

6228

BOARD DIPLOMA EXAMINATION, (C-16)

MAY/JUNE—2023

DCME - THIRD SEMESTER EXAMINATION

DIGITAL ELECTRONICS AND COMPUTER ARCHITECTURE

Time : 3 Hours]

[Total Marks : 80

PART—A

3×10=30

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Define AND, OR, NOT operators with truth tables.
2. List any three postulates in Boolean algebra.
3. Mention the basic principal operation of a flip-flop.
4. Write any three applications of counter.
5. List any three applications of a multiplexer.
6. Define the terms fetch cycle and execution cycle.
7. Define the terms operand, opcode and address.
8. Define floating point representation and fixed point representation of numbers.
9. Distinguish between main memory and auxiliary memory.
10. List out three modes of data transfer.

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PART—B

10×5=50

- Instructions :** (1) Answer *any five* questions.
(2) Each question carries **ten** marks.
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

- 11.** Explain the working of EX-OR and EX-NOR gates with truth tables. 10
- 12.** Explain the working of a master-slave flip-flop using logic diagram and truth table. 10
- 13.** Draw and explain a 4-bit synchronous counter operation. 10
- 14.** (a) Explain the operation of a programmable counter using flip flops. 5
(b) Describe the operation of a 4 to 10 line decoder. 5
- 15.** Draw the functional block diagram of digital computer and explain the function of each unit. 10
- 16.** Explain zero address, one address, two address and three address instructions with simple examples. 10
- 17.** (a) Explain any five addressing modes. 5
(b) Explain the principle and advantage of cache memory organization. 5
- 18.** Explain DMA controlled transfer. 10

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