Exam. Code : 105702
Subject Code : 1441

B.Sc. (Information Technology) 2nd Semester

(Batch 2021-24)

PRINCIPLES OF DIGITAL ELECTRONICS

Paper—I

Time Allowed—3 Hours] [Maximum Marks—75

Note :— Attempt **FIVE** questions in all, selecting at least **ONE** question from each section. The fifth question may be attempted from any section. All questions carry equal marks.

SECTION—A

1. (i) Write Gray code for 10110_2.

   (ii) Convert $(135.12)_8$ into binary.

   (iii) Covert 10010010 into hexadecimal code.

   (iv) Multiply $(38)_8$ with $(25)_8$.

2. Do the following :

   (i) (240-113) using 2's complement.

   (ii) Write the excess-three codes for decimal numbers 40.

SECTION—B

3. (i) Design a full adder using NAND gates only.

   (ii) Use K-map to simplify $F = \Sigma(1, 3, 4, 5, 10, 13, 15)$.

4. (i) Convert $(A + B + C)(B + C)$ into standard POS form.

   (ii) Simplify $F = \Sigma(1, 3, 5, 7, 9)$ using Boolean algebra.

SECTION—C

5. (i) Explain the working of JK flip-flop.

   (ii) Explain the working of serial in parallel out shift register.

6. (i) Design and explain the working of 1 to 4 de-multiplexer.

   (ii) Explain the working of 2-bit synchronous counter and explain its working.

SECTION—D

7. (i) Describe the selection logic used to select a device out of a 04 devices connected.

   (ii) Differentiate PROM and EPROM.

8. (i) Differentiate between static and dynamic memory.

   (ii) Draw read and write control timing diagrams for accessing and writing to a memory location.