Note: Answer all questions from Part - A and Part - B. Each question carries 4 marks in Part - A and 12 marks in Part - B.

PART – A (8 x 4 = 32 Marks) [Short Answer Type]

1. Convert the decimal number 76 into its hexa decimal, binary and octal number equivalents.
2. Simplify the Boolean expression $x'y' + xy + x'y$
3. Write the truth tables of R, S and J, K flip flops.
4. Explain the working of ring counter by drawing its circuit diagram and timing diagram.
5. Enumerate the ECL logic family characteristics.
6. Draw the circuit diagram of CMOS transmission gate (Bilateral switch) and explain its working.
7. Enumerate the types of ROMs.
8. Draw the symbolic representation of a dynamic RAM cell and explain its working.

PART – B (4 x 12 = 48 Marks) [Essay Answer Type]

9. a) Simplify the Boolean equation $Y = \overline{A} \overline{B} \overline{C} \overline{D} + \overline{A} \overline{B} \overline{C} \overline{D} + \overline{A} \overline{B} C \overline{D} + \overline{A} \overline{B} C \overline{D} + A B \overline{C} \overline{D} + A B C \overline{D}$ using karnaugh map method and implement the circuit using NAND gates.
   b) How BCD addition is performed. Explain the working of BCD adder circuit by drawing its circuit diagram.
10. a) Draw the circuit diagram of 4-bit ripple counter and explain its working using timing diagram. Convert this circuit into Mod-10 counter.
    b) Write an essay on monostable multivibrators (one shot).
11. a) Draw the circuit diagram of TTL NAND gate and explain its working. Discuss the important characteristics of TTL logic families.
    b) What is multiplexing? Draw the circuit diagram of 8x1 multiplexer and explain its working. Implement the logic function $f = \Sigma (0, 1, 2, 5)$ using it.
12. a) Discuss the ROM architecture and explain the timing for ROM read operation. Enumerate the applications of ROM.
    b) Describe the PLD architectures PROM, PAL and PLAS.