C16-CM–303

6234

BOARD DIPLOMA EXAMINATION, (C-16)

MARCH/APRIL—2021

DCME - THIRD SEMESTER EXAMINATION

DIGITAL ELECTRONICS

Time : 3 hours] [*Total Marks* : 80

PART—A

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. Convert decimal number 124·6 into Binary and Hexadecimal. 1½+1½

2. Subtract 101010 from 110111 using 2's complement method.   3

3. Write the Excess-3 code and Gray code for decimal digit 9.   1½+1½

* 4. Define propagation delay and fan-out of digital ICs.   1½+1½

5. List the applications of multiplexer.   3

6. Draw the logic circuit of half adder using NOR gates only.   3

7. Differentiate between level clocking and edge triggering.   3

8. Draw NOR latch with truth table.   3

9. List the applications of flip-flops.   3

10. Write differences between EEPROM and UVEPROM. 3

*

PART—B 10×5=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. *(a)* Explain working of AND, NOR and EX-OR gates with truth

(b) Minimize $\overline{A}BC\ \overline{A}BC\ ABC\ ABC$ ☐ ☐ using 4
Karnaugh map.

4

12. *(a)* State De-Morgan's theorems. 6

(b) Realize AND, OR and NOT gates using NOR gates.

13. Explain the working of open collector TTL NAND gate with circuit 10
diagram.

14. Explain the working of 2's complement adder/subtractor with logic 10
block diagram.

10

15. Draw and explain the working of decimal to BCD encoder. 10

16. Draw and explain the working of asynchronous decade counter.

7

3
* **17.** *(a)* Draw and explain the working of 4-bit ring counter.

(b) Draw the logic circuit of 3-bit asynchronous up-down counter.

18. Draw and explain the working of 4-bit shift right register with timing

diagram. 10

★ ★ ★

tables. 6