

B.E (FULL TIME) DEGREE END SEMESTER EXAMINATIONS, MAY 2012
COMPUTER SCIENCE AND ENGINEERING BRANCH
FIFTH Semester
CS9303 SYSTEM SOFTWARE INTERNALS
(Regulations:2008)

3

Time : 3 Hours

Max. Marks:100

Part-A (10 * 2 = 20 Marks)

1. What are assembler directives? Give any 2 examples. (2)
2. Suggest any 2 addressing modes you would recommend for a new architecture and explain how the target address can be computed for one of the modes. (2)
3. What is the purpose of a bootstrap loader. (2)
4. Explain the structure of an object file. (2)
5. Name the 3 data structures associated with the implementation of macro processor. (2)
6. Explain a macro time variable. (2)
7. What is binary class? (2)
8. Explain the functioning of mark- and- sweep collectors. (2)
9. Give an example of well defined interface and justify. (2)
10. Give an example for system level and process level virtual machine. (2)

Part-B (5 * 16 = 80 Marks)

- 11a. Explain the various registers available in SIC. (5)
- b. Explain the instructions available in SIC. (5)
- c. Explain the instruction set supported by SIC/XE. (6)
- 12.a. Write the code for a bootstrap loader for SIC/XE and explain the working of the code.
(OR)
- 12.b.(i) Explain any 4 loader options. (8)
- (ii) Explain the loader design options. (8)
- 13.a Explain how dynamic class loading works.
(OR)
- 13.b. Explain the various methods for collecting garbage.
- 14.a. Explain any 2 profiles in detail and 2 methods for collecting profiles. (8+8)
(OR)
- 14.b. Explain any 4 forms of implementing virtual machines.
- 15.a i. Explain the different data structures used in implementing the macro processor.
ii. Explain with an example how concatenation of macro parameters and generation of unique labels is done.
(OR)
- 15.b.i Write the algorithm for implementing one pass macro processor.
ii. Explain conditional macro expansion.