SARDAR VALLABHBHAI NATIONAL INSTITUTE OF TECHNOLOGY, SURAT
COMPUTER SCIENCE AND ENGINEERING DEPARTMENT

B. Tech - III Year Mid-Semester Examination (EVEN SEM) (March-2022)

Subject – SYSTEM SOFTWARE (CS306)
Time: 12:00 pm –1:30 pm **Marks: 20**

SECTION - II

Question 1.

(A). With respect to following grammar : **4 Marks**

Briefly explain imperative statements, declaration statements and assembler directives and identify AD(Assembler directive), IS(Imperative statements), DS(Declaration statement) and Label.

Show output of PASS 1 of two pass assembler. Show the entries in MOT(machine opcode table), ST(symbol table), LT(Literal table), LPT (Literal Pool table) after pass 1.

```
        START    100
        MOVER    BREG, ='2'
LOOP    MOVER    AREG, N
        ADD BREG, ='1'
        ORIGIN LOOP+5
        LTORG
        ORIGIN NEXT +2
LAST    STOP
        N    DC '5'
        END
```

(B). Consider the following macro. What is the purpose of data structure in macro? And show the content of (1) MNT (2)KPDTAB (3)SSTAB (4)MDT (5)PNTAB (6)EVNTAB (7)SSTAB (8)EVTAB (9)APTAB(MACRO CALL = SAMPLE A, 10, REG=BREG). Assume the next free entry in MDT is 12, KPDTAB is 7 and SSTAB is 4. **5 Marks**

```
        MACRO
        SAMPLE   &X, &N, &REG=AREG
        LCL      &M
&M      SET      0
        MOVER    &REG, ='0'
.MORE   MOVEM    &REG, &X+&M
&M      SET      &M+1
        AIF      (&M  NE  &N)      .MORE
        MEND
```

Question 2.

(A). Consider the following320 grammar **3 Marks**

$$S \rightarrow SS + \mid SS * \mid a$$

(1). With an appropriate example, show leftmost derivation and rightmost derivation for the string.

(2). Is the grammar ambiguous? Justify your answer.

(3). Remove left recursion and left factor the above grammar.

(B). Given the following grammar. **8 Marks**

$$S \rightarrow aBDh$$
$$B \rightarrow cC$$
$$C \rightarrow bC \mid \in$$
$$D \rightarrow EF$$
$$E \rightarrow g \mid \in$$
$$F \rightarrow f \mid \in$$

(1). Find the FIRST() and FOLLOW() set for the above grammar. Mention appropriate applicable rules for each set you derive.

(2). Construct a predictive parser table. Mention appropriate applicable rules for each table entry you derive.

(3). Show the moves of the parser for each of the following input strings
(a)abach (b)acgfh

(4) What is panic mode error recovery? With suitable example, show how you resolve errors in above grammar using panic mode error recovery?