Seat No. : _____

AK-117

April-2023

Integrated M.Sc. (CA & IT), Sem.-VI

System Software

Time : 2:30 Hours] **[Max. Marks : 70**

1. (A) Answer the following : (Any **four**) **12**
   (1) Write short note on Debug Monitors.
   (2) Define Language Translator, Preprocessor, Language migrator.
   (3) Explain Analysis phase of Language Processor.
   (4) Define IR. And list out its properties.
   (5) Explain back-end operation of compiler with example.

   (B) What is system software ? Write down examples of system software. **2**

2. (A) Answer the following : (Any **two**) **8**
   (1) Write steps followed by interpreter for each statement (i.e. Interpretation cycle). Explain pure and impure interpreter using figure.
   (2) Explain AIF, AGO, REPT, ANOP with example.
   (3) Explain Positional Parameter, Keyword Parameter, Default Parameter and other use of parameter with example.

   (B) Answer the following : (Any **one**) **6**
   (1) Show the content of MNT, MDT, PNTAB , KPDTAB for the following :

```
MACRO
INCR_M &MEM_VAL, &INCR_VAL, &REG=AREG
MOVER &REG &MEM_VAL
ADD      & REG, &INCR_VAL
MOVEM &REG, &MEM_VAL
ENDM
```

   (2) Explain Lexical substitution and Semantic expansion with example.

3. (A) Answer the following : (Any **two**) **8**
   (1) Explain Major Design Issues of Device Driver
      (i) The OS / Driver Communications
      (ii) Driver Operations (Internal operation related issues)
   (2) Explain variant I and II of intermediate code for imperative statements with example.
   (3) Explain with example how to resolve problem of forward reference in single pass assembler.

(B) Answer the following : (Any **one**) **6**

(1) Explain in detail Types of Device Driver with figure.

(2) Show the content of SYMTAB, LITTAB, POOLTAB for the following :

```
        START 101
        MOVER AREG = '5'
        MOVEM AREG A
LOOP    MOVER AREG A
        MOVER CREG B
        ADD CREG = '1'
        BC ANY NEXT
        ORIGIN LOOP+1
NEXT    SUB AREG A
        LTORG
              = '5'
              = '1'
        MOVER AREG = '1'
        LTORG
              = '1'
        MOVER AREG = '2'
LAST    STOP
        BC LT BACK
A       DS 1
B       DS1
BACK    EQU LOOP
        END
              = '2'
```

4. (A) Answer the following : (Any **two**) **8**

(1) Explain Top-down parsing with backtracking with example.

(2) Explain in brief :

(i) Global Optimization (ii) Production

(iii) Reduction (iv) Derivation

(3) Write and explain Naive bottom up parsing algorithm

(B) Answer the following : (Any **one**) **6**

(1) Explain LPDT (Language Processor Development Tools) with figure.

(2) Explain memory allocation and deallocation for a block structured program with example and figure.

5. (A) Answer the following : (Any **two**) **8**

(1) Explain EXTRN and ENTRY with example.

(2) Explain task performed by Loader, also. Explain Absolute Loader.

(3) Explain with figure design of an overlay structured program.

(B) Answer the following : (Any **one**) **6**

(1) Explain Program Relocation Algorithm with example.

(2) Explain in Brief :

(i) Self-Relocating program

(ii) Linking

(iii) Bootstrap loader