B. TECH.
(SEM III) THEORY EXAMINATION 2022-23
ANALOG ELECTRONICS

Time: 3 Hours   *Total Marks: 100*

Note: Attempt all Sections. If require any missing data, then choose suitably.

SECTION A

1. **Attempt *all* questions in brief.**   **2 x 10 = 20**

(a)   Explain the term Current Amplification.
(b)   Define the term input resistance.
(c)   Elaborate the term multistage amplifiers.
(d)   Define feedback in any circuit and its applications.
(e)   Explain the Barkhausen Criteria.
(f)   Illustrate the oscillator circuit and its applications.
(g)   Define the term Differential Amplifier.
(h)   Explain the term transconductance and its formula.
(i)   Illustrate the use of inverting amplifier in Op-Amp.
(j)   Elaborate the high pass filter circuit.

SECTION B

2. **Attempt any *three* of the following:**   **10x3=30**

(a)   Explain the Trans-Conductance amplifier with working and circuit diagram along with applications.
(b)   Define the Cascode amplifier with working and circuit diagram along with applications.
(c)   Elaborate the Wein-Bridge oscillator circuit with working and circuit diagram along with applications.
(d)   Illustrate the current mirror circuit with working and circuit diagram with V-I Characteristics.
(e)   Define the Summing Amplifier with working and circuit diagram along with applications.

SECTION C

3. **Attempt any *one* part of the following:**   **10x1=10**

(a)   Calculate the Voltage gain parameter of Common Base (CB) configuration.
(b)   Define different biasing schemes and techniques for FET amplifier.

4. **Attempt any *one* part of the following:**   **10x1=10**

(a)   Elaborate the Class-AB amplifier circuit with working and circuit diagram along with applications.
(b)   Define the Voltage series and Current Series circuits with working and circuit diagram along with applications.

5. **Attempt any *one* part of the following:**   **10x1=10**

   (a) Elaborate the Colpitts oscillator circuit with working and circuit diagram along with applications.

   (b) Explain Non-Sinusoidal oscillator circuit with working and circuit diagram along with applications.

6. **Attempt any *one* part of the following:**   **10x1=10**

   (a) Illustrate the Op-Amp circuit with basic structure and working principle.

   (b) Explain the terms with respect to Differential Amplifiers,
         1. Differential gain
         2. Common Mode Gain
         3. CMRR
         4. ICMR

7. **Attempt any *one* part of the following:**   **10x1=10**

   (a) Define the Schmitt Trigger circuit with working and circuit diagram along with applications.

   (b) Explain the Band-Stop Filter circuit with working and circuit diagram along with applications.