NIR/KW/18/2230

Bachelor of Computer Application (B.C.A.) Semester–III Examination
DIGITAL ELECTRONICS–I
Paper–VI

Time : Three Hours]   [Maximum Marks : 50

Note :— (1) All questions are compulsory and carry equal marks.

         (2) Draw neat and labelled diagram wherever necessary.

EITHER

1. (a) Explain double-dabble method with suitable examples.   5

    (b) Solve the following :

        (i) $(C7\ D8)_{16} = (?)_{10}$ (ii) $(21.6)_{10} = (?)_2$ 5

OR

    (c) Write a short note on alphanumeric code.   5

    (d) What is Excess-3 code ? Perform the following addition using excess-3 code :

        (i) $11 + 22$ (ii) $36 + 41$ 5

EITHER

2. (a) How are real numbers represented ? Explain.   5

    (b) Explain the various methods to represent a negative perform the following subtraction using 1'S complement method :

        $(10111)_2 - (101)_2$ 5

OR

    (c) Explain Binary subtraction by 2'S complement method with suitable examples.   5

    (d) Explain the following with examples :

        (i) Underflow of data

        (ii) Range of data

        (iii) Mantissa of data.   5

EITHER

3. (a) Why NAND and NOR gates are called universal building blocks ? Explain with logic diagram.   5

    (b) Explain AND, OR and NOT gate with their truth table and logic symbol.   5

OR

    (c) Explain the construction and working of EX-NOR gate using basic gates.   5

    (d) Differentiate between basic gates and universal building blocks.   5

EITHER

4. (a) State and prove De-Morgen's theorem.   5

    (b) Prove the following identities using Boolean laws :

        (i) $(A+B)\ (A+C) = A+BC$ (ii) $A + \overline{A}.B = A + B$ 5

OR

    (c) What is K-map ? What are advantages and disadvantages of K-map ?   5

    (d) Explain the terms :

        (i) Sum of product

        (ii) Product of sum with reference to K-map with example.   5

5. (a) Convert the Hexadecimal number $(57\ B.8)V_{16}$ into equivalent binary number.   2½

    (b) How are positive numbers represented ? Explain.   2½

    (c) Draw the logic diagram of EX-OR gate and give its truth table.   2½

    (d) Prove that :

        $(A + B)\ (A + \overline{B})\ (\overline{A} + C) = AC$ 2½