

PURBANCHAL UNIVERSITY**2022**

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.

Group A**Answer TWO questions.****2 X 12 = 24**

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 $(878)_{10}$ using 9's and 10's complement method.
3. (a) Perform the following.
(i) $(43021)_{10} = (?)_2$ (ii) $(BO3.83)_{16} = (?)_{10}$ (iii) $(3567)_8 = (?)_6$
(b) What is Decoder? Discuss 3×8 line decoder in detail.

Group B**Answer SEVEN questions.****7 X 8 = 56**

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
 $F(A,B,C,D) = \sum (1,2,4,6,8,10,12)$
 $d(A,B,C,D) = \{3,5,7,9\}$
6. What is Clock pulse? Explain in detail .How it is important in
7. Design 4×1 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