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NEW SCHEME

Fifth Semester B.E. Degree Examination, Dec. 06 / Jan. 07

CS / IS

System Software

Time: 3 hrs.]

[Max. Marks:100

Note : Answer any FIVE full questions.

- 1 a. Bring out the difference between system software and application software. (04 Marks)
- b. Explain SIC/XE machine instruction formats and all addressing modes, by clearly indicating setting of different flag bits. (10 Marks)
- c. Suppose that RECORD contains a 100 byte record. Write a subroutine for SIC/XE that will write this record on to device 05. Use immediate addressing and register-to-register instructions to make the subroutine as efficient as possible. (06 Marks)
- 2 a. Write and explain the algorithms of pass1 of two-pass assembler. (10 Marks)
- b. Generate the machine code for the following :
- i) +JSUB RDREC
- ii) STL RETADR
- iii) LDB #LENGTH
- Assume the opcode for :
- JSUB = 48H, STL = 14H and LDB = 68H
- The location counter value for :
- RDREC = 1036H, RETADR = 0030H and LENGTH = 0033H (10 Marks)
- 3 a. Generate the object code for the program shown below :
- ```

LDX #0
LDT #100
Loop : TD INDEV
 JEQ Loop
 RD INDEV
 STCH RECORD, X
 TIXR T
 JLT Loop
INDEV BYTE X 'F1'
RECORD RESB 100
END

```
- Assume starting address 1000H
- Opcode for mnemonics are as follows :
- LDX = 04H, LDT = 74H, TD = E0H, JEQ = 30H, RD = D8H, STCH = 54H,  
TIXR = B8H, JLT = 38H (10 Marks)
- b. What is relocating loader? Explain the two methods for specifying relocation as a part of object program. (10 Marks)
- 4 a. Differentiate between a linking loader and linkage editor, with the help of suitable diagrams. (10 Marks)
- b. Explain a simple Boot-strap loader, with an algorithm or a source program. (10 Marks)



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- 5 a. What is an interactive editor? Explain briefly, structure of a typical editor with the help of suitable block diagram. Also briefly discuss command language processor, traveling, editing, viewing and display functions. (12 Marks)
- b. Explain the different debugging functions and debugging capabilities. (08 Marks)
- 5 a. With regard to the machine-independent macroprocessor features, explain the following :
- i) Conditional macro expansion
- ii) Keyword macro parameters. (08 Marks)
- b. Write the algorithm for one pass macroprocessor and explain. Briefly discuss various data structures required for a design of a macro processor. (12 Marks)
- 7 a. Explain recursive decent parsing. Write recursive decent parse for a READ statement. (10 Marks)
- b. Briefly explain shift-reduce parsing. (05 Marks)
- c. Write explanatory notes on interpreter. (05 Marks)
- 8 a. Explain :
- i) P-code compilers
- ii) Compiler-compilers (10 Marks)
- b. i) Explain the structure of LEX program.
- ii) Write a program in LEX to count the number of vowels and consonants in a given string. (10 Marks)