

BT-4 / M-19
DIGITAL ELECTRONICS
Paper-ECE-204 E

*Time allowed : 3 hours]**[Maximum marks : 100*

Note : Attempt any five questions, selecting at least one question from each unit.

Unit-I

1. Write the minimizing procedure followed in Q-M method. Using Q-M method, obtain the minimal expression for $F = \sum m(1, 2, 3, 6, 7, 8, 9, 13, 15) + d(10, 11, 12, 14)$. Also realise the expression using NAND gate only. 20
2. (a) Describe and design Excess 3 code converter. 10
(b) Implement the Boolean expression of X-OR gate using NAND and NOR gates. 10

Unit-II

3. (a) Differentiate between a flip flop and a Latch. Explain the working of J-K flip flop. Also explain the problem associated with JK flip flop. 10
(b) Draw a diagram for 5 bit ring counter using J K flip flop. Explain its working with the help of timing diagram. 10
4. (a) Design a full adder. What is difference between a binary adder and a BCD adder ? 10
(b) What is demultiplexer ? Explain the working of 1:n demultiplexer using logic diagram. 10

(2)

Unit-III

5. (a) Write in detail the characteristics of digital logic gates. Explain them. 10
- (b) Explain working of CMOS NAND gate. 10
6. (a) Explain the working of ECL inverter. What are drawback of ECL logic gates ? 10
- (b) What is the meaning of Tristate logic ? Draw diagram of TTL NAND gate and explain its working. 10

Unit-IV

7. Write a short note on :
- (a) FPGA
- (b) ROM. 20
8. (a) List the specifications of D/A converters. Explain weighted resistor D/A converter. 10
- (b) Explain the working of dual slope A/D converter. 10