



Reg. No. :

Name :

**Fifth Semester B.Tech. Degree Examination, October 2016
(2013 Scheme)**

13.504 : SYSTEMS PROGRAMMING (FR)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions, **each** question carries **4** marks.

1. Write any two assembler directives used by SIC/XE. Write an SIC code to copy a 13 byte character string to another.
2. Could a one pass assembler produce a relocatable object program and handle external references ? Describe the processing logic that would be involved and identify any potential difficulties.
3. How linking loader differs from linkage editor ?
4. What is macro call and macro expansion ?
5. What is delay branching ? Give example.



(5×4=20 Marks)

PART – B

Answer **one full** question from **each** Module.

Module – I

6. a) Explain the SIC machine architecture in detail. 10
- b) Write and explain the sequence of code for SIC and SIC/XE to perform the task to add together the corresponding elements of ALPHA and BETA storing the results in the elements of GAMMA using indexing and looping operation. 10

OR



7. a) Compare SIC and SIC/XE architecture with respect to memory, instruction format, addressing modes and data formats. 10
- b) Write and explain the sequence of code in SIC and SIC/XE to read 200 byte record from the input device using subroutine. 10

Module - II

8. a) Describe the various data structures used by an assembler. 5
- b) How forward references are handled by multi pass assembler ? Illustrate with an example. 15

OR

9. a) How an assembler calculates displacement for PC-relative and Base relative addressing mode ? 10
- b) Write an algorithm for Pass 1 and Pass 2 of assembler and explain. 10

Module - III

10. a) Why linking loader require 2 passes to complete loading ? Explain the operations of linking loader. 15
- b) Explain the various data structures used by the macro processor. 5

OR

11. a) Describe the machine dependent loader features. 15
- b) Describe the various records in MS-DOS linker. 5

Module - IV

12. a) Explain how the interactive debugging systems provide the testing and debugging to the programmers.. 10
- b) Describe kernel structure of UNIX operating system. 10

OR

13. a) Explain the various steps in editing and structure of an editor with neat diagram. 10
- b) Describe the file system architecture of UNIX operating system. 10