



C09-IT-304

**3302**

**BOARD DIPLOMA EXAMINATION, (C-09)**

**MARCH/APRIL—2013**

**DIT—THIRD SEMESTER EXAMINATION**

DIGITAL ELECTRONICS AND COMPUTER ARCHITECTURE

Time : 3 hours ]

[ Total Marks : 80

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**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. State De Morgan's theorem.
2. Draw half-adder circuit using an EX-OR gate and an AND gate.
3. State the need for master slave flip-flop.
4. List the drawbacks of ripple counters.
5. Write the applications of multiplexer and demultiplexer.
6. Define macrooperation.

7. What is an addressing mode? List any two addressing modes.
8. Define floating point representation of numbers.
9. Write the advantages of cache memory.
10. What is direct memory access?

**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. Explain the postulate of Boolean algebra.
12. Explain the working of *T* flip-flop with block diagram and write its truth table.
13. Draw and explain a 3-bit Up/Down asynchronous counter.
14. Describe the sequential execution of a program stored in memory by the CPU.
15. Draw and explain the flowchart for the sequence of operations 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 4 to 10 lines decoder with diagram.
- 18.** (a) Draw the flowchart for the sequence of operations for subtraction of floating point numbers.  
(b) What is meant by memory hierarchy? State its need.

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