

Time: 3 Hours

Max. Marks: 60

- Instructions:**
1. It is compulsory to answer all the questions (2 marks each) of Part -A in short.
 2. Answer any four questions from Part -B in detail.
 3. Different sub-parts of a question are to be attempted adjacent to each other.

PART -A

- Q1 (a) Convert the binary number 1101.0101 into decimal. (2)
- (b) How many bits are required to distinguish 108 distinct objects? (2)
- (c) What do you understand by minterms? (2)
- (d) What are applications of decoders? (2)
- (e) What is latch? (2)
- (f) Which is the fastest logic family? (2)
- (g) Give the specifications of analog to digital converters. (2)
- (h) What is dynamic RAM? (2)
- (i) Draw the circuit of sample and hold circuit. (2)
- (j) Give the truth table of JK flip-flop. (2)

PART -B

- Q2 (a) Explain the different type of binary codes. (5)
- (b) Implement the AND, OR and NOT operations using NAND gates. (5)
- Q3 (a) Minimize the function $F(A,B,C,D) = \sum m(0,1,2,3,7,8,9,10,11,12,13)$ using K-map. (5)
- (b) Minimize the function $Y(A,B,C,D) = \sum m(0,1,3,7,8,9,11,15)$ using Quine-Mcclusky (5)
metode.
- Q4 Design the full adder and full subtractor using NAND gates. (10)
- Q5 (a) Draw and explain the circuit of ECL logic family. (5)
- (b) Draw and explain the circuit of weighted resistor digital to analog converter. (5)
- Q6 (a) Design a 3-bit ripple counter using JK flip-flop. (5)
- (b) Convert SR flip-flop into JK flip-flop. (5)
- Q7 Write the short notes on (1) PLA (2) FPGA. (10)