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C09–CM–304

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BOARD DIPLOMA EXAMINATION, (C–09)

MARCH/APRIL—2014

DCM—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 :

(a) NAND *(b)* NOR

2. Draw a full adder using two half adders.

3. Distinguish between synchronous and asynchronous inputs of flip-flops.

4. Draw mod-8 ripple counter.

5. Define the following :

(a) Multiplexer *(b)* Decoder

6. Define instruction cycle.

7. List any three addressing modes.

8. What is meant by instruction format?

9. Distinguish between main memory and auxiliary memory.

10. Define a bus system and state the common type of bus systems.

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. Express the Boolean function $F = A + B\ C$ in sum of minterms and product of maxterms.

12. Draw and explain the working of *(a)* NAND latch and *(b)* NOR latch.

13. Draw and explain the operation of a 4-bit ring counter.

14. Draw the block diagram of a simple accumulator based CPU and explain the function of each unit.

15. Draw and explain the flowchart for multiplication of fixed point numbers.

16. Explain the destination initiated data transfer using handshaking procedure.

17. *(a)* Explain the transfer of data between registers.

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

18. *(a)* Explain the floating point representation of numbers with example.

(b) Explain the memory interleaving.

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