

Code: ME6T1

**III B.Tech - II Semester – Regular/Supplementary Examinations
March - 2020**

**MECHANICAL MEASUREMENTS
(MECHANICAL ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11 x 2 = 22 M

1.

- a) List the main static characteristics of measuring instrument.
- b) What are the characteristics of capacitive transducers?
- c) Explain the working principle of thermocouple.
- d) Draw the diagram of bourdon tube pressure gauge and label the parts.
- e) Enumerate the principle of operation of Ultrasonic Level Indicator with a neat sketch.
- f) Recall different types of electrical tachometers used for speed measurement.
- g) Define vibration. List some of its harmful effects.
- h) Explain the principle and working of absorption type dynamometer.
- i) What are the requirements of materials used for strain gauges?
- j) Define the Psychometric terms:
 - i. Dew point temperature.
 - ii. Wet bulb temperature.
- k) What are different types of air pollutants?

PART – B

Answer any *THREE* questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) With a block diagram explain the generalized measurement system indicating various functional elements. 8 M

b) Explain the disappearing filament pyrometer setup and explain its operation for the measurement of temperature. 8 M

3. a) Describe thermocouple type vacuum gauge for low pressure measurement with a neat sketch. 8 M

b) With the help of hot wire bridge circuit explain the working of hot wire anemometer in constant current and constant temperature mode. 8 M

4. a) Classify different speed measuring techniques. Explain with neat sketch any one of the mechanical tachometer used for speed measurement. 8 M

b) Compare the strain gauge accelerometer and piezoelectric accelerometer and their salient features and applications. State any two applications of an accelerometer. 8 M

5. a) With a neat sketch explain the working of eddy current dynamometer. 3 M
- b) Define strain guage rosette. How is it used for strain measurement. 5 M
- c) Explain the different methods of temperature compensation employed for strain gauges. 8 M
6. a) Explain the measurement of humidity using absorption hygrometer. 8 M
- b) Discuss different air pollution control methods briefly. 8 M