EC 222 (R-22)

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

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

Second Semester

ELECTRONICS AND COMMUNICATIONS ENGINEERING

PULSE CIRCUITS AND LICA

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

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

All Questions carry equal marks.

UNIT - I

1. a) What criteria are essential for achieving good differentiation and integration in wave shaping circuits ?

   b) How do RC-high pass circuits respond to sinusoidal inputs and what is their working principle ?

(OR)

2. a) How do ringing circuits operate and what are their applications in waveform shaping ?

   b) Draw and explain the response of an RC circuit to pulse input signals ?

UNIT - II

3. a) How do voltage sweep circuits work and what are the common sources of errors affecting linearity ?

   b) What are Bootstrap sweep circuits and how do they address specific challenges in sweep circuit design ?

(OR)

4. a) Draw and explain the working of constant current charging voltage sweep circuits ?

   b) Explain the process of generating a trapezoidal waveform for linearity correction in sweep circuits.

UNIT - III

5. a) What are the different types and classifications of integrated circuits and how are they categorized ?

   b) How does a dual input balanced output differential amplifier work and what are its DC and AC analysis considerations ?

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(OR)

6. a) Describe the properties and characteristics of a single-ended input with balanced and unbalanced output differential amplifier.

   b) Explain the block diagram of an operational amplifier (op-amp) and its ideal specifications.

UNIT - IV

7. a) What is a difference amplifier and how does it amplify the voltage difference between two input signals ?

   b) How does an inverting amplifier using an op-amp work and what is its application in signal processing ?

(OR)

8. a) Draw and explain the working of an integrator circuit using an op-amp, and what is its primary function ?

   b) Explain the operation of V to I and I to V converters based on op-amp circuits.

UNIT - V

9. a) Describe the 555 timer IC and its applications as a monostable and astable multivibrator.

   b) How does a 1st-order Butterworth active low-pass filter operate and how can you design and analyse it ?

(OR)

10. a) Provide examples of applications for the 565 PLL IC and its role in signal processing ?

    b) Explain the concept and working of an all-pass filter and its significance in signal processing.