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C16-CM-302/IT–302

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BOARD DIPLOMA EXAMINATION, (C-16)

MARCH/APRIL—2021

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 EX-OR gate. Give its truth table.

2. Draw the half adder using an EX-OR gate and AND gate.

3. State the need of a master-slave flip-flop.

4. List any three drawbacks of ripple counter.

5. Write the applications of De-Multiplexer.

6. What is the purpose of program counter and accumulator registers?

7. Write differences between fixed point and floating point representations.

8. Differentiate between direct and indirect addressing modes.

9. Write memory hierarchy.

10. List various peripheral devices that can be connected to computer.

PART—B

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. *(a)* Explain any five postulates in Boolean Algebra. 5

(b) Develop AND, OR, NOT, EX-OR gates using NAND gate only. 5

12. Explain the working of D flip-flop and T flip-flop with block diagram, wave-forms and truth tables. 10

13. Draw and explain Modulo-8 ripple counter. 10

14. *(a)* State the use of shift register as memory. 5

(b) Construct and explain 4 × 1 multiplexer. 5

15. Write about instruction cycle, fetch cycle and execution cycle. 10

16. Explain floating point addition and subtraction operations with flowcharts. 10

17. *(a)* Write Zero address instructions for $X = (A + B) \times (C + D)$. 5

(b) List and explain significance of any five memory device characteristics. 5

18. Explain Programmed I/O method of data transfer. 10

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