C09–CM–304/C09–IT–**304**

3230

BOARD DIPLOMA EXAMINATION, (C–09)
OCT/NOV—2017
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. Draw the logic diagram for 4-bit parallel binary adder.

2. State De Morgan's theorems.

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

4. Distinguish between asynchronous and synchronous counters.

5. What is an encoder?

6. Define micro- and macrooperation.

7. Define opcode, operand and address.

8. Define fixed point representation of numbers.

9. Write the advantages of Cache memory.

10. Explain the need for an interface.

PART—B   10×5=50

Instructions : (1) Answer *any* **five** questions.

                   (2) Each question carries **ten** marks.

                   (3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. *(a)* Explain about AND, OR and NOT gates.

     (b) Explain the operation of half-adder with logic diagram and truth table.

12. Draw the logic circuit, truth table and timing diagrams for a clocked D-flip-flop. Explain its operation.

13. Explain the operation of a ripple counter.

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

     (b) Describe the operation of a 1 × 4 de-multiplexer with a circuit diagram.

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

16. Explain floating addition and subtraction operation with flowchart.

17. *(a)* Explain any five addressing modes.

     (b) Explain associative memory.

18. Explain programmed I/O method of data transfer.

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