

Register No.:

2026

October 2024

Time - Three hours
(Maximum Marks: 100)

- [N.B.]** Answer all the questions, choosing any two subdivision from each question. Each subdivision carries 10 marks.]
1.
 - (a) Convert $(38)_{10}$ into binary, octal and hexadecimal numbers.
 - (b) Write the step by step procedure to perform binary subtraction using 2's complement method. Also using this method perform binary subtraction of $(100110)_2 - (001110)_2$.
 - (c) Simplify using K-map $f(a,b,c,d) = \sum(0,1,4,5,6,7,9,11,13,14)$.
 - (d) Discuss about any two types of special codes.

 2.
 - (a) Realize NOT, AND, OR gates using NAND gates.
 - (b) Implement the following boolean expression using logic gates.
 $F = A'BC + AC + AB'C' + ABC'$
 - (c) Write the logical expression, symbol and truth table for EX-OR and EX-NOR gates.
 - (d) What are universal gates? Also write the logical expression and truth table for universal gates.

 3.
 - (a) Describe the operation of 4 to 1 multiplexer.
 - (b) Write about the function of 8 to 3 encoder.
 - (c) Describe the operation of full adder with necessary diagrams.
 - (d) Write a note on parity generator and checker.

[Turn over.....

4.
 - (a) Explain the operation of decade counter.
 - (b) Describe about JK, D and T flip flops.
 - (c) Explain the operation of 4 bit synchronous counter.
 - (d) Discuss about the basic latches using NAND, NOR gates.

5.
 - (a) Discuss about the various types of Read Only Memory (ROM).
 - (b) Explain the structure of SRAM and DRAM.
 - (c) Explain the operation of Parallel In Serial Out (PISO) shift registers.
 - (d) Discuss the principles of cache memory and associative memory.
