2002 SCHEME

USN | | | | | | | | | | |

CS51

Fifth Semester B.E. Degree Examination, December 2010
System Software

Time: 3 hrs. Max. Marks:100

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

1 a. Bring out the differences between system software and application software. **(04 Marks)**

b. With reference to the standard SIC/ XE model, discuss the data formats and instruction formats and addressing modes. **(10 Marks)**

c. Write a subroutine for SIC/ XE to read a 100 byte record from a device 'F5' into BUFFER. Use immediate and resister–to–register instructions. **(06 Marks)**

2 a. Write and explain the algorithm of pass1 of a two-pass assembler. **(10 Marks)**

b. Show the structure of a header record, text record and modification record taking one example for each. **(06 Marks)**

c. What is LTORG? When is it used? Explain with an example. **(04 Marks)**

3 a. Generate the machine code for the following instructions :

LC	MNEMONIC	OPERAND
i) 0006	+JSUB	RDREC
ii) 0000	STL	RETADR
iii) 0003	LDB	#LENGTH

Assume the OPCODE for : JSUB = 48 H, STL = 14 H, and LDB = 68H
Assume the OPERAND ADDRESS for :
RDREC = 1036 H, RETADR = 0030 H and LENGTH = 0003 H. **(10 Marks)**

b. What is relocating loader? Explain the two methods for specifying relocation as a part of object program. **(10 Marks**

4 a. What are the basic functions of a loader? Explain a simple boot-strap loader, with an algorithm or a source program. **(10 Marks)**

b. With a neat diagram, explain how object program can be processed in
i) Linking loader ii) Linkage editor. **(10 Marks)**

5 a. Explain the working of a text editor, with a neat block diagram. **(10 Marks)**

b. Explain the different debugging functions and debugging capabilities. **(10 Marks)**

6 a. Write and explain the algorithm for one pass macroprocessor. Briefly discuss various data structures required for a design of one pass macroprocessor. **(12 Marks)**

b. With regard to the machine- independent macroprocessor features, explain the following:
i) Concatenation of macro parameters ii) Generation of unique labels. **(08 Marks)**

7 a. What are the main functions of a compiler? List all the phases of a compiler. **(05 Marks)**

b. Explain recursive decent parsing. Write recursive decent parse for a READ statement. **(10 Marks)**

c. Briefly explain the shift–reduce parsing. **(05 Marks)**

8 a. Explain : i) P – code compiler ii) Compiler – compilers. **(10 Marks)**

b. i) Explain the structure of LEX program.
ii) Write a YACC program to recognize a valid variable, which starts with a letter, followed by any number of letters or digits. **(10 Marks)**

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