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Third Semester MCA Degree Examination, December 2011

System Software

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. Bring out differences between system software and application software. (05 Marks)
- b. Explain the differences between SIC and SIC/XE architecture by comparing both. (15 Marks)

- 2 a. What are the basic functions of an SIC assembler? (04 Marks)
- b. Write and explain the algorithm of a two pass assembler. (10 Marks)
- c. Explain the concept of program blocks. (06 Marks)

- 3 a. Convert the given program into its object code. Show the data structures used and its contents :

SUM	START	4000
FIRST	LDX	ZERO
	LDA	ZERO
LOOP	ADD	TABLE, X
	TIX	COUNT
	JLT	LOOP
	STA	TOTAL
	RSUB	
TABLE	RESW	100 H
COUNT	RESW	1
ZERO	WORD	0
TOTAL	RESW	1
	END	FIRST

OPcode for memories –

LDX – 04, LDA – 00, TIX – 2C, ADD – 18, JLT – 38, STA – 0C, RSUB – 4C. (10 Marks)

- b. Explain the working of a multipass assembler. (06 Marks)
- c. What are assembler directives? Explain START and LORG. (04 Marks)

- 4 a. What are the basic functions of a loader? (04 Marks)
- b. Explain the working of the algorithm of an absolute loader and give an example of an absolute loader. (06 Marks)
- c. Explain linking loader and linkage editor. (10 Marks)

- 5 a. With a neat diagram, explain the structure of a text editor. (10 Marks)
- b. Discuss the capabilities of an interactive system and explain debugging. (10 Marks)

- 6 a. Explain the macro definition, macro call and working of expansion with a small example. (10 Marks)
- b. Briefly discuss the various data structures required for the design of a macro processor. (05 Marks)
- c. Explain with example the concatenation of macro parameters. (05 Marks)

- 7 a. Define len, yy len and token. (06 Marks)
- b. Write a yacc program to check the validity of an arithmetic expression like $5 * (4 + 8) / 9$. Write the relevant len program for tokenizing. (10 Marks)
- c. Define regular expressions. Explain the metacharacters? and \wedge . (04 Marks)

- 8 Write short notes on : a. Program Relocation ; b. MS – DOS linker ; c. General purpose macro processor ; d. Shift – reduce parsing. (20 Marks)
