Total number of printed pages: 02

D/6/DIE601

2024

INDUSTRIAL INSTRUMENTATION-II

Full Marks: 100

Time: Three hours

The figures in the margin indicate full marks for the questions.

Part-A: Answer all questions

1. a) The SI unit of viscosity is ..... 1x20=20
   b) The sight glass and float type level gauges are classified as ..... method for level measurement.
   c) The pressure exerted at the bottom of the tank ..... as the liquid level increases.
   d) ..... viscosity of the fluid is measured by using Saybolt viscometer.
   e) ..... is the SI unit of density.
   f) ..... liquid level is measured using resistive type level gauge.
   g) ..... is the ratio of absolute viscosity of the fluid to the absolute viscosity of a standard fluid at the same temperature.
   h) ..... level gauge uses piezoelectric element in it.
   i) Thermistors are used in .....type of densitometer.
   j) Level is expressed in terms of ..... of the liquid column.
   k) The relation for flow rate in a head type flowmeter is .....
   l) The central section of venturimeter is known as .....
   m) Flow Nozzle is a ..... type flow meter.
   n) The unit of mass flow rate is .....
   o) Magnetic or reluctance pick-ups are used in ..... flowmeters.
   p) Coriolis flow meter is used for the measurement of flow rates of .....
   q) Positive displacement type flowmeters are used for ..... flow measurements.
   r) Electromagnetic flowmeters are suitable for flow measurements of ..... liquids.
   s) Relative humidity is measured in .....
   t) The amount of water adsorbed or absorbed by a solid is known as .....

Part-B: Answer any four questions

2. a) Describe the working of different types of head type flowmeters with diagrams. 10

   b) Describe the construction and working of turbine mass flowmeter. Also, derive the mathematical relation for torque produced in the flowmeter. 10

3. a) Explain the construction and working of the following:
   (i) Ultrasound type level gauge
   (ii) Resistive type level gauge
   (iii) Saybolt Viscometer 7+7+6=20

4. a) Draw the diagram of electromagnetic type flowmeters and explain the basic principle of operation. 6

   b) Describe a suitable method for dew point measurement with the help of a diagram. 8

   c) Explain the construction and working of hair hygrometer. 6

5. a) Explain the construction and working of any two direct methods for liquid level measurement. 10

   b) Explain any two types of densitometer used for liquid density measurement. 10

6 a) Write short notes on any two: 7x2=14

   (i) Positive displacement flowmeters.

   (ii) Dry and wet bulb psychrometer.

   (iii) IR method for moisture measurement

   b) Describe the electrical methods for measurement of moisture with suitable diagrams. 6

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