R20

II B. TECH II SEMESTER REGULAR EXAMINATIONS, JUNE - 2022
ANALOG CIRCUITS
(ELECTRONICS AND COMMUNICATION ENGINEERING)

Time: 3 hours   Max. Marks: 70

Note: Answer **ONE** question from each unit **(5 × 14 = 70 Marks)**
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UNIT-I

1. a) Explain RC-Integrator with necessary equations and waveforms? What is time constant? [7M]

   b) Give the classification of various types of clippers? Draw a series clipper circuit and explain its operation? [7M]

(OR)

2. a) A differentiator circuit is given triangular wave as input. What is the output wave? Explain with necessary waveforms? [7M]

   b) How a clamper circuit adds DC level to an AC signal, explain? [7M]

UNIT-II

3. a) Draw Darlington pair circuit, explain its operation and applications? [7M]

   b) Draw the hybrid-Π parameter model of common emitter amplifier and list out various circuit parameters considered at high frequencies? [7M]

(OR)

4. a) Derive an expression for short circuit current gain of CE amplifier at high frequencies. [7M]

   b) Give the analysis of common drain amplifier at high frequencies? [7M]

UNIT-III

5. a) What is the type of feedback employed in CE amplifier? Derive the expressions for R_{if} and R_{of}? [7M]

   b) Explain the bandwidth variation in negative feedback amplifiers with necessary equations? [7M]

(OR)

6. a) Explain how noise and distortion are affected in negative feedback amplifiers? [7M]

   b) The gain and distortion of an amplifier are 150 and 5% respectively without feedback. If the stage has 10% of its output voltage applied as negative feedback, find the distortion of the amplifier with feedback? [7M]

UNIT-IV

7. a) Derive the expression for frequency of oscillation in RC phase shift oscillator using FET. [10M]

    b) A phase shift oscillator using FET employs 5pF capacitors. Find the value of R to produce a frequency of 800 kHz. [4M]

(OR)

8. a) Derive the expression for frequency of oscillation in Colpitts Oscillator? [10M]

    b) Explain Barkhausen criterion? [4M]

UNIT-V

9. a) Derive the efficiency of Class B power amplifier? [7M]

    b) Derive the expression for the bandwidth of a synchronous tuned circuit? [7M]

(OR)

10. a) Explain the operation of push-pull power amplifier? [7M]

    b) What is stagger tuning? Explain in detail? [7M]

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