

Roll No. 

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Total No. of Pages : 02

Total No. of Questions : 09

**B.Tech.(AE) (2011 Onwards) (Sem.-5)**  
**MEASUREMENTS AND INSTRUMENTATION**

Subject Code : BTAE-505

Paper ID : [A2065]

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTION TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

**SECTION-A****Q1 Explain briefly the followings :**

- (a) Differentiate between primary, secondary and tertiary measurement.
- (b) Explain the phenomenon of hysteresis in measurement system.
- (c) What is the difference between systematic error and random error?
- (d) What are the different standard inputs for studying the dynamic response of a system?
- (e) Differentiate between Analog and Digital transducers.
- (f) Define sensitivity error and dynamic error with reference to transducers.
- (g) Write the salient features of Analytical Balance.
- (h) What is seismic type velocity transducer?
- (i) What are variable flow meters?
- (j) Explain the importance of temperature measurement in industry.

### SECTION-B

- Q2 Suppose we have two variables  $x$  and  $y$ . Explain how least squares can be used to find the best linear function connecting  $y$  and  $x$ .
- Q3 Describe the different criteria for selection of transducers for a particular application.
- Q4 Explain how sensitivity can be increased by using inclined tube manometer. What are its advantages and limitations?
- Q5 Why are dummy strain gauges used? In what way they affect the output of a strain gauge bridge?
- Q6 Explain the principle of measurement of linear velocity using electromagnetic transducers.

### SECTION-C

- Q7 Describe the different modes of piezo-electric transducers. Define and sketch binders and twisters.
- Q8 Describe the construction and functioning of Pneumatic load cells. Explain their advantages and disadvantages.
- Q9 Explain with neat sketch the construction and working of liquid-in-glass thermometers. Describe the correction applied in case of total immersion and partial immersion thermometers.