

**2020**

**COMPUTER SCIENCE — GENERAL**

**Paper : GE/CC-3**

**Full Marks : 50**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

Answer **question no. 1** and **any four** questions from the rest.

1. Answer **any five** questions : 2×5
- (a) Write down any two characteristics of Von Neumann architecture.
  - (b) Compare between SRAM and DRAM.
  - (c) An 8 bit register contains the binary value 10011100. What is the register value after an arithmetic shift left?
  - (d) What is the significance of high-impedance state?
  - (e) Define Virtual Memory.
  - (f) State the role of stack pointer.
2. (a) What do you mean by Instruction set completeness?  
(b) Evaluate the following arithmetic expression :  
 $X = (A + B - C + D) / (E - F)$  using zero address instruction format. 5+5
3. (a) A computer employs RAM chips of  $256 \times 8$  and ROM chips of  $1024 \times 8$ . The computer system needs 2K bytes of RAM, 4K bytes of ROM, then how many RAM and ROM chips are needed? Draw a memory-address map table (address range in hexadecimal) for the system.  
(b) Define hit ratio of cache memory. [(2+2)+4]+2
4. (a) Write down the characteristics of Hardwired control unit and Microprogrammed control unit.  
(b) Write down the significance of Priority Interrupt.  
(c) State briefly any one bus arbitration technique. (2½+2½)+3+2
5. (a) Describe Booth's Multiplication algorithm.  
(b) Apply this algorithm to multiply  $(-7) \times (-3)$ . 5+5

**Please Turn Over**

6. (a) Explain the set associative cache mapping technique with the help of an example.  
(b) Write short notes on –  
(i) register indirect addressing  
(ii) immediate addressing. 6+(2+2)
7. (a) Explain the functions of PLA.  
(b) Compare between memory mapped I/O and I/O mapped I/O. 5+5
8. (a) Explain the concept of page fault in a virtual memory system.  
(b) Describe the working principle of VDU.  
(c) What is the importance of Program status word? 3+5+2
-