Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

B.Tech. Summer 2018 - 19 Examination

Semester: 4 **Date: 01/05/2019**
Subject Code: 03105252 **Time: 02:00am to 04:30pm**
Subject Name: Computer Organization **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Answer the following. **(15)**

1. Which of the following is not a valid Input-Output Instruction?
   a) INPR b) OUT
   c) IN d) SKI
2. Booth's algorithm uses which of the following binary representation?
   a) Unsigned Integers b) Signed Magnitude Representation
   c) 2's Complement Representation d) Both A & B
3. Microinstruction is of _____ bits.
   a) 8 b) 16
   c) 12 d) 20
4. When interrupt occurs, which of the following flip-flop (flag) is set by the computer circuit?
   a) IEN b) R
   c) FGI d) FGO
5. Which of the following is not practically implemented.
   a) SISD b) SIMD
   c) MISD d) MIMD
6. In memory-mapped I/O….
   a) The I/O devices and the memory share the same address space
   b) The I/O devices have a separate address space
   c) The memory and I/O devices have an associated address space
   d) A part of the memory is specifically set aside for the I/O operation
7. During the execution of a program which gets initialized first?
   a) MAR b) IR
   c) MDR d) PC
8. In Von-Neuman Architecture, Data and Programs are stored in different separated memory. State **TRUE or FALSE**
9. CDR is also called as _____.
10. Strobe method sends acknowledgement to the sender at every communication. **TRUE or FALSE**
11. In _____, control unit is made up of sequential and combinational circuits to generate the control signals.
12. Upon detecting an _____, the CPU stops momentarily the task it is doing, branches to the service routine to process the data transfer, and then returns to the task it was performing.
13. _____ shift is a micro operation that shifts signed binary number to the left or right. Left shift multiplies a signed binary no. by 2 and shift right divides by 2.
14. The _____ holds an 8 bit character got from an input device.
15. _____ is a digital circuit that exhibits three states. Two of the states are signals equivalent to logic 1 and 0 as in a conventional gate. The third state is a high-impedance state. The high-impedance state behaves like an open circuit, which means that the output is disconnected and does not have logic significance

Q.2 Answer the following questions. (Attempt any three) **(15)**

A) Explain booth algorithm for multiplication with a flowchart.
B) What is pipeline conflict? List the types of conflicts & the techniques to solve those conflicts. Explain data dependency in detail.

C) List all cache memory mapping techniques. Explain any two with suitable examples. Make required Assumptions.

D) What is the maximum theoretical Speed-Up possible for a system with pipelining? Justify your answer with proper proof.

Q.3 A) Explain the communication process between I/O and Memory using DMA with proper diagram. List the modes of transfer for DMA. **(07)**

B) What is Assembly Language? What is Assembler? Demonstrate the process of Second Pass of Assembler using a suitable diagram. **(08)**

OR

B) Write an assembly language program to add two double precision numbers. Write comment & suitable microoperation for each instruction. **(08)**

Q.4 A) Draw the diagram of Micro programmed sequencer for a control memory and explain it. **(07)**

OR

A) Draw the Microinstruction format. And explain each field in detail with proper examples. **(07)**

B) Explain the following instructions: BUN, BSA, ISZ, CLA, CLE, CIR, mov, jmp. **(08)**