

Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2020

Course: Digital Electronics

Semester: III

Program: B. Tech ELE

Time 03 hrs.

Course Code: ECEG 2016

Max. Marks: 100

Instructions: Answer all the questions.
Diagrams must be neat and clean.

SECTION A

Each Question will carry 5 Marks

Instruction: Complete the statement / Select the correct answer(s)/write a few words

S. No		CO
Q 1	Convert the following octal numbers to binary equivalent i) 132.456 ii) 345.301	CO1
Q 2	Represent the following decimal numbers in 2's complement representation using 8 bits i) -64 ii) 67	CO1
Q 3	Simplify the following expression : $Y = \sum m(0,1,2,3,4,5,6)$	CO2
Q 4	Find the Gray codes for the following binary numbers: a) 10001000 b) 01011100	CO1
Q5	Find the minterms of the function $Y(A,B,C) = A\bar{B} + \bar{C}$	CO3
Q6	Explain in brief about the semiconductor memories	CO3

SECTION B

Each question will carry 10 marks

Instruction: Write short / brief notes

Q 1	Design a combinational logic circuit with four input variables that will produce logic 1 when the number of 1s in the input is ODD. Implement a full subtractor using two 4:1 MUX	CO4
Q 2	Minimize the following logic function using K-Map : i) $Y(A,B,C,D) = \sum m(1,2,3,5,7,8,13,14)$	CO2

	ii) $Y(A,B,C,D) = \pi M(0,2,8,12,13,14)$	
Q 3	Design a mod 8 ripple counter using T-Flipflop and draw the output waveforms	CO4
Q 4	Implement the following output functions using a suitable PLA $F1(A,B,C,D) = \sigma m(3,7,8,9,11,14)$ $F2(A,B,C,D) = \sigma m(3,4,5,7,11,14,15)$ $F3(A,B,C,D) = \sigma m(1,5,6,11,15)$	CO3
Q 5	Explain the operation of R-2R ladder D/A converter and weighted resistor D/A converter. Also Explain the Flash type A/D converter	CO4
SECTION-C		
Each Question carries 20 Marks.		
Instruction: Write long answer.		
Q 1	a) Design a two bit comparator using suitable decoder b) Develop and analyze a Parallel in parallel out and parallel in serial out shift register with JK-Flip flop	CO4
