

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 3991

Roll No.

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### B.Tech.

(SEM. IV) THEORY EXAMINATION 2010-11

### MEASUREMENT & METROLOGY

Time : 2 Hours

Total Marks : 50

Note : (1) Q. 1 is compulsory.

(2) Assume suitable data, if necessary.

1. Attempt any two parts : (7×2=14)
  - (a) Explain the utility of transducer in measurement.
  - (b) Discuss the role of sensors in measuring instruments. Why signal processing is required during measurement ?
  - (c) Differentiate the following :
    - (i) Instrumental errors and environment error.
    - (ii) Observation error and operational error.
  
2. Attempt any two parts : (6×2=12)
  - (a) Explain the working principle of bellows pressure gauge with a neat sketch.
  - (b) Why temperature compensation in strain gauges are required ? How it is accounted ?
  - (c) Why calibration is required for resistance strain gauge ?  
State the advantages of unbonded wire strain gauge.

3. Attempt any two parts : (6×2=12)

- (a) Write the characteristics of line standards and end standards.
- (b) With the help of a neat sketch explain the working of spirit level for angular measurement.
- (c) Explain the vernier principle for linear measurement.

4. Attempt any two parts : (6×2=12)

- (a) Discuss the construction and working of talysurf roughness tester.
- (b) Explain in brief, the interference method for evaluation of surface texture. How accuracy of interference method can be increased ?
- (c) Explain the straightness measurement method by auto-collimator.