



C09-CM-304/C09-IT-304

3230

BOARD DIPLOMA EXAMINATION, (C-09)
MARCH/APRIL—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 half-adder and explain. 1½+1½=3
2. Draw the symbols and truth tables for the following gates : 1½+1½=3
 - (a) EX-OR
 - (b) EX-NOR
3. What is meant by edge triggering and level triggering in flip-flops? 1½+1½=3
4. List different types of registers basing on the way data enters and exits. 1×3=3
5. Define the following : 1½+1½=3
 - (a) Multiplexer
 - (b) Decoder
6. Define fetch cycle. 3
7. What is an addressing mode? List any two addressing modes. 1+2=3

- * 8. Give the examples for two-address and three-address instructions. $1\frac{1}{2}+1\frac{1}{2}=3$
9. Distinguish between main memory and auxiliary memory. $1\times 3=3$
10. Define a bus system and state the common type of bus systems. $1+2=3$

PART—B

$10\times 5=50$

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 a 4-bit parallel binary adder. $4+6=10$
12. Draw and explain the working of (a) NAND latch and (b) NOR latch. $5+5=10$
13. Explain a 4-bit synchronous binary counter with diagram. $4+6=10$
14. Draw the block diagram of a simple accumulator based CPU and explain the function of each unit. $4+6=10$
15. Draw and explain the flowchart for addition of floating-point numbers. $4+6=10$
16. Explain the destination initiated data transfer using handshaking procedure. $4+6=10$
17. (a) Draw a 3-bit synchronous UP/DOWN counter. 5
 (b) Explain the 1×4 demultiplexer with diagram. 5
- * 18. (a) Explain the fixed-point representation of numbers with example. 5
 (b) What is meant by virtual memory? State the reasons for using virtual memory. $2+3=5$
