

Dec.-22-0243

ME-602 (Measurement and Control)

B.Tech. 6th (CBCS)

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five Questions in all. One question from each unit. Question no. 9 is compulsory.

**UNIT - I**

1. (a) What is the secondary standard in measurement? (4)  
(b) How do mechanical measurement is associated with electrical and electronics instruments? (6)
2. (a) Define the terms (i) Accuracy (ii) Precision (iii) resolution (iv) sensitivity used to describe the quality of an instrument's readings. (4)  
(b) Define and classify Error. Explain each type with suitable sketches. (6)

**UNIT - II**

3. (a) What is sensor? Explain electro-mechanical sensor with neat sketch. (4)  
(b) How does transducer work in measurement? Describe inductance and capacitive pick up transducer. (6)
4. (a) Explain theory of operation of the metallic resistance strain gauge. (4)  
(b) What is strain-gage bridge circuit? Explain with suitable expression and neat sketches. (6)

**UNIT - III**

5. (a) Define pressure cell. Explain Strain-gage circuitry for pressure cells. (4)  
(b) What is electromagnetic flow meters? Explain its working with neat sketch. (6)
6. (a) What are desirable properties for the liquid used in a glass thermometer? (4)  
(b) Explain about radiation pyrometry- theory. Describe Total-Radiation and Spectral-Band Pyrometry. (6)

**UNIT - IV**

7. (a) What do you understand by vibrometers and vibration detectors? (4)  
(b) Explain the working of tachometer and troboscope with neat sketches. (6)
8. (a) Differentiate between open and closed loop of control system. (4)  
(b) Explain Mason's rule and its application for stability in the control system. (6)

**(Compulsory)**

9. (a) Define measurement.  
(b) What do you understand by dynamic error?  
(c) Write all sources of errors.  
(d) What is application of photocell in measurement?  
(e) What do you understand by resistance strain gauge?  
(f) How is bourdon tube used in pressure measurement?  
(g) What is thermo-electric sensor?  
(h) What is absorption dynamometer?  
(i) Name the elements of control system.  
(j) What is Nyquist plot for study of stability? (10×2=20)