TED (21) -3044
(Revision- 2021)

N22-2110220227B

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

DIGITAL ELECTRONICS

(Maximum Marks : 75) [Time : 3 hours]

PART–A

I. Answer **all** the following questions in one word or one sentence. Each question carries 1 mark.

(9x1=9 marks)

		Module Outcome	Cognitive level
1	Hexadecimal value of decimal 21 is……	M 1.01	U
2	Write the 1's complement of 1010	M 1.01	U
3	Write any one universal logic gate and show its symbol.	M1.03	R
4	Name the fastest logic family.	M2.02	U
5	Number of control signals required for a 4x1 Multiplexer is…...	M2.04	U
6	Name the type of logic circuit in which the output depends upon only the present input and present state.	M3.01	U
7	Serial in serial out shift register has……..input line and ……. output line.	M3.03	U
8	Counter without common clock is called……..counter.	M4.01	U
9	Name the memory which is also called volatile memory.	M4.04	R

PART - B

II. Answer **any Eight** questions from the following. Each question carries 3 marks.

(8x3=24marks)

		Module Outcome	Cognitive level
1	Add the following Hexadecimal numbers. a) AC6 + 9B b) B59 + 64	M 1.01	U
2	Show the conversion of NAND gate to AND and NOT gates.	M 1.03	U
3	Reduce the expression Y=$\sum m$ (0,2,3,4,5) using K Map.	M1.04	A
4	Write any three features of TTL logic family.	M2.02	U
5	Show the functional diagram and logic diagram of logic circuit to select one data line at a time from two input data lines.	M2.04	A
6	Draw the logic of a 4 bit Ripple Carry Adder.	M2.04	U
7	Draw the logic symbol and truth table of T flip flop. Mention its applications.	M3.02	U
8	Draw the logic diagram of 3 bit ring counter using D flip flops.	M3.04	U

9	Write any three features of Asynchronous counter.	M4.01	U
10	Differentiate PROM, EPROM.	M4.04	U

PART - C

Answer **all** questions from the following. Each question carries 7 marks.

(6x7=42marks)

		Module Outcome	Cognitive level
III	Perform the following operations. (i) Multiply 1011_2 by 110_2 (ii) 46-14 using 8 bit 2's complement method. (iii) Convert $2AB_{16}$ to binary.	M1.01	U
	OR		
IV	Minimize the following expression using K Map $F(A,B,C) = \sum m\,(1,4,7,10,13) + \sum d(5,14,15)$	M1.04	U
V	Using K Map design a 2 bit Gray to Binary code converter.	M2.04	U
	OR		
VI	Explain 3 line to 8 line Decoder using truth table only.	M2.04	U
VII	With the help of conversion table and K Map show the conversion of JK flip flop to T flip flop.	M3.02	A
	OR		
VIII	With necessary diagrams explain 3 bit Johnson counter using D flip flops.	M3.04	U
IX	Explain JK flip flop with logic diagram. Mention its truth table.	M3.02	U
	OR		
X	With a diagram explain the working of Serial in - Parallel out Shift register.	M3.03	U
XI	With the logic diagram and timing diagram briefly explain a two bit ripple up counter with positive edge triggering	M4.02	U
	OR		
XII	Write short notes on Random Access Memory.	M4.04	U
XIII	Design and implement a mode 6 Asynchronous counter using T flip flops.	M4.02	A
	OR		
XIV	Design a 3 bit synchronous up counter. (Excitation table and design equations need, no need to implement)	M4.03	A

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