M S Ramaiah Institute of Technology

Department of Information Science and Engineering

Term:	23/01/2017 to 13/05/2017	**Course Code:**	IS631
Course:	System Software	**Semester:**	6
CIE:	Test I	**Max Marks:**	30
Date:	**27/02/17**	**Time:**	9 :30 –10:30 AM

Portions for Test: Lecture Nos. from 1 to 17 as per lesson plan

Instructions to Candidates: Answer any **Two** out of Three questions.

Sl No	Questions	Marks	Blooms Level	CO
1.a)	I)Discuss the following architecture components of SIC/XE machine i)Registers ii) Input and Output instruction	**(03)**	U	CO1

	II)Generate the Object code for SIC machine
	
	COPY START 1000 **OPCODE TAB**
	MOVECH LDX STR1,X LDX 04
	                    STCH STR2,X STCH 54
	                    TIX THREE TIX 2C
	                    JLT MOVECH JLT 38
	
	STR1 BYTE C'ABC'
	STR2 RESB 3
	
	ZERO WORD 0
	THREE WORD 3
	                    END
		(05)	A	CO1

b)	Illustrate with an example the machine dependent features of program relocation.	**(07)**	U	CO2
2 a)	I)Illustrate the role of the flag bits n ,i, x in addressing modes of Format 3 and 4 of SIC/XE instructions. II)Suppose FILE is the name of the program written for SIC machine and its length is 0029.Write the object program for the following object codes **LOC Object code** 2000 141033 2003 482039 2006 001036 2009 281030 200C 301015 200F 482061 2012 3C1003 2015 00102A 2018 0C1039 201B 05 201C 0C1036	**(09)**	A	CO1

	201F 482061 2022 08 2023 4C0000 2026 0C1020			
b)	Provide the format of the modification record. With suitable illustrations indicate why modification records are generated only for Format 4 instructions.	(06)		CO2
3 a)	Design pass-2 algorithm of two-pass assembler.	(07)	U	CO1

b)	Generate the symbol table and the object code(each statement) for the following assembly language program-
	
	OPcodes:
	CLEAR: B4, STL: 14, LDB: 68, JSUB: 48, LDA: 00, STA: 0C, J: 3C
	
	SUM START 0
	
	FIRST CLEAR S
	         LDB #5
	         +JSUB RESULT
	         STA LOC,X
	         J @NUM
	NUM RESW 1
	TEMP WORD 20
	LOC BYTE X'12'
	RESULT RESB 2
	         END SUM
		(08)	A	CO2

U:Understand, A:Apply