

# Paper ID [EE206]

(Please fill this Paper ID in OMR Sheet)

**B.Tech. (Sem. - 4<sup>th</sup>)**

## **INSTRUMENTATION ENGINEERING (EE - 206)**

**Time : 03 Hours**

**Maximum Marks : 60**

### **Instruction to Candidates:**

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

### **Section - A**

**Q1)**

**(10 × 2 = 20)**

- a) What is meant by electronic voltmeter? Are VTVMs same as electronic voltmeters?
- b) Draw a neat diagram showing the essential components of a cathode ray tube.
- c) Show the circuit diagram of any type of Electronic multimeter.
- d) Give classifications of transducers.
- e) Why does CRO give more accurate measurement than a VTVM?
- f) What is a Displacement Transducer? How is angular displacement be measured?
- g) What is a Tachometer and why is it called a tachogenerator?
- h) What are types of recorders?
- i) What is working principle of infrared sensors?
- j) What do you mean by Digital Display? Distinguish between LED and LCD?

### **Section - B**

**(4 × 5 = 20)**

- Q2)** Discuss working of a RMS electronic voltmeter. Mention ranges of voltage and frequency for which such voltmeters are available.

- Q3)** Draw a neat block diagram of a CRO. Discuss the functions of each block representing part of CRO.
- Q4)** List various measurements one can have using a CRO. In a CRT, the anode to cathode voltage is 2000V. The parallel deflector plates are 1.5 cm long and spaced 5 mm. The screen is 50 cm from the centre of deflecting plates. Find (a) beam speed & (b) deflection sensitivity of the tube.  
(Assume mass of electron =  $9.109 \times 10^{-31}$  kg,  $e$  = electronic charge =  $1.602 \times 10^{-19}$  C).
- Q5)** Give a detail comparison between analog and digital instruments. Explain how is resolution of Digital instruments increased.
- Q6)** Define transducers. What are optical transducers? Discuss working of a vacuum type emissive cell.

### Section - C

(2 × 10 = 20)

- Q7)** Draw neat diagrams to show how LVDTs can be used with bellows elements and Bourdon tubes for measurement of pressure. Give their advantages and disadvantages.
- Q8)** (a) Explain how resistive transducers can be used for measurement and control of relative humidity. Also give its advantages and disadvantages.  
(b) What is pH value? Describe how does a pH meter measure pH of a given sample.
- Q9)** Write notes on :
- Introduction to Data Acquisition systems.
  - Block diagram of an instrumentation system.

