Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2023

Course: Digital Logic and Computer Organization **Semester: II**
Program: B.Tech CSE (All Batches) **Time: 03 hrs.**
Course Code: CSEG 1015 **Max. Marks: 100**

Instructions: There are three sections. Attempt all questions.

SECTION A

1. Each Question will carry 4 Marks

S. No.		Marks	CO
Q1	What are ripple counters? Why are they called so?	**3+1**	CO4
Q2	Convert the following numbers to their decimal equivalents: a) $F1792_{16}$ b) 56671_{8}	**2x2**	CO1
Q3	Realise AND and OR operations through NAND and NOR gates.	**4**	CO2
Q4	Write a short note on TTL.	**4**	CO5
Q5	What are the different operations possible with JK Flip Flop? Support your answer with relevant state table.	**4**	CO4

SECTION B

1. Each question will carry 10 marks.

Q6	Simplify the following Boolean functions with the help of K-Map: a) $F(A,B,C)=\pi(0,3,6,7)$ b) $F(A,B,C,D)=\pi(3,5,7,8,10,11,12,13)$	**4+6**	CO2
Q7	Simplify the following function using Quine Mc'Clusky method: $F(A,B,C,D) = \sum m(0,1,2,4,6,8,9,11,13,15)$.	**10**	CO2
Q8	Design a 4 bit BCD adder and explain its working logic starting from truth table. **OR** (a) Design a Decimal to BCD encoder with truth table and final logic diagram. (b) Design a 4X1 multiplexer with truth table and logic diagram.	**10** **OR** **5+5**	CO3

Q9	Design a 4 bit odd counter with T flip flops and give the relevant timing diagram.	**10**	CO4
Section C **1. Each question will carry 20 marks**			
Q10	What are the four different types of shift registers? Give a very brief description of each with respective circuit diagrams.	**20**	CO4
Q11	What is a 555 timer? Why is it called so? Give a detailed operational description of astable multivibrator using LM555 timer with necessary diagrams, waveforms and equations. **OR** Write short notes on: RAMs, ROM, EPROM, and EEPROM	**3+2+15** **OR** **(4x5)**	CO6