Fifth Semester B.E. Degree Examination, June/July 2017
System Software

Time: 3 hrs.   Max. Marks: 100

Note: *Answer FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. Calculate the target address and value loaded into register A for the following machine instructions.   **(10 Marks)**
   i)   0310C303
   ii)   03C300
   iii) 022030
   iv)   010030
   v)   032600.
   if (B) = 6000, (PC) = 3000, (X) = 90,

Memory location	Contents
3030	3600
3600	103000
6390	C303
C303	3030

   b. Differentiate between system software and application software.   **(05 Marks)**
   c. Explain the registers and addressing modes of SIC machine architecture.   **(05 Marks)**

2 a. Generate the complete object program for the following assembly level program.

SUM	START	4000
FIRST	LDX	ZERO
	LDA	ZERO
LOOP	ADD	TABLE, X
	TIX	COUNT
	JLT	LOOP
	STA	TOTAL
	RSUB	
TABLE	RESW	2000
COUNT	RESW	1
ZERO	WORD	0
TOTAL	RESW	1
	END	FIRST

   Assume : LDX = 04, LDA = 00, ADD = 18, TIX = 2C, JLT = 38, STA = 0C RSUB = 4C
                                                                                   (10 Marks)
   b. Explain the program relocation with an example.   **(10 Marks)**

3 a. Explain the structure of load and go assembler.   **(10 Marks)**
   b. Differentiate between literal and an immediate operand. Give an example for each. **(05 Marks)**
   c. With an example, explain the multipass assembler.   **(05 Marks)**

4 a. What is dynamic loading? Explain the process of loading and calling of subroutines using dynamic binding. **(10 Marks)**

   b. What is relocating loader? Explain the creation of object program with relocation by bit mask. **(10 Marks)**

PART – B

5 a. Explain briefly structure of a typical editor with the help of suitable block diagram. **(10 Marks)**

   b. Explain different debugging functions and capabilities. **(10 Marks)**

6 a. List machine independent macro processor features. Explain any two with an example. **(10 Marks)**

   b. Explain the data structures involved in macro-processor algorithm. **(05 Marks)**

   c. Explain the features of MASM macro-processor. **(05 Marks)**

7 a. Explain the structure of a lex program with an example. **(08 Marks)**

   b. Explain yylex ( ) and yywrap( ) functions. **(04 Marks)**

   c. Write a Lex program to count the number of characters, words, spaces and lines in a given input file. **(08 Marks)**

8 a. Write a yacc program to accept the grammar $a^n b^n$ where $n \geq 0$. **(10 Marks)**

   b. Write a short note on Parser – Lexer communication. **(05 Marks)**

   c. Explain the following functions : **(05 Marks)**
   - i) yyparse
   - ii) yytext
   - iii) atoi
   - iv) yylval
   - v) yyerror.

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