

MODEL QUESTION PAPER

TED(15)-3042
(REVISION-2015)

Reg No.....
Signature.....

THIRD SEMESTER DIPLOMA EXAMINATION IN ENGINEERING /TECHNOLOGY

DIGITAL ELECTRONICS

[Time:3 hours

(Maximum Marks: 100)

PART-A

(Maximum marks : 10)

Marks

I. Answer the following questions in one or two sentences. Each question carries 2 marks.

1. Write radix of a binary number system.
2. List any two weighted codes.
3. Define fan in of a logic gate.
4. List the applications of shift register.
5. Define accuracy of Digital to Analog Converter.

(5*2=10)

PART-B

(Maximum marks : 30)

II. Answer any five of the following questions. Each question carries 6 marks.

1. Describe BCD code and EXCESS 3 code .
2. Draw and explain TTL inverter.
3. Design a full subtractor.
4. Differentiate between synchronous and asynchronous logic circuits.
5. Draw and explain a serial in parallel out shift register.
6. Draw and explain a 3 bit up counter using JK flip flop.
7. Draw and explain the working of R-2R type Digital to analog converter.

(5*6=30)

PART-C

(Maximum marks : 60)

Answer one Full question from each unit. Each question carries 15 marks.

UNIT-1

III a. Convert the following decimal numbers to binary and hexa decimal.

1. (32.82)₁₀
2. (638.53)₁₀
3. (423.05)₁₀
4. (93.53)₁₀

(8 marks)

b. Implement basic gate using NAND gate only.

(7 marks)

OR

IV a. Subtract using 2's complement method.

1. $(320)_{10} - (250)_{10}$ 2. $(435)_{10} - (625)_{10}$ (8 marks)

b. Simplify the given expression using Karnaugh map.

$Y = \Sigma (1,5,6,12,13,14) + d(2,4)$ (7 marks)

UNIT-2

V.a. Draw and explain CMOS NAND gate . (8 marks)

b. Describe the operation of 4:1 multiplexer with circuit diagram. (7 marks)

OR

VI. a. Define the terms related to TTL logic gates.

1. noise margin 2. Propagation delay
3. fan out 4. V_{OH} (8 marks)

b. Draw and explain 3 bit encoder. (7 marks)

UNIT-3

VII. a. Discuss JK flip flop with truth table using NAND gates. (8 marks)

b. Explain the working of ring counter with truth table. (7 marks)

OR

VIII. a. Discuss various types of shift registers. (15 marks)

UNIT-4

IX. a. Draw and explain a mod-10 ripple counter using JK flip flop. (8 marks)

b. Draw and explain the working of R-2R type Digital to analog converter. (7 marks)

OR

X. a. Differentiate synchronous and asynchronous counters. (8 marks)

b. Explain weighted resistor type Digital to Analog converter with suitable circuit diagram . (7 marks)
