREG, B
        ADD     AREG, C
        MOVEM   AREG, D
D       EQU     A + 1
L2      PRINT   D
        ORIGIN  A – 1
C       DC      '5'
        ORIGIN  L2 + 1
        STOP
B       DC      '19'
        END
```

Show the contents of symbol table at the end of Pass I. Explain the significance of EQU and ORIGIN statements. 5+2=7

(e) Given the following source program :

```
        START   100
        MOVER   AREG, A
LOOP :  PRINT   B
        ADD     BREG, '=9'
        SUB     BREG, D
        COMP    CREG, '=23'
        LTORG
        A  DS   3
LABEL : EQU     LOOP
        ORIGIN  500
L1 :    MULT    CREG, '=7'
        SUB     BREG, '=93'
        LTORG
        B  DC   10
        MOVEM   CREG, '=7'
        PRINT   '=7'
        D  DC   8
        END
```

Show the contents of symbol table, literal table and pool table at the end of Pass II. 7

(f) Explain Macro Definition, Macro call and Macro expansion with proper example. 7
