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TED (15) – 3042

Reg. No.....

(REVISION — 2015)

Signature

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019

DIGITAL ELECTRONICS

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

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

1. Define radix of a number system.
2. Identify encoder.
3. Identify D flip flop.
4. Define accuracy.
5. Define synchronous counter.

(5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Discuss universal gates. Implement basic gates using NOR gates only.
2. Design and implement a Full Adder circuit.
3. Draw and explain SR flip flop using NAND gates.
4. Identify a register. List different types of registers.
5. Draw and explain a 3 bit up/down counter.
6. List different types of Analog to Digital Converter and Digital to Analog Converter.
7. Compare fan in, fan out and power dissipations of TTL, ECL and CMOS logic families.

(5×6 = 30)



PART — C

(Maximum marks : 60)

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

UNIT — I

- III (a) Convert the following numbers.
- (i) $(6CD)_{16} = (\dots\dots\dots)_2$ (iii) $(485)_{10} = (\dots\dots\dots)_2$
- (ii) $(192.625)_{10} = (\dots\dots\dots)_2$ (iv) $(11011101100.111)_2 = (\dots\dots\dots)_{16}$ 8
- (b) Simplify the given Boolean expression. $Y = \overline{(\overline{A+A+B})(\overline{B+B+C})}$ 7

OR

- IV (a) Convert to binary and add the given decimal numbers.
- (i) $150.75 + 235.25$ (ii) $428 + 180$ 8
- (b) Simplify the given expression using Karnaugh map
- $f(a, b, c, d) = \sum m(0, 3, 6, 8, 10, 12, 14) + d(2, 4, 11)$ 7

UNIT — II

- V (a) Explain TTL inverter with circuit diagram. 8
- (b) Draw and explain 3 bit encoder. 7

OR

- VI (a) Explain the working of CMOS NAND gate. 8
- (b) Draw and explain parallel binary adder. 7

UNIT — III

- VII (a) State Race around condition. List the methods to eliminate this problem. 8
- (b) Explain the working of 4 bit ring counter with truth table. 7

OR

- VIII (a) Distinguish between synchronous and asynchronous sequential logic circuits. 8
- (b) Draw and explain the working of Johnson counter with truth table. 7

UNIT — IV

- IX (a) Explain the working of mod-10 asynchronous counter using JK flip flop. 8
- (b) Draw and explain the working of R-2R type Digital to Analog Converter. 7

OR

- X (a) Explain the working of flash type Analog to Digital Converter. 8
- (b) Draw and explain weighted resistor type Digital to Analog Converter. 7