

Roll No .....

**CS-4002 (CBGS)****B.E. IV Semester**

Examination, May 2018

**Choice Based Grading System (CBGS)****Computer System Organization***Time : Three Hours**Maximum Marks : 70*

- Note:** i) Attempt any five questions.  
ii) Each question carries equal marks.

1. a) Explain all the CPU registers with their functions. Describe the function of control unit and ALU.  
b) What is micro-operation? Draw a 4 bit arithmetic circuit and write its function table.
2. a) What do you mean by shift micro operation? Explain three types of shift micro-operations.  
b) Draw one stage of Arithmetic Logic Shift Unit and write its function table.
3. a) Explain signed magnitude, signed 1's complement and signed 2's complement representation of numbers. Find the range of numbers in all three representations for 8 bit register.  
b) Explain the process of multiplication by Booth method. Multiply 6 and -3 using Booth method.

4. a) Explain hardwired microprogrammed control unit? What is address sequencer circuit?  
b) Explain how a stack organized computer executes instructions? What is Stack?
5. a) Explain PUSH and POP instructions. Differentiate infix and postfix notation with an example.  
b) Explain different instruction formats of a computer. Give suitable examples for each one of them.
6. a) Draw block diagram of memory hierarchy of computer system. Explain why 3 level hierarchy is necessary.  
b) If cache access time is 100ns, main memory access time is 1000ns and the hit ratio is 0.9. Find the average access time and also define hit ratio.
7. a) What is paging? Explain in detail. Describe some important page replacement algorithms.  
b) Define the concept of Pipeline. Draw a space time diagram for a six segment pipeline showing the time it takes to process eight tasks.
8. Write short notes on any two of the followings:
  - a) Structure of multiprocessor
  - b) Direct memory access
  - c) Control memory
  - d) SCSI bus

\*\*\*\*\*