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**Fifth Semester B.E. Degree Examination, June/July 08**  
**System Software**

Time: 3 hrs.

Max. Marks:100

Note : Answer any FIVE full questions.

- 1 a. With reference to the standard SIC and SIC/XE model, discuss the data formats instruction formats available. (12 Marks)
- b. Generate the target address for the following LDA machine instructions. Finally indicate the values of reg - A.  
 Content of X register (X) = 000090,  
 Content of B register (B) = 006000,  
 Content of PC register (PC) = 003000.  
 i) 032600 ii) 03C300 iii) 022030 iv) 010030 v) 003600 vi) 0310C303 (08 Marks)

- 2 a. Generate the complete object program for the following assembly level program. Also indicate the contents of symbol table at the end. Assume standard SIC model and assume the following machine OPCODES in HEX

LDA → 00 TIX - 2C  
 LDX → 04 JLT - 38  
 STA → 0C RSUB - 4C  
 ADD → 18

Source 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

- (12 Marks)
- b. What are different ways of specifying an operand value in a source statement? What are the advantages and disadvantages of each? (04 Marks)
- c. With suitable example explain the use of LTORG assembler directives. (04 Marks)
- 3 a. What are different record formats used in order to obtain a object code? Give their formats. (12 Marks)
- b. What are Program Blocks? With suitable example explain how program blocks are processed by assembler Pass-I and Pass-II (08 Marks)

- 4 a. What is Relocating loader? Explain the methods of specifying relocation as a part of object program. (10 Marks)
- b. With neat diagram, explain how object program can be processed in  
i) Linking loader ii) Linkage editor (10 Marks)
- 5 a. List the various machine independent macro processor features. Explain any two (10 Marks)
- b. With neat diagram, explain the structure of a text editor. (10 Marks)
- 6 a. What are different tasks that are performed by a lexical phase of a compiler? Write an algorithm for lexical analyzer recognizes the IDENTIFIER taken with underscore. (12 Marks)
- b. Write BNF grammar to recognize the following statement used in PASCAL program  
i) READ statement ii) WRITE statement iii) Assignment statement (08 Marks)
- 7 a. What is Quadruple representation? Give the quadruple representation of the following source statements.  
i)  $SUM := SUM + VALUE$   
ii)  $VARIANCE := SUMSQ DIV 100 - MEAN * MEAN$  (08 Marks)
- b. With suitable example, explain the different sections in the format of LEX program and YACC program. (12 Marks)
- 8 Write the short notes on the followings  
a. MASM assembler  
b. Dynamic linking  
c. Operator Precedence Parsing  
d. P-code compiler. (20 Marks)

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