PURBANCHAL UNIVERSITY

2023

Bachelor in Information Technology (B.I.T) / First Semester / Final Time: 03:00 hrs. Full Marks: 80 / Pass Marks: 32 BIT173CO: Digital Logic(New course)

Candidates are required to give their answers in their own words as far as practicable.

Figure in the margin indicate full marks.

<u>Group A</u>

Answer TWO questions.

- 1. (a) Define combinational circuit? Explain a Full-Subtractor circuit in detail.
 - (b) What is ROM? explain.
- 2. (a) What is counter? List different types of counters and design Synchronous 3-bit Counter.
 (b) Subtract (532)10 from (878)io using 9's and 10's compliment method.
- 3. (a) Perform the following.
 (i) (43021).0= (?)2 (ii) (BO3.83)16= (?)io (iii) (3567)8= (?)r6
 (b) What is Decoder? Discuss 3x8 line decoder in detail.

<u>Group B</u>

Answer SEVEN questions.

- 1. Define Register. Explain PIPO Register with timing diagram.
- 2. What is Logic Gate? List different types of Logic Gates and explain.
- 3. What is Flip-Flop? Explain JK Flip-Flop in details.
- 4. State and prove De-Morgans's theorem.
- 5. Simplify the following Boolean. expression using k-ma F(A,B,C,D)=2{ 1,2,4,6,8,10, 12} d(A,B,C,D)=43,5,7,9}
- 6. What is Clock pulse? Explain in detail .How it is important in
- 7. Design 4x1 MUX with logic diagram and truth table.
- 8. Differentiate between sequential and combinational circuit with examples.
- 9. Write short note on(Any TWO:
 - (a) Gray code
 - (b) Universal Logic Gates
 - (c) Master Slave Flip-Flop

7 X 8 = 56

 $2 \times 12 = 24$