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**Fifth Semester B.E. Degree Examination, June/July 2016**  
**System Software**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, selecting  
atleast TWO questions from each part.**

**PART – A**

- 1
  - a. Bring out the differences between system software and application software, with examples. (05 Marks)
  - b. Write the program in both SIC and SIC/XE to copy a character string 'SYSTEM SOFTWARE' to another character string. (05 Marks)
  - c. Briefly explain the SIC/XE machine architecture. (10 Marks)
- 2
  - a. Write and explain the algorithm for a pass – 1 of two – pass assembler. (08 Marks)
  - b. Explain the data structures used in assembler algorithms. (04 Marks)
  - c. Generate the object code for the source program given below :

WRREC	START	105D
	CLEAR	X
	LDT	LENGTH
WLOOP	TD	OUTPUT
	JEQ	WLOOP
	LDCH	BUFFER, X
	WD	OUTPUT
	TIXR	T
	JLT	WLOOP
	RSUB	
OUTPUT	BYTE	X '05'
BUFFER	RESB	400
LENGTH	RESB	2
	END	WRREC

CLEAR = B4, LDT = 74, TD = E0, JEQ = 30, LDCH = 50, WD = DC, TIXR = B8, JLT = 38, RSUB = 4C, X = 1 T = 5. (08 Marks)

- 3
  - a. Differentiate between literal and immediate operand with example. (05 Marks)
  - b. Discuss different design options of assembler. (10 Marks)
  - c. What are control sections? How are they processed? (05 Marks)
- 4
  - a. What is loader? What are its advantages and disadvantages? Explain the boot strap loader, with algorithm. (10 Marks)
  - b. Explain the two design options of loaders. (10 Marks)

**PART – B**

- 5
  - a. List the task performed by document linking process in an interactive system. (04 Marks)
  - b. Explain the structure of a text editor with a neat diagram. (10 Marks)
  - c. Explain the functions and capabilities of an interactive debugging system. (06 Marks)

- 6 a. Explain the data structures involved in macro-processor algorithm. (06 Marks)  
b. Briefly explain the machine – independent macro-processor features. (10 Marks)  
c. Write a note on MASM macro-processor. (04 Marks)
- 7 a. Explain the structure of a LEX program with example. (06 Marks)  
b. What is regular expression? Explain any 8 characteristics that form a regular expression. (08 Marks)  
c. List any 3 LEX – YACC variables and functions. (06 Marks)
- 8 a. Write a YACC program to recognize an arithmetic expression involving operations +, -, \*, /. (08 Marks)  
b. What is shift reduce parsing? Explain with an example. (06 Marks)  
c. Differentiate between LEX and YACC. (06 Marks)

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