EE 312 (R-20)

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

III/IV B. Tech. DEGREE EXAMINATIONS, DECEMBER - 2022

First Semester

ELECTRICAL AND ELECTRONICS ENGINEERING

LICA & PULSE CIRCUITS

Time : **Three Hours** Maximum : **60** Marks

Answer ONE Question from each Unit.

All questions carry equal marks. 5x12=60 M

UNIT - I

1. a) Draw the equivalent circuit diagram of Op amp and derive the expression for gain of non-inverting amplifier.

   b) Write the small signal analysis of different amplifier.

(OR)

2. a) With block diagram, explain the general stages of an Op-Amp IC.

   b) Draw the circuit diagram of differential amplifier with dual input and unbalanced output. Derive expressions for differential gain Ad, input resistance Ri and output resistance R0.

UNIT - II

3. a) Explain the open loop frequency response characteristics of an op-amp.

   b) Explain the operation of Square wave generator along with a circuit diagram.

(OR)

4. a) Draw the block diagram of Op-amp and explain its operation.

   b) What is differential amplifier ? Derive the expressions for emitter current and collector to emitter voltage of a differential amplifier using DC analysis.

UNIT - III

5. a) Design a 555 Astable Multivibrator to operate at 10 kHz with 40% duty cycle.

   b) Design a second order low pass filter at high cutoff frequency of 1 kHz.

P.T.O.

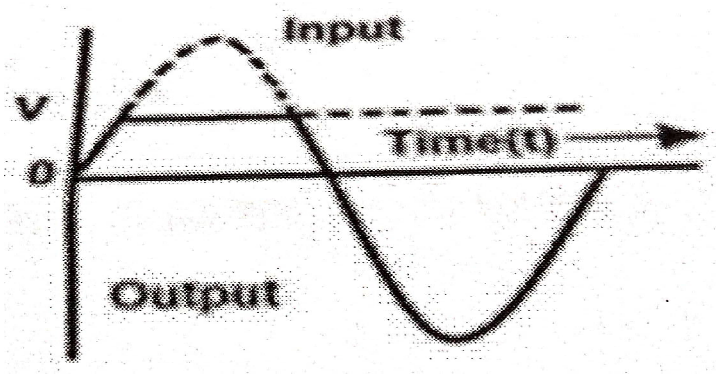
(OR)

6. a) Draw the circuit of a monostable multivibrator using 555 IC and explain its operation.

   b) Draw the block diagram of PLL and explain its operation.

UNIT - IV

7. a) Draw the circuit diagram of given out put waveform and discuss it ?



   b) Explain the compensated attenuators with example.

(OR)

8. a) Explain the clamping circuit theorem.

   b) Discuss the criteria for good integrator & differentiator ?

UNIT - V

9. a) Design a bistable multivibrator with $h_{fe}(mi) = 20$ and $V_{CC} = V_{BB} = 10v$. Assume silicon transistors are used.

   b) Write about the operation of miller sweep circuit in brief ?

(OR)

10. a) Draw the exponential sweep circuit and derive the expression for transmission error.

    b) Design a collector coupled one shot with a gate width of 3 ms, using n-p-n transitors.