2008 VISVESVARAYA TECHNOLOGICAL UNIVERSITY

B.E COMPUTER SCIENCE ENGINEERING

SYSTEM SOFTWARE

TIME: 3 HOUR
MARK: 80

Answer Any Five Question
All Question Carry Equal Mark

1 a. Bring out the differences between Application software and System software.

b. Explain SIC/XE machine instruction formats and all addressing modes clearly indicating the setting of different flag bits.

c. Write a subroutine in SIC/XE to read a 100-byte record from a device 'F5' into buffer. Use immediate and register-to register instructions.

2 a. Write and explain the algorithm of pass-1 of a two pass assembler.

b. Generate the complete object program for the following assembly level program.

```
SUM START 0
FIRST CLEAR X
LDA #0
+LDB #TOTAL
BASE TOTAL
LOOP ADD TABLE,X
TIX COUNT
JLT LOOP
STA TOTAL
COUNT RESW 1
TABLE RESW 2000
TOTAL RESW 1
END FIRST
```

Assume below opcodes(all in hexadecimal)
CLEAR-B4 LDA-00 LDB-68 ADD-18
TIX-2C JLT-38 STA-0C

3 a. Distinguish between literal and an immediate operands. How does the assembler handle the literal operand?

b. Compare a two-pass assembler with a one pass assembler.How forward references are handled in one pass assembler?

c. Write a note on MASM assembler.

4 a. Give and explain the algorithm or source program for a simple bootstrap loader.

b. Distinguish between linking loader and linkage editors.

c. Explain dynamic linking with suitable diagrams.

5 a. Explain the structure of a text editor with a neat diagram.

b. Explain the functions and capabilities of an interactive debugging system.

c. Write a note on the aspect of the user-interface criteria.

6 a. What are the basic functions of a macroprocessor? Explain the various data structures used in the implementation of one-pass macroprocessor.

b. Using the following definition, expand the following macro calls, called in sequence.

i) LABEL RDBUFF F2, BUFFER, LENGTH, (04,12)

ii) RDBUFF OE, BUFF, RLENG, , 2048 RDBUFF MACRO &INDEV, &BUFADR,&RECLTH, &EOR, &MAXLTH &EORCT SET %NITEMS(&EOR)

```
CLEAR X
CLEAR A
IF (&MAXLTH EQ ' ')
+LDT #4096
ELSE
+LDT #&MAXLTH
ENDIF
$LOOP TD =X '&INDEV'
JEQ $LOOP
RD =X'&INDEV'
&CTR SET 1
WHILE (&CTR LE &EORCT)
COMP =X '0000 &EOR[&CTR]'
JEQ $EXIT
&CTR SET &CTR+1
ENDW
STCH &BUFADR,X
TIXR T
JLT $LOOP
$EXIT STX &RECLTH
MEND
```

c. Write a short note on 'keyword macro parameters'.

7 a.List and explain the different design options for a macro processor.

b.Write a short note on 'parser - lexer communication'.

c. Write a LEX program to count the number of vowels and consonants in a given string.

8 a.Explain regular expressions in UNIX with proper examples.

b.Explain the structure of YACC program.

c. Give the LEX and YACC specifications to recognise parenthtsized arithmatic expressions.