

GYANMANJARI INNOVATIVE UNIVERSITY

GYANMANJARI INSTITUTE OF TECHNOLOGY
B.Tech. - Mid Semester Examination (MSE) - S2026

Enrollment No.: _____

Subject Code: BETEE10302

Subject Name: Digital Electronics

Time: 10:30 AM to 12:30 PM

Date: 18/03/2026

Semester: 2

Total Marks: 60

Instructions:

1. Question No. 1 is compulsory.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a) Explain Binary to Hexadecimal conversion with example. 05
- (b) Perform the following conversions: 05
- $(725)_{10}$ to Binary, Octal, Hexadecimal
 - $(1011011)_2$ to Decimal
 - $(3A9)_{16}$ to Decimal
- (c) Convert the following: 10
- $(45)_{10}$ to Binary
 - $(101101)_2$ to Decimal
- Q.2 (a) Explain Gray code with example. 05
- (b) Explain Exclusive-OR gate with truth table and Boolean expression. 05
- OR
- (b) Draw the symbols and write truth tables of AND, OR, and NOT gates. 05
- (c) Simplify the following using Boolean laws: 10
- $$F = AB + A'B + AB'$$
- OR
- (c) Explain NAND and NOR gates in detail and prove they are universal gates. 10
- Q.3 (a) List and explain characteristics of a good digital IC. 05
- (b) Differentiate between SOP and POS forms. 05
- (c) Simplify the following with K-map: 10
- $$F(A,B,C,D) = \Sigma(1,3,7,11) + d(0,2,5)$$
- OR
- Q.3 (a) Prove De-Morgan's First theorem for three variable using truth table. 05
- (b) Simplify 2-variable K-map with example. 05
- (c) Explain combinational digital circuit with block diagram. 10
