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Fifth Semester B.E. Degree Examination, June/July 2015
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. Give any two differences between SIC and SIC/XE machine architecture. (04 Marks)
- b. Explain in detail the architecture of a SIC/XE machine. (10 Marks)
- c. Write a subroutine in SIC/XE to read a 100-byte record from a device 'F5' into BUFFER use immediate and register-to-register instructions. (06 Marks)
- 2 a. What is a forward reference? How to solve this forward reference in assembler? (04 Marks)
- b. What are the 3 different records used in object program and write their formats? (06 Marks)
- c. Generate the object code for the instructions shown below: (10 Marks)

1) 0006 CLOOP	+JSUB	RDREC
2) 0017	J	CLOOP
3) 0020	LDA	#3
4) 103C	+LDT	#4096
5) 002A	J	@RETADR

Note: JSUB = 8, J = 3C, LDA = 00, LDT = 74, RDREC = 1036, RETADR = 0030

- 3 a. Enlist the various machine independent assembler features. (05 Marks)
- b. With suitable example, explain the use of LTORG assembler directive. (05 Marks)
- c. Explain the multi pass assembler with example. (10 Marks)
- 4 a. What are basic functions of a loader? Develop an algorithm for a bootstrap loader. (10 Marks)
- b. What is the difference between linkage editor and linking loader? (04 Marks)
- c. Explain various data structures used for a linking loader. (06 Marks)

PART – B

- 5 a. Explain the relationship between editing and viewing buffers with relevant diagram. (10 Marks)
- b. Differentiate between tracing and traceback functions in a debugging system. (04 Marks)
- c. Mention the different precessions for future assembler and compiler consistent interface with debugging system. (06 Marks)
- 6 a. List the different tables used for a macroprocessor. Explain their functions. (08 Marks)
- b. Explain with example, concatenation of macro parameter and generation of unique lables. (12 Marks)
- 7 a. Explain the structure of LEX specification with example. (10 Marks)
- b. What is symbol table? Write a LEX program to implement symbol table. (10 Marks)
- 8 a. What is YACC? Explain the different sections used in writing the YACC specification. (10 Marks)
- b. Explain conflicts in YACC with example. (05 Marks)
- c. Write YACC program to check whether the given string $b^n a^n (n > 0)$ is accepted by grammar or not. (05 Marks)