6234

BOARD DIPLOMA EXAMINATION, (C-16)

MARCH/APRIL—2021

DECE - 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

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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 tables.   6

(b) Minimize $A\bar{B}C + \bar{A}BC + A\bar{B}\bar{C} + \bar{A}B\bar{C}$ using Karnaugh map.   4

12. *(a)* State De-Morgan's theorems.   4

(b) Realize AND, OR and NOT gates using NOR gates.   6

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

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

17. *(a)* Draw and explain the working of 4-bit ring counter.   7

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

18. Draw and explain the working of 4-bit shift right register with timing diagram.   10

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