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Reg. No.	
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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 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. 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.

 $(5 \times 6 = 30)$

[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	
ΙX	(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