Bachelor of Science (B.Sc. I.T.) Semester—II (C.B.S.) Examination
FUNDAMENTALS OF DIGITAL ELECTRONICS
Paper—I

Time : Three Hours]   [Maximum Marks : 50

Note :— (1) **ALL** questions are compulsory.

        (2) Draw neat labelled diagrams wherever necessary.

    EITHER

1. (a) Explain double dabble method of converting decimal number into its binary equivalent.
        5

    (b) What are binary codes ? Explain gray code with suitable example.   5

    OR

    (c) Do as directed :

        (i) $(1101)_{10} = (\quad)_2$

        (ii) $(234)_7 = (\quad)_{10}$.   5

    (d) Explain 2's complement method of number representation.   5

    EITHER

2. (a) Construct AND, OR and NOR gates using only NANO gates.   5

    (b) State and prove De-Morgan's theorem.   5

    OR

    (c) What is a k-map ? How does it help in reducing the equations in SOP form ?   5

    (d) Explain Quine McClusky method.   5

    EITHER

3. (a) What is a multiplexer ? Explain the working of 4 : 1 multiplexer with circuit diagram.
        5

    (b) Explain the working of a 3-bit asynchronous counter.   5

    OR

    (c) What is full adder ? Explain the working of a full adder circuit with neat diagram.   5

    (d) Explain the working of JKMSFF with circuit diagram.   5

    EITHER

4. (a) Explain ROM and EPROM.   5

    (b) Explain the organization of a hard disk.   5

    OR

    (c) Write a note on any two I/O devices.   5

    (d) What is cache memory ? Explain.   5

5. Attempt *all* :

    (a) What is an ASCII code ? Explain.   2½

    (b) Why NOR gates is called as universal building blocks ? Explain.   2½

    (c) What is a demultiplexer ? Explain.   2½

    (d) What is RAM ? Explain.   2½