Roll No .....

ME - 503

B.E. V Semester

Examination, June 2016

Mechanical Measurement and Control

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each questions are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

1. a) Compare static and dynamic calibration.
   b) Write about zero order, first order and second order systems.
   c) Define the term: Phase linearity.
   d) Explain the following measurement terms:
   Range, accuracy, bias error, sequential and random tests

   OR

   Draw and Discuss general model for a dynamic measurement system.

2. a) Define error propagation.
   b) Write about the concept of standard deviation in measurement.
   c) Define the term: Data outlier detection.
   d) Discuss the least square regression analysis with examples.

OR

Describe the different types of errors encountered in measurement with examples.

3. a) What do you mean by transducers?
   b) Write about Relative Pressure Scales.
   c) State the working of bimetallic thermometers.
   d) Write short note on following (any two)
   i) Orifice meter
   ii) Flow meter
   iii) Rotameter.

   OR

   Discuss the construction and working of resistance temperature detector.

4. a) What do you mean by angular velocity measurements?
   b) Write about potentiometers.
   c) State the working of LVDT.
   d) Discuss Measurement of Torque on rotating shaft.

   OR

   Explain the working or Rotary Variable Differential Transformer.

5. a) What do you mean by Transfer function?
   b) Write about Signal flow graphs.
   c) State brief about Transient and steady state response analysis.
   d) Discuss the Modelling of fluid systems or mechanical systems.

   OR

   Explain the following:
   i) Liquid level systems.
   ii) Impulse response function.

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