

Second Semester MCA Degree Examination, June/July 2016
System software / System Programming

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1
 - a. Compare system software and application software. Give examples for each. (04 Marks)
 - b. Discuss the architecture of SIC/XE. (12 Marks)
 - c. Assume that 100 words of data are stored from LOCI. Write a SIC program to copy these words to another location in memory starting from LOC2. (04 Marks)
- 2
 - a. Explain the following with an example for each : i) START ii) TIX iii) JSUB iv) STL. (08 Marks)
 - b. Write an algorithm for pass1 and pass2 of SIC assembler. (12 Marks)
- 3
 - a. Explain what is relocation. How relocation using modification record is achieved? (10 Marks)
 - b. Explain 1 – pass assembly process. (10 Marks)
- 4
 - a. What are the basic functions of a loader? (04 Marks)
 - b. Explain a simple bootstrap loader for SIC/XE with an algorithm. (06 Marks)
 - c. Write the algorithm for pass–1 and pass–2 of a linking loader. (10 Marks)
- 5
 - a. Explain the structure of a Text Editor with suitable diagram. (10 Marks)
 - b. What are the different components of a debugging system? Explain. (10 Marks)
- 6
 - a. Discuss the different data structures used by a macro processor. (10 Marks)
 - b. Explain the following :
 - i) Conditional macro expansion
 - ii) Generation of unique labels. (10 Marks)
- 7
 - a. i) Consider the following finite automata. Check whether the following strings are recognized or not. i) abc ii) abbc iii) aabbc iv) ac v) acbbb. (05 Marks)

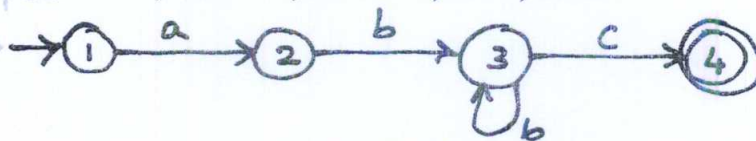


Fig. Q7(a)

- ii) Write a finite automata to recognize an identifier with the following rules :
 - i) An identifier should start with an alphabet
 - ii) Subsequent character can be an alphanumeric
 - iii) An identifier may or may not have an under score in between other characters, but not in the beginning or at the end. (05 Marks)
- b. Write parse tree for the following statements :
 - i) WRITE(MEAN, VARIANCE)
 - ii) VARIANCE := SUM DIV 100 –MEAN * MEAN. (10 Marks)
- 8 Write short notes on :
 - a. MASM assembler
 - b. MS-DOS linker
 - c. Shift-reduce parsing
 - d. P-code compiler. (20 Marks)