

(ENGLISH)

[TIME ALLOWED—3 HOURS]

(MARKS—100)

MEASUREMENT AND MEASURING INSTRUMENTS (THEORY-II)**Marks**

1. (a) Fill in the blanks (*any five*) :— 5
- (i) is most commonly used metal for RTD.
 - (ii) requires reference Junction compensation.
 - (iii) PTC and NTC are the types of transducer.
 - (iv) The Reynolds number is quantity.
 - (v) Most pressure measuring devices use for sensing pressure at primary stage.
 - (vi) Thermistors are generally composed of materials.
- (b) State the long forms of (*any five*) :— 5
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|----------|----------|-----------|
| (i) PID | (ii) PLC | (iii) FD |
| (iv) ATC | (v) RTD | (vi) PSIG |
- (c) Match the pairs :— 5
- | ‘ A ’ Group | ‘ B ’ Group |
|-------------------|---------------------|
| (i) Temperature | (a) Pascal |
| (ii) Pressure | (b) Meters |
| (iii) Level | (c) degree Kelvin |
| (iv) Flow | (d) Gallon per hour |
| (v) Angular speed | (e) rpm |
- (d) State whether *true* or *false* (*any five*) :— 5
- (i) Thermocouples are active transducer.
 - (ii) Specify gravity and relative density is different.
 - (iii) Bimetallic thermometers strips are made of two similar metals.
 - (iv) Level sensors detect the level of liquids and other fluids and fluidized solids.
 - (v) The basic formula for pressure is Force per unit area.
 - (vi) Viscosity is a measure of a fluid's resistance to flow.
2. Attempt any *two* of the following :— 16
- (a) State classification of errors. How it affects performance of instrument ?
 - (b) Enlist the different temperature scales ? Write their reference points and absolute zero point.
 - (c) Write classification of flow meter. Give the construction of Venturi Tube.
 - (d) List the types of manometer. Give description and use of U tube manometer.

[turn over]

3. Attempt any *two* of the following :— 16
- (a) Differentiate between mechanical and electrical tachometer.
 - (b) Explain the basic principle, construction and working of capacitive level transducer with a neat and clean diagram.
 - (c) Draw and explain the block diagram of functional elements of control system.
 - (d) Write the procedure of repairing and testing of resistance thermometer.
4. Give brief answer of any *two* of the following :— 16
- (a) Explain the working principle of thermocouple with a neat diagram? What are the materials normally used in making thermocouples.
 - (b) Describe the working of air pollution monitoring instrument.
 - (c) Explain the concept of measurement of pH and conductivity.
 - (d) Differentiate between analog recorder and digital recorder.
5. Write short notes on (any *four*) :— 16
- (a) Accelerometer and their types
 - (b) Data logger
 - (c) Vortex flow meter
 - (d) Force balance pressure gauge
 - (e) Moving coil Pyrometer
6. Attempt any *two* of the following :— 16
- (a) Describe the construction and working of C-type bourdon tube gauge with a neat and clean diagram.
 - (b) State the Bernoulli's theorem, Explain the principle, construction and working of Rotameter.
 - (c) Explain the generalized diagram of a digital data acquisition system.
 - (d) Describe the construction and working of Air type level measuring instrument with a neat diagram.
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