Roll No.....

National Institute of Technology Delhi

Name of the Examination: Mid Semester March-2023 (B. Tech.)

Branch: ECE **Semester : IV**

Course Name : Analog Electronics **Course Code : ECB-252**

Time: 1:5 Hrs **Maximum Marks: 25**

Note:

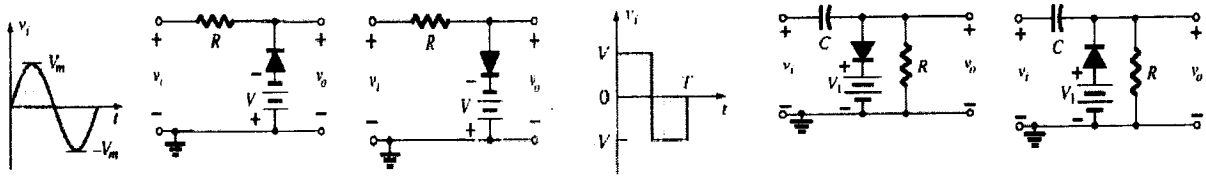
- **All Questions are compulsory and carry equal Marks.**
- **Assume data where ever required.**

COURSE OUTCOMES		**COGNITIVE LEVELS**
CO1	Understand the characteristics of diodes and transistors.	**Understanding** (Level II)
CO2	Design sinusoidal and non-sinusoidal oscillators.	**Analyzing** (Level IV)
CO3	Understand the functioning of OP-AMP and design OP-AMP based circuits	**Evaluating** (Level V)
CO4	Design LPF, HPF, BPF, BSF	**Analyzing** (Level IV)

Course Outcomes(CO's)	**CO1**
Questions No.	**Q1, Q2, Q3, Q4, Q5**

Q1) **(a)**What is a p-n junction. Draw and explain its performance in forward and reverse biased conditions.

(b) Draw the waveforms for clipping and clamper circuits for sinusoidal and square inputs respectively.



Q2) Draw small Signal Model of BJT CE configuration. Also find the expression for input impedance and current gain.

Q3) **(a)** Draw the characteristics of Zener diode and explain Zener regulator.
(b) Define DC load line and Q point.

Q4) **(a)** Discuss transistor characteristics for CE configuration. Explain its behaviour in active and cut-off region.
(b) Explain voltage divider biasing method of transistor.

Q5) Figure shows that a silicon transistor with $\beta = 100$ is biased by base resistor method. Draw the d.c. load line and determine the operating point. What is the stability factor?