5918-08.   (REVISED COURSE)   RC-6896

(3 Hours)   [Total Marks : 100

: (1) Question No. 1 is **compulsory**.
  (2) Attempt any **four** questions from remaining **six** questions.
  (3) Assume **suitable** data if **required** and state it **clearly**.

(a) Draw the circuit diagram of three op-amp instrumentation amplifier. Get **10**
     an expression for the output.
(b) Why is an op-amp diode rectifier called as a precision rectifier ? Explain **10**
     with waveforms.

(a) Design a voltage regulator using IC 723 to regulate the output voltage between **10**
     4V to 20V and output current of 100 mA.
(b) Draw the circuit diagram and explain multiplication and division of two analog **10**
     signals using op amps.

(a) Explain how a missing pulse can be detected using IC 555.   **10**
(b) Design an op-amp based Schmitt trigger with UTP = +4V, LTP = −2V. **10**
     Assume op-amp is powered with ± 12V and V_{ref} = −3V.

(a) Design a phase shift oscillator with f_o = 5 KHz. How is the peak to peak **10**
     output voltage adjusted ?
(b) Draw the functional block diagram of PLL IC 565 and explain its working. **10**

(a) What are the different types of Digital to Analog converters ? Explain **10**
     one of the techniques in detail.
(b) Design a Low-pass, second order KRC filter using equal component design **10**
     using f_o = 1 KHz and Q = 5. What is its dc gain ?

(a) Explain the frequency response of an ideal integrator and that of practical **10**
     integrator with figures.
(b) What are the main features of IC 8038 ?   **10**

Write notes on (any two) :—   **20**
  (a) Switched Capacitor Filters
  (b) Three Pin Regulators
  (c) Dual Slope ADC
  (d) Antilog Amplifier.

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