



Reg. No. :

Name :

**Fourth Semester B.Tech. Degree Examination, May 2014
(2008 Scheme)**

08.403 : COMPUTER HARDWARE DESIGN (R)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **4** marks **each** :



1. What is overflow ? Give an example.
2. Give the schematic of 2x2 array multiplier.
3. What is the advantage of representing numbers in floating point representation in comparison with fixed point representation ?
4. What are the major steps in addition/subtraction of two floating point numbers ?
5. What are the components that form the basis of a register transfer logic method ?
6. How is accumulator register different from other registers ?
7. Show how a parallel adder can be used to perform decrement by 1 operation.
8. What are the different methods of control organization ?
9. What is microprogram sequencer ?
10. What is microprogrammed CPU organization ? (10x4=40 Marks)

PART – B

Each full question carries **20** marks.

Module – I

11. a) What is the principle behind Booth's multiplication algorithm ? Write the Booth's multiplication algorithm. 10
- b) Show the contents of various registers after each step in the multiplication of - 9 by -11 represented in 2's complement form. 10

OR



12. a) Design an array multiplier for multiplying two 4 bit numbers. 10
 b) Write the algorithm for addition/subtraction of binary numbers in 2's complement representation. 10

Module – II

13. a) Explain the bus organization for multiple registers (say 4 nos) for communicating with memory. 10
 b) Show the hardware for implementing the statement $T : A \leftarrow A + B$, Which denotes addition of two signed numbers in 2's complement form

$$V \leftarrow C_n \oplus C_{n+1}.$$

OR

14. a) Give the design of a status register and explain. 10
 b) Give the design of a shifter. 10

Module – III

15. Design a hard wired control for addition/subtraction of two numbers in sign magnitude form. 20

OR

16. With block diagram explain microprogram control. 20

(3×20=60 Marks)