2024

COMPUTER SCIENCE — HONOURS

Paper : CC-5

(Computer Organization and Architecture)

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 of the following : 2×5

(a) State the difference between opcode and operand.

(b) What is a flag register?

(c) What is the function of Instruction Register?

(d) What is a tri-state buffer?

(e) Distinguish between SRAM and DRAM.

(f) What is a non-maskable interrupt?

(g) What is cache coherence problem?

(h) What is cycle stealing in DMA?

2. (a) Provide a concise explanation of immediate, direct, and indirect addressing modes, including relevant examples for each.

(b) How do CISC and RISC architectures differ, and what are the key similarities between them? 6+4

3. (a) Design an 8×2 ROM chip with a linear organization and provide a diagram.

(b) Briefly discuss about Program Control Instruction (PCI). 6+4

4. (a) What is masking?

(b) Arrange the interrupts according to priority order.

(c) What is Program Counter? 2+6+2

5. (a) What are the main differences between memory mapped I/O and I/O mapped I/O?

(b) What is Booth's algorithm for signed multiplication? Explain with an appropriate example. 4+6

Please Turn Over

6. (a) What is micro-instruction? What is the difference between microprocessor and microprogram?
   (b) Is it possible to design a microprocessor without a microprogram?
   (c) What is Register Transfer Level in digital circuit design? (2+3)+3+2

7. (a) What is cache memory, and why is it important for CPU performance?
   (b) What is the difference between volatile and non-volatile memory?
   (c) What is virtual memory and how does it extent physical memory? 3+4+3

8. Write short notes on ***any two*** of the following : 5×2
   (a) VDU
   (b) Interrupts
   (c) Secondary storage devices
   (d) Temporary registers.
