

--	--	--	--	--	--	--	--	--	--

## Fifth Semester B.E. Degree Examination, December 2012

### Systems Software

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting at least TWO questions from each part.**

#### PART – A

1.
  - a. Explain the instruction formats and addressing modes of SIC/XE machine architecture. (10 Marks)
  - b. Generate the target address for the following object codes:
    - i) 032600
    - ii) 010030
 Content of X = 000090; Content of B = 006000; Content of PC = 003000 (04 Marks)
  - c. Write a SIC/XE program to read 100 byte record from a device 'F5' into BUFFER. Use immediate and register-to-register instructions. (06 Marks)
  
2.
  - a. With an algorithm, explain pass-1 of a 2-pass assembler. (10 Marks)
  - b. Generate the object code for each statement and write the object programs for the following SIC/XE program.
 

Given that: CLEAR = B4, LDA = 00, LDB = 68, ADD = 18,  
TIX = 2C, JLT = 38, STA = 0C

```

SUM START 0
FIRST CLEAR X
      LDA #0
      +LDB #TOTAL
      BASE TOTAL
LOOP  ADD TABLE, X
      TIX COUNT
      JLT LOOP
      STA TOTAL
COUNT RESW 1
TABLE RESW 2000
TOTAL RESW 1
      END FIRST
          
```

(10 Marks)
  
3.
  - a. With required data structures and processing logic, explain the implementation of literals within an assembler. (07 Marks)
  - b. What are program blocks? How multiple program blocks are handled by an assembler? (07 Marks)
  - c. Compare a two-pass assembler with a single pass assembler. How forward references are handled in one-pass assembler? (06 Marks)
  
4.
  - a. Define program relocation. Explain the different ways of doing program relocation. (06 Marks)
  - b. With an algorithm, explain pass 1 of a linking loader. (08 Marks)
  - c. Explain the facilities available in MS-DOS linker for program linking. (06 Marks)

**PART – B**

- 5 a. With a neat diagram, explain the working of typical editor structure. (08 Marks)  
b. Explain the debugging functions and capabilities of an interactive debugging system. (08 Marks)  
c. List the four tasks of a document editing process. (04 Marks)
- 6 a. Define MACRO. Briefly explain the various data structures used in the design of MACRO PROCESSOR. (08 Marks)  
b. With an example, explain generation of unique labels in macros. (06 Marks)  
c. Explain the advantages and disadvantages of general purpose macro processors. (06 Marks)
- 7 a. With an example, explain the structure of a LEX program. (07 Marks)  
b. Write regular expressions to identify the following:  
i) Identifier    ii) Decimal number    iii) – ve integer    iv) + ve fraction (08 Marks)  
c. Write a short note on parser-lexar communication. (05 Marks)
- 8 a. Define YACC tools. What are the two types of conflicts in YACC? Give examples. (08 Marks)  
b. Write a YACC program to evaluate an arithmetic expression involving operators +, –, \*, /. (07 Marks)  
c. Write a short note on shift/reduce parsing. (05 Marks)

\* \* \* \* \*