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10MCA31

Third Semester MCA Degree Examination, Dec. 2013/Jan. 2014
Systems Software

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions.***

1 a. Define system software. Name any four system softwares with the purpose of each. **(05 Marks)**

b. Discuss instruction formats and any three addressing modes of SIC/XE. **(07 Marks)**

c. Write a sequence of instructions for SIC/XE to set NUM3 equal to NUM1 + NUM2 – 1 and set NUM5 equal to NUM4 + NUM2 + 1. **(08 Marks)**

2 a. What is an assembler directive? Explain any five assembler directives with their meaning. **(06 Marks)**

b. Write an algorithm for pass 1 of assembler. **(08 Marks)**

c. Generate object code for each statement for the following SIC source program :

SUM	START	2000
LAST	LDX	ZERO
	LDA	ZERO
RPT	ADD	TABLE, X
	TIX	COUNT
	JLT	RPT
	STA	TOTAL
	RSUB	
TABLE	RESW	1000
COUNT	RESW	1
ZERO	WORD	0
TOTAL	RESW	1
	END	LAST

Op codes : LDX – 04, LDA – 00 ADD – 18, TIX – 2C JLT – 38, STA – OC, RSUB – 4C. **(06 Marks)**

3 a. What is a program block? Discuss its usage, with an example. **(04 Marks)**

b. Explain control section. How are these handled by the assembler? **(06 Marks)**

c. Write an algorithm for one pass assembler. **(10 Marks)**

4 a. What is a loader? Explain a simple boot strap loader for SIC/XE, with source code. **(10 Marks)**

b. Explain linking loader and linkage editor, with suitable diagram. **(10 Marks)**

5 a. What are the four tasks involved in a document editing process? **(02 Marks)**

b. Explain the structure of a text editor, with suitable diagram. **(08 Marks)**

c. What are the different components of debugging systems? Explain. **(10 Marks)**

6 a. Briefly explain various data structure requirements of a macro processor, with suitable example. **(10 Marks)**

b. Discuss any two machine independent macroprocessor features. **(10 Marks)**

7 a. What is a LEX? Briefly explain the components of a LEX program. **(04 Marks)**

b. Write a LEX program to count number of printf, scanf statements used in a C program. **(06 Marks)**

c. Write an YACC program is recognize the grammer $a^n b^2$, where $n \geq 2$. **(10 Marks)**

8 Write short notes on :

a. Automatic library search

b. Program relocation

c. YACC parser

d. ELENA macro processor. **(20 Marks)**

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