C16-**CM/IT-302**

6228

BOARD DIPLOMA EXAMINATIONS

SEPTEMBER/OCTOBER - 2020

DCME – THIRD SEMESTER

DIGITAL ELECTRONICS AND COMPUTER ARCHITECTURE

Time: 3 hours | Max. Marks: 80

PART – A **10X3= 30M**

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

1. Write any three Boolean postulates.
2. State De – morgan's theorems.
3. Define positive and negative logic levels.
4. Write names of any three counters.
5. Write three applications of multiplexers.
6. Define the terms micro operation, macro operation.
7. Define opcode, operand and address.
8. Write three differences between floating point and fixed point representation.
9. Write three advantages of cache memory.
10. List three peripheral devices that can be connected to a computer.

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PART – B 5 X 10 = 50

Instructions:

1. *Answer any **Five** questions*
2. *Each question carries **TEN** Marks.*
3. *Answer should be comprehensive and Criteria for Valuation is the content but not the length of the answer.*

11. a) Draw logic circuit for EX–OR and Ex-Nor by NAND gates only. 5

    b) Reduce the expression given below by using karnaugh map

    AB'C + B + BD' + ABD' + A'C.

12. Explain the working of a master –slave flip-flop using suitable diagram and truth table. 2+5+3

13. a) Draw and explain 4 bit synchronous counter operation.

    b) Explain the draw backs of ripple counters.

14. a) Explain the transfer of data between register.

    b) Draw circuit diagram for 1x4 Demultiplexer and explain.

15. Draw the functional block diagram of digital computer and explain the function of each unit.

16. a) Explain basic types of information representation in a computer.

    b) Explain different addressing modes.

17. a) Explain fixed point addition with flow chart.

    b) Explain the need for memory hierarchy in a computer.

18. a) Explain hand shaking procedure of data transfer.

    b) Explain interrupted initiated I/O.