

22382

24225

3 Hours / 70 Marks

Seat No. 

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- Instructions* –
- (1) All Questions are *Compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answer with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Assume suitable data, if necessary.
  - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

1. **Attempt any FIVE of the following:** **10**
  - a) Give classification of amplifiers based on biasing techniques.
  - b) State the ideal parameter values of –
    - i) Bandwidth
    - ii) CMRR.
  - c) Draw circuit diagram of inverting type summing amplifier/Adder.
  - d) Draw circuit diagram of Differentiator using Op-Amp.
  - e) Draw the pin diagram of 555 timer IC.
  - f) Give the function of following ICs:
    - i) 7812
    - ii) 7912
  - g) Draw the pin diagram of LM723.

P.T.O.

2. Attempt any THREE of the following: 12

- Sketch circuit diagram of RC coupled single stage CE amplifier. State the function of each component.
- Explain virtual ground concept of Op-amp with a neat diagram.
- Draw a circuit of integrator with its output voltage equation, and draw output waveforms for input Square wave.
- Draw and explain astable multivibrator using Op-amp.

3. Attempt any THREE of the following: 12

- Draw the Functional Block diagram of IC555 and give the function of Pin 5 and Pin 7.
- Draw and explain sample and hold circuit using Op-amp.
- Compare Open loop and closed loop configuration of Op-amp with respect to –
  - Circuit Diagram
  - Gain
  - Bandwidth
  - Application.
- Draw and explain transformer coupled amplifier.

4. Attempt any THREE of the following: 12

- In Figure No. 1  $R_1 = 10\text{k}\Omega$ ,  $R_f = 100\text{k}\Omega$ ,  $V_1 = 1\text{V}$ . A load of  $25\text{k}\Omega$  is connected to the output terminal. Calculate  $i_1$  and  $V_o$ .

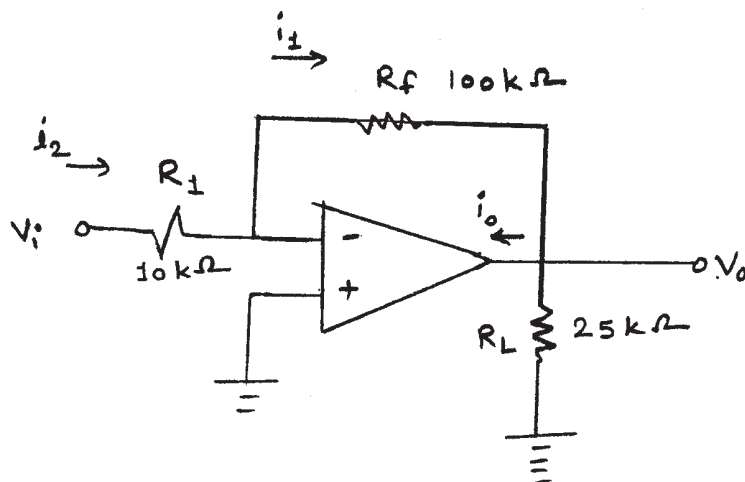


Fig. No. 1

- b) Draw and explain the circuit of Ground Load Voltage to Current Converter using Op-amp.
- c) Draw and explain non-inverting comparator.
- d) Explain Bistable Multivibrator using Op-amp with a neat diagram.
- e) Explain the working of LM317 Adjustable voltage regulator with a neat diagram.

**5. Attempt any TWO of the following:**

**12**

- a) Compare class A, Class B and Class C amplifiers.
- b) Identify the circuit and explain its working whose output equation is

$$V_o = -nV_T \ln \left( \frac{V_i}{R_I I_8} \right)$$

- c) Draw the Functional Block diagram of IC 723 and explain any two blocks of it.

**6. Attempt any TWO of the following:**

**12**

- a) Draw and explain Schmitt trigger circuit using Op-amp.
  - b) Draw the block diagram of the phase locked loop and explain each block.
  - c) Draw and explain Switched Mode Power Supply.
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