Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

ME-5002 (CBGS)

B.E. V Semester

Examination, December 2017

Choice Based Grading System (CBGS)

Mechanical Measurement and Control

Time : Three Hours ***Maximum Marks : 70***

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Explain calibration and its necessity for an instrument. How do you proceed to draw the calibration curve and error curve?
   b) What is order of an instrument? How it is decided? Discuss the dynamics for sinusoidal input to a first order system.

2. a) Explain the significance of confidence interval and confidence level in statistical analysis of data.
   b) Write short notes on uncertainty analysis.

3. a) Explain the working of a bimetallic thermometer with help of neat diagram.
   b) Compare and contrast the advantages and limitations of
      i) Resistance thermometer and thermister
      ii) Thermo couples and resistance thermometer

303

www.rgpvonline.com www.rgpvonline.com

4. a) Explain the principle and working of resistance strain gauge. Define and derive the gauge factor.
   b) Explain the various types of mechanical techometer.

5. a) Discuss the salient features of first order system response with step input. Show that after a time constant of the system the output reaches 0.63 of the step value.
   b) Explain the difference between open loop and closed-loop control system.

6. a) Explain a method to estimate the propagation of error.
   b) Write short notes on regression analysis.

7. a) Explain with neat sketch the constructional features and basic working principle of McLeod gauge used for the measurement of low pressure.
   b) Explain the working principle of rotameter with neat sketch.

8. a) What is mathematical model? How mathematical equation of a system can be used to derive the transfer function of the system.
   b) How the modelling of electrical system can be done.

******

304