EC/EE 212 (R-22)

Total No. of Questions : 10] [Total No.of Pages : 02

II/IV B. Tech. DEGREE EXAMINATIONS, AUGUST - 2024

First Semester

EC / EE

ANALOG CIRCUITS

Time : **Three Hours** Maximum : **70** Marks

Answer ONE Question from each Unit. 5x14=70 M

All Questions carry equal marks.

UNIT - I

1. a) Draw and describe the working of an RC-coupled common emitter (CE) to common emitter (CE) cascade amplifier.

   b) Describe the working principle of multistage amplifiers and explain why cascading is necessary for amplification ?

(OR)

2. a) Explain the working of a common emitter (CE) to common collector (CC) cascade amplifier and its advantages in certain scenarios.

   b) What are the different methods of inter-stage coupling in multistage amplifiers and how do they affect signal transfer between stages ?

UNIT - II

3. a) Explain the concept of system transfer functions in the context of amplifier frequency response analysis.

   b) Describe the working principle of a JFET low-frequency small-signal model.

(OR)

4. a) Describe the frequency response of FET amplifiers and highlight any unique characteristics compared to bipolar transistors.

   b) What is the small-signal model of a common gate amplifier and how does it function in amplification ?

P.T.O.

UNIT - III

5. a) Draw and explain the operation of a Class-C power amplifier, emphasizing its high efficiency but limited linearity.

   b) Describe the working principle of power amplifiers and their role in amplifying signals.

(OR)

6. a) What are power transistors and how do they differ from small-signal transistors in power amplifier applications ?

   b) Describe the characteristics and operation of Class-AB power amplifiers.

UNIT - IV

7. a) How does feedback affect the gain and stability of voltage amplifiers and can you provide a schematic representation ?

   b) What is feedback in amplifiers and how does it improve or modify their performance ?

(OR)

8. a) What are transconductance amplifiers and how do they use feedback to achieve specific characteristics ?

   b) Draw and explain the operation of an ideal voltage amplifier with feedback ?

UNIT - V

9. a) What is the Barkhausen criterion and how does it relate to the stability of oscillators ?

   b) Explain the principle behind bistable multivibrators and how they are used for digital memory applications.

(OR)

10. a) Draw and explain the operation of a resonant circuit oscillator in generating continuous waveforms ?

    b) What is an astable multivibrator and how does it produce continuous square wave output signals ?