

**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.