**B.Sc. (Honours) Semester-IV Examination 2017**
**Computer Science**
**Course : BCSC-42**
**(Computer Architecture)**

**Time : 3 Hours** **Full Marks : 40**

Questions are of value as indicated in the margin

Attempt Question No. **1** and **any four** from the rest

1. (a) When a floating point number is called normalized?
   (b) How many Machine cycles and T-states are required for POP instruction in 8085 μP?
   (c) How Infinity and NaN are represented in IEEE-754 floating point representation?
   (c) What is the purpose of SIM instruction in 8085 μP? 4×2=8
2. (a) Briefly explain the various addressing modes.
   (b) What is the strategy followed in the design of carry-look-ahead adders? Explain the strategy with the help of 4-bit carry-look-ahead adder.
   (c) Represent the number $(-46.75)_{10}$ in IEEE-754 floating point representation? 3+3+2=8
3. (a) Illustrate Booth's algorithm for 2's complement multiplication.
   (b) Briefly explain different methods for binary division.
   (c) What is biased exponent? Why is it used in IEEE-754 floating point representation? 3+3+2=8
4. (a) What is pipelining? Derive the maximum theoretical speedup of pipelining. Why the pipeline cannot operate at its maximum theoretical speed?
   (b) Briefly explain vector processing. (1+2+2)+3=8
5. (a) Why zero-address instructions are used? Write two-zero-address instructions in 8085 μP.
   (b) What are the functions of Program Counter and Instruction Register in 8085μP?
   (c) Explain CALL and RET instructions of 8085 μP with an example. 3+2+3=8
6. (a) How Direct Memory Access (DMA) is done in 8085 μP?
   (b) Draw the timing diagram of memory write machine cycle in 8085μP?
   (c) Write a subroutine for division of two 8-bit unsigned numbers in 8085 μP. 2+3+3=8
7. Write short notes on **any two** : 2×4=8
   (a) Memory Interleaving
   (b) Interrupts in 8085 μP
   (c) Arithmetic Pipelining
   (d) RISC vs. CISC Architecture

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