BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI, RAJASTHAN

CS/ECE/EEE/INSTR F215 DIGITAL DESIGN

TUTORIAL-1

8th and 10th August 2025

Question (1 to 5):

Convert the decimal number 123.123 (base 10) into the following number systems:

- 1. Binary (base 2)
- 2. Octal (base 8)
- 3. Hexadecimal (base 16)
- 4. Gray Code (only for the integer part)
- 5. Convert each result back to decimal to verify correctness.

Q6. Prove that, $A+A + \bar{A}B = A + B$

Q7. If $(123)_X = (12X)_3$, which of the following is correct:

- (a) X=3
- (b) X=4
- (c) Both (a) and (b)
- (d) None of these

Q8. Simplify and minimise the following Boolean expression

$$R + S + \overline{PQ + PQ\overline{R} + PQ\overline{S}}$$

Q9. Let M = 57381 and N = 1246. Use 10's complement to find M-N and N-M.