

2021

## 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) State the role of program counter.
  - (b) Write down any two characteristics of IAS Computer.
  - (c) Define the functions of CAM.
  - (d) Write down the significance of cache memory.
  - (e) Convert the following arithmetic expressions from infix to reverse polish notation :  

$$A + B * C/D - E$$
  - (f) Write down the two differences between memory mapped I/O and I/O mapped I/O.
2. (a) Define Instruction Cycle. Explain its operation with a flowchart. 3+5  
 (b) What do you mean by effective address of an instruction? 2
3. (a) What are the three ways a negative integer number can be represented? Explain how  $(-12)_{10}$  can be represented in each case. 3+5  
 (b) Define virtual address. 2
4. (a) Evaluate the following arithmetic expression using three address and one address instruction format :  

$$X = P + Q - R - S / M$$
 3+4  
 (b) Describe the working principle of keyboard. 3
5. (a) Consider a direct mapped cache of size 32KB with block size 512 Bytes. The size of main memory is 16 MB. Find number of bits in tag and line number. 3+3  
 (b) Write down the differences between CISC and RISC processors. 4
6. (a) Write down the flowchart / algorithm of Addition and Subtraction with sign-magnitude data. 6  
 (b) Write down the differences between direct and indirect addressing mode. 4

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7. (a) In how many ways DMA controller transfers the data? Define each of them. 1+5  
(b) Write down the significances of Polling. 4
8. (a) Write down the key features of SCSI & PCI bus. 5  
(b) Compare between write through and write back methods in cache. 5
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