TED (15) – 3042

(REVISION — 2015)

Reg. No. ....[p.t.o..

Signature ....

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

DIGITAL ELECTRONICS

[*Time* : 3 hours

(Maximum marks : 100)

Marks

PART — A

(Maximum marks : 10)

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

1. Convert binary number 101101 is equal to hexadecimal number.

2. List two alpha numeric codes.

3. List any two features of CMOS logic family.

4. Draw SR flip flop using NAND gate only.

5. Define resolution and accuracy for an ADC. $(5 \times 2 = 10)$

PART — B

(Maximum marks : 30)

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

1. State and explain Demorgan's theorems.

2. Draw and explain the operation of 4 × 1 Multiplexer.

3. Draw and explain the working principle of CMOS NAND gate.

4. State the race around condition and methods to overcome the problem.

5. Draw and explain the working of ring counter.

6. Explain Weighted resistor DAC.

7. Differentiate between synchronous and asynchronous counters. $(5 \times 6 = 30)$

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[P.T.O.

Marks

PART — C

(Maximum marks : 60)

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

Unit — I

III   (a)   Implement AND, OR, NOT, EXOR and EXNOR using NAND gate.   10

      (b)   List the advantages and disadvantages of K-map.   5

Or

IV   (a)   Simplify using K-map

$$\Sigma m(4,5,7,8,10,11,13,14) + \Sigma d\,(0,1,2)$$
     10

      (b)   Write short note on excess-3 code.   5

Unit — II

V   (a)   Explain the circuit of TTL inverter.   8

    (b)   Draw and explain the operation of 3 bit encoder.   7

Or

VI   (a)   Define the terms Noise margin, noise immunity, propagation delay, fan-in and fan-out.   10

      (b)   Draw and explain parallel adder.   5

Unit — III

VII   (a)   Explain the working of master slave JK flip flop.   8

      (b)   Explain the working of Johnson counter and its applications.   7

Or

VIII   (a)   Explain D and T flip flops.   8

       (b)   Explain the working of different types of shift registers.   7

Unit — IV

IX   (a)   Explain mod-8 synchronous down counter using JK flip flop.   9

      (b)   List the different types of ADC and DAC.   6

Or

X   (a)   Explain mod-10 asynchronous counter using JK flip flop.   9

    (b)   Explain Counter type ADC.   6

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