

Name:

Enrolment No:



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

Course: Analog Electronics

Semester: III

Programme: B.Tech EL

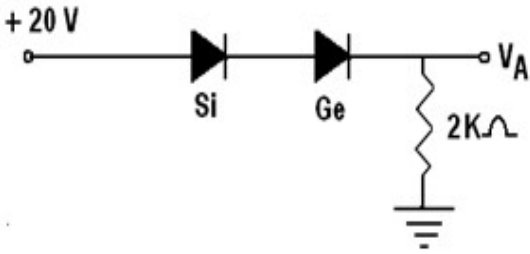
ECEG 2027

Time: 03 hrs.

Max. Marks: 100

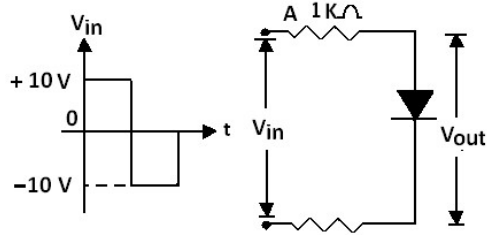
Instructions:

SECTION A (5X6)

S. No.		Marks	CO
Q 1	Differentiate the two breakdown mechanisms in Zener diode?	5	CO1
Q 2	What is a PN junction? Explain the formation of depletion layer (potential barrier) in a PN junction?	5	CO1
Q 3	What is a Barkhausen criterion with respect to Sinusoidal Oscillator?	5	CO3
Q 4	Define following parameter for op-amp: a. Slew Rate b. CMRR c. Zero crossing Detector	5	CO3
Q5	Determine the magnitude of V_A . 	5	CO1
Q6	Fill in the Blanks 1.a The input Impedance of amplifier should be veryas possible. 1.b Emitter follower configuration has.....voltage gain. 1.c CE configuration output is differ by Phase shift. 1.d For switching action of BJT the biasing region of the BJT should be in..... region	5	CO2

SECTION B (10X5)

Q 7	For the input voltage to the clipping circuit. Draw the output voltage waveform.	10	CO1
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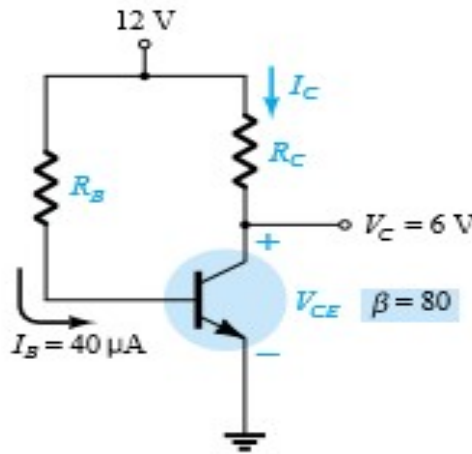
Q8 Draw Output and Transfer characteristics of n channel JFET and explain them with the help of suitable equations?

10 CO2

Q9 Construct a Enhancement type MOSFET with the application of Gate voltage. Also draw its drain and transfer characteristics?

10 CO2

Q10 Determine the following parameters of the common emitter configuration given below?
 (a) I_C .
 (b) R_C .
 (c) R_B .
 (d) V_{CE} .



10 CO4

Q11 Draw the circuit diagram of Adder using operational amplifier such that the output described by $V_o = 10V_1 - 5V_2$.

10 C03

SECTION C (1X20)

Q12 (a). Design a **self-bias** network using a JFET transistor with $I_{DSS} = 10 \text{ mA}$ and $V_{gs\text{off}} = -8 \text{ V}$ to have a Q-point at $I_{DQ} = 5 \text{ mA}$ using a supply of 20 V .
 (b). Design an circuit such that if the input is $I(t) = 20u(t)$, the output will be $O(t) = -60 tu(t)$.

20 CO4