(DME 421)

B. Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Final Year)

MECHANICAL ENGINEERING

Paper – I : Mechanical Measurements

Time : 3 Hours **Maximum Marks : 75**

Answer question No. 1 is compulsory ***(15)***

Answer ONE question from each unit ***(4 x 15 = 60)***

1) a) Draw a neat sketch of hydraulic load cell.

b) Explain the principle of LVDT.

c) Calibration.

d) Optical encoder.

e) Define gauge factor.

f) Curve fitting.

g) Dynamic measurements.

Unit - I

2) a) What are the different types characteristics of zero, first and second order systems? Explain them with neat diagram.

b) Discuss elaborately about different types errors.

OR

3) a) Explain the statistical analysis of measured data with an example.

b) Explain in detail about the stability analysis of the system.

Unit – II

4) a) Sketch and explain the Ionization transduces.

b) Discuss the method of fixing and bridge circuits for measuring strain.

OR

5) a) Discuss in detail the working principle of strain measurement using photoelectric methods with neat sketches.

b) Sketch and explain different Bonded type of strain gauges.

Unit – III

6) a) State the working principle of a Bourdan tube.

b) Sketch and explain the working principle of Bimetalic thermometers.

OR

7) a) List out few pressure measurement equipment and their importance.

b) What do you mean by "dynamic calibration" in flow measurement? Give the steps which are necessary in performing a calibration.

Unit – IV

8) a) Explain any one of Elastic force meter.

b) Discuss the working principle of a mechanical Dynamometer Rope and Brake.

OR

9) a) Write in detail about importance of microprocessor based instrumentation and their application.

b) Describe the principle and working of Vibrometers and Accelerometers.

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