A–1136

Total Pages : 4 **Roll No. .....**

BCA (N)-120

Digital Electronics

Examination February, 2026

Time : 2:00 Hrs. Max. Marks : 70

Note* :–** This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given therein. ***Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

Section–A

(Long Answer Type Questions) (2×19=38)

***Note* :–** Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

1. Explain all binary codes : BCD, Gray code, Excess-3 code, alphanumeric codes. Show conversions between binary $\leftrightarrow$ BCD and binary $\leftrightarrow$ Gray.

2. Define Boolean algebra. What is Huntington's postulates ? What are the several new preposition derived using the basic Huntington's postulates ?

3. Minimize the following Boolean function using 5-variable Karnaugh-map :

   $F(A, B, C, D, E) = \Sigma m(1, 3, 4, 5, 7, 9, 12, 13, 16, 17, 19, 23, 25, 29)$.

4. What are combinational circuits ? Explain multiplexer, demultiplexer, encoder, and decoder with diagrams and applications.

5. Explain in detail the working of MOD-10 counter, ring counter, and Johnson counter with diagrams.

Section–B

(Short Answer Type Questions) (4×8=32)

***Note* :–** Section 'B' contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. Explain the steps of the Quine-McClusky method of minimization.

2. Write short notes on the following :

   (a) Logic gates

   (b) Truth tables

3. What is flash memory ? Explain its features.

4. Explain half adder and full adder with truth tables.

5. Distinguish between SRAM and DRAM.

6. Write a short note on incompletely specified Boolean functions.

7. Explain master- slave JK flip-flop.

8. What is memory expansion ? Explain with an example.

****