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C09–IT–304

3302

BOARD DIPLOMA EXAMINATION, (C–09)

MARCH/APRIL—2014

DIT—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) AND

(b) OR

2. Express the Boolean function $F \quad A \quad \overline{B}C$ in a sum of minterms and product of maxterms.

3. Draw the NOR latch and write its truth table.

4. List the applications of counters.

5. What is a demultiplexer?

6. Define execution cycle.

7. State the basic types of information representation in a computer.

8. Explain one address instruction with an example.

9. Distinguish between physical address space and logical address space.

10. Define polling.

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 digital comparator for two 4-bit binary numbers.

12. Explain the principle of operation of monostable multivibrator circuit.

13. Explain the asynchronous decade counter with diagram.

14. Draw the block diagram of a digital computer and explain the function of each unit.

15. Draw and explain the flowchart for the sequence of operations for subtraction of floating-point numbers.

16. Explain synchronous and asynchronous data transfer.

17. *(a)* Draw and explain a serial in parallel out register.

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

18. *(a)* Explain the sequence of operations for addition and subtraction of fixed point numbers.

(b) What is meant by memory hierarchy? State its need.

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