

22391

23124

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 answers 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) State the need of tuned amplifier.
 - b) List application of strain gauge.
 - c) State the characteristics of IC 741.
 - d) State the need of oscillator.
 - e) Name the fixed voltage regulator IC's used for the given output voltage.
 - i) +5V
 - ii) -12V
 - f) Define line and load regulation.
 - g) Define Transducer.

P.T.O.

- 2. Attempt any FOUR of the following :** **12**
- a) Explain working of single tuned amplifier with neat circuit diagram.
 - b) Define :
 - i) CMMR
 - ii) Slew rate
 - iii) Bandwidth
 - c) Explain Miller's sweep generator with circuit diagram.
 - d) Describe working of Schmitt trigger using IC 555.
 - e) Compare active and passive transducer and give example of each.
- 3. Attempt any FOUR of the following :** **12**
- a) Explain single stage CE amplifier with sketch of frequency response.
 - b) Voltage to current converter with grounded load circuit has $V_{in} = 10\text{ V}$, $R_1 = 30\text{ K}\Omega$ and $V_1 = 2\text{ V}$, Calculate load current I_L and output voltage V_o .
 - c) Explain crystal oscillator with suitable diagram.
 - d) Draw pin diagram of PLL IC 565 and explain the function of each pin
 - e) Calculate the resistance of PT 100 for 50°C and sketch the characteristics of PT 100
- 4. Attempt any THREE of the following :** **12**
- a) Explain the working of transistor as an amplifier.
 - b) Explain the working of inverting zero crossing detector with circuit diagram.
 - c) State the applications of positive and negative feedback.
 - d) Describe working the Bistable multivibrators with diagram.
 - e) Explain the construction and working principle of LVDT.

- 5. Attempt any THREE of the following :** **12**
- a) Compare single tuned amplifier and double tuned amplifier.
(four points)
 - b) Differentiate between open loop and closed loop configuration of OP-AMP.
 - c) Explain working of colpitis oscillator with suitable diagram.
 - d) Describe the working of PLL as a frequency multiplier with circuit diagram.
 - e) Astable multivibrator using IC 555 has $T_{ON} = 4$ m sec and $T_{OFF} = 2$ m sec. Calculate its frequency of oscillation and duty.
- 6. Attempt any TWO of the following :** **12**
- a) Draw the circuit diagram of non-inverting zero crossing detector with reference voltage 2V and applied input 5V P-P sine wave. Draw corresponding input and output waveforms and explain its working.
 - b) Wein bridge oscillator using OP-AMP has the frequency of oscillation $F = 2$ KHz. Calculate the value of R and C used in it.
 - c) Draw and explain pin diagram of IC 78XX and 79XX and state their features and advantages.
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