TED (15/19) 3212
(Revision-2015/19)

N22-09554

Reg.No.....
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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER - 2022

DIGITAL CIRCUITS

[Maximum marks: 100] (Time: 3 Hours)

PART – A
Maximum marks : 10

I (Answer ***all*** the questions in one or two sentences. Each question carries 2 marks)

1. List various number systems.
2. List various digital codes.
3. Define combinational logic circuit.
4. List any two applications of shift registers.
5. List some D/A ICs. (5 x 2 = 10)

PART – B
Maximum marks : 30

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

1. State and explain De-Morgan's theorem.
2. Realize OR and EXOR gates using NAND gate.
3. Explain the working of a TTL inverter with circuit diagram.
4. Explain the working of 4:1 multiplexer with logic diagram.
5. Explain the operation of SR flip flop with logic diagram and truth table.
6. Compare synchronous and asynchronous counters.
7. Define byte, nibble and capacity. (5 x 6= 30)

PART – C
Maximum marks : 60

(Answer one full question from each unit. Each full question carries 15 marks)

UNIT –I

III.(a) Convert into Binary. (i) $1024_{(8)}$ (ii) $98_{(10)}$ (iii) $5A9D_{(16)}$ (7)

(b) Simplify the Boolean expression.

(i) AB + A(B+C)+B(B+C) (ii) A'B'C'+A'BC'+AB'C'+ABC' (8)

OR

IV.(a) Simplify using K map. $F(A,B,C,D)=\sum m(0,1,2,3,5,7,8,9,10)+d(13,15)$. (8)

(b) Solve the following. (i)1000--1010 Using 2's complement method.

(ii) 110010÷101 (iii) 1011.01 x 110.1 (7)

UNIT-II

V. (a) Explain the operation of a Full adder circuit using NAND Gates. (8)

(b) Explain the operation of TTL NAND gate. (7)

OR

VI. (a) Describe the operation of Decimal-BCD encoder. (8)

(b) Define (i)Propagation delay (ii) Power dissipation (iii)fan in (iv) Fan out. (7)

UNIT-III

VII.(a) Explain the working of Decade counter. (8)

(b) Explain the operation of J-K pulse triggered flip flop. (7)

OR

VIII.(a) What is a shift register? Explain the working of serial in serial out shift register. (8)

(b) Explain the working of a 4 bit asynchronous up counter. (7)

UNIT-IV

IX. (a) Explain the operation of R- 2R D/A converter. (8)

(b) Explain the various types of ROM. (7)

OR

X. (a) Explain the operation of S-A A/D converter. (8)

(b) Explain Sensitivity and Resolution of a digital meter. (7)

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