

Roll No .....

## CS/IT - 402

BE. IV Semester Examination, December 2014

### Computer System Organization

Time : Three Hours

Maximum Marks : 70

- Note:** i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.  
ii) All parts of each questions are to be attempted at one place.  
iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.  
iv) Except numericals, Derivation, Design and Drawing etc.

#### Unit - I

1. a) Explain the data transfer between register and memory.  
b) Draw and explain the implementation of 1-bit register.  
c) Draw the functional block diagram of microprocessor 8085 and explain in brief.  
d) What is the difference between a direct and indirect address instruction? How many references to memory are needed for each type of instruction to bring an operand into a processor register? Give at least three examples of each type.

OR

What is instruction cycle? Explain different phases of instruction cycle and show flow chart for instruction cycle.

#### Unit - II

2. a) What is meant by Hardwired control?  
b) What is microprogramming and microprogrammed control unit?  
c) Compare horizontal and vertical organization. Give their advantages and disadvantages.  
d) With neat block diagram, explain the working principal of microprogram sequencer.

OR

Explain Booth's algorithm for multiplication of two fixed point numbers. Illustrate the same with a sample multiplication of two numbers of your choice.

#### Unit - III

3. a) What do you mean by programmed I/O?

- b) Explain the drawbacks in programmed I/O and Interrupt driven I/O?
- c) Draw and explain typical block diagram of DMA?
- d) Write an assembly program to obtain the multiplication table of 12 using repeated addition.

OR

How is interrupt I/O better than programmed I/O? Discuss completely how the various signals are exchanged during I/O.

#### Unit - IV

4. a) What is cache memory? Why is it implemented?
- b) What is cache coherency? Why is it necessary? Explain different approaches for cache coherency.
- c) Draw and explain the virtual memory organization.
- d) Explain associative memory with its hardware organization. Explain how the data is read and write in the associative memory.

OR

What are the various mapping methods used with cache memory organization? Explain any one in detail.

#### Unit - V

5. a) Explain the basic structure of pipeline processor.
- b) Explain the general instruction format of the vector processor.
- c) Write a short note on hypercube interconnection.
- d) What is the purpose of system bus controller? Explain how the system can be designed to distinguish between reference to local memory and reference to common shared memory.

OR

Draw and explain the model of crossbar switch organization for establishing an interconnection network in multiprocessor system. How many switch points are there in a crossbar switch network that connects  $P$  processors to  $m$  memory module?

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