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C09–CM–304/C09–IT–**304**

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BOARD DIPLOMA EXAMINATION, (C–09)

OCT/NOV—2016

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 symbols and truth tables for the following gates : 2×1½=3

(a) AND

(b) OR

2. State De Morgan's theorems. 2×1½=3

3. Draw the NOR latch and write its truth table. 2×1½=3

4. List the applications of counters. 1×3=3

5. Define the following : 2×1½=3

(a) Multiplexer

(b) Decoder

6. Define instruction cycle. 3

7. Define floating point representation of numbers. 3

8. What is the difference between register addressing mode and register indirect addressing mode? 3

9. Distinguish between main memory and auxiliary memory. 3

10. What is meant by asynchronous data transfer? 3

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. Draw and explain 2's complement adder-subtractor. 4+6=10

12. Explain the principle of operation of Schmitt trigger circuit. 4+6=10

13. Draw and explain a mod-8 ripple counter. 4+6=10

14. Draw the block diagram of a digital computer and explain the function of each unit. 4+6=10

15. Draw and explain the flowchart for multiplication of floating point numbers. 4+6=10

16. *(a)* Explain priority interrupt mode of data transfer. 5

(b) Explain daisy chain priority interrupt mode of data transfer. 5

17. *(a)* Explain the working of parallel-in serial-out register. 5

(b) Explain the 1 4 demultiplexer with diagram. 5

18. *(a)* Draw the flowchart indicating sequence of operations for subtraction of fixed point numbers. 5

(b) Explain the memory interleaving. 5

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