10/12/13 S. E. (EXTC) Sem-III CBGS
Electronic Instruments and Measurement

43 : 2nd half.13-Avi(au)

Con. 8964-13. **GX-12161**

(3 Hours) **[Total Marks : 80**

N.B. : (1) Question No. **1** is **compulsory**.
(2) Out of **remaining** questions, **attempt** any **three** questions.
(3) **Assume** suitable additional **data** if **required**.
(4) **Figures** in brackets on the **right hand side** indicate **full** marks.
(5) **Write** your answers in **Ink only**.

1. (A) **Draw block diagram for generalized measurement system and explain its components.** (05)
   (B) **A strain gauge with gauge factor of 2 is fastened to a metallic member subjected to a stress of 1000 kg/cm^2. The modulus of elasticity of the metal is $2*10^6$kg/cm^2. Calculate the percentage change in the resistance of the strain gauge? What is the value of poisson's ratio?** (05)
   (C) **Explain the significance of X-1/2 digit displays.** (05)
   (D) **Describe the various types of sweeps used in CRO.** (05)

2. (A **Compare and explain different types of ADCs.** (10)
   (B) **Draw and explain the block diagram of general purpose CRO.** (10)

3. (A) **Describe how *Q* meter is used for the measurement of low impedance. What are the various sources of error in *Q* meter?** (10)
   (B) **Explain with neat diagram the working principle of LVDT. Give its application.** (10)

4. (A) **What is the basic principle of wave analyzer? Explain heterodyne type wave analyzer with application.** (10)
   (B) **Explain the principle of operation of dual slope DVM.** (10)

5. (A) **Draw and explain the block diagram of DSO. Describe various modes of operation in it.** (10)
   (B) **Derive an expression for inductance measurement using Hay bridge.** (05)
   (C) **Brief out classification of Errors in measurements.** (05)

6. (A) **Brief out Classification of transducers.** (07)
   (B) **Explain electrodynamometer type wattmeter.** (07)
   (C) **Derive an expression for resistance measurement using Wheatstone bridge.** (06)
