4640

C14-EE–505

4640

BOARD DIPLOMA EXAMINATION, (C-14)

MARCH/APRIL—2021

DEEE - FIFTH SEMESTER EXAMINATION

DIGITAL ELECTRONICS

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

PART—A

4×5=20

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

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

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Draw the logic symbols and truth tables for the AND, OR gates.

2. State De-Morgan's theorems.

3. Draw the circuit of TTL NAND gate with Totem pole output.

4. List the characteristics of digital ICs.

5. Define the terms power dissipation and propagation delay.

6. Draw the Full Adder using two Half Adders and OR gate.

7. List any four applications of Decoders.

8. Write the need for CLEAR and PRESET inputs of Flip-Flops.

9. Draw the T-Flip-Flop using JK Flip-Flop.

10. Distinguish between RAM and ROM.

PART—B

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

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

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

11. *(a)* Draw the symbols and truth tables for the following gates. 6

(i) NAND

(ii) NOR

(b) Using K-Map method, simplify the following Boolean function and realize using basic gates. 9

$$Y = \overline{A}\overline{B}\overline{C} + \overline{A}\overline{B}C + A\overline{B}\overline{C} + ABC$$

12. *(a)* Compare TTL, CMOS and ECL logic families. 5

(b) List any five IC numbers of 2 input digital IC logic gates. 5

(c) Mention any five characteristics of digital ICs. 5

13. Draw and explain the working of TTL NAND gate with open collector. 15

14. Draw and explain the operation of 3 × 8 Decoder. 15

15. Explain the working of serial adder with a block diagram. 15

16. Draw and explain the level clocked D and T flip-flops with truth tables. 15

17. Draw and explain Master-Slave JK flip-flop with its truth tables. 15

18. *(a)* Draw and explain the working of basic dynamic MOS RAM cell. 9

(b) Briefly explain *(i)* memory read operation, *(ii)* access time and *(iii)* memory capacity. 6

★ ★ ★