Total number of printed pages: 02 **D/6/DIE601**

2023

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*20=20**

1. a) …….. is trapped in the diaphragm box of a diaphragm type level gauge.
   b) ……. detectors are used in a hot wire gas bridge type of densitometer.
   c) For …… fluid, the viscosity is constant.
   d) ……. phase in chromatograph carries sample to the column.
   e) In a float type level gauge, the float is usually made of ……
   f) Poise is the unit of ……
   g) …… is the ratio of absolute viscosity to density of the fluid.
   h) Radiation type level gauge uses …… rays for level measurements.
   i) Viscosity is the reciprocal of ……..
   j) A transparent glass tube is used in …… type of level measuring instrument.
   k) Venturimeter is a …… type flowmeter.
   l) Coriolis flowmeter is use for the measurement of mass flow rates of ……
   m) The unit of volumetric flow rate is……..
   n) Nutating disc is a type of ……flowmeter.
   o) The unit of dew point is ……
   p) The unit of relative humidity is……
   q) Electromagnetic and turbomagnetic flowmeters are examples of …… type flowmeters.
   r) Wet and dry bulb psychrometer is use for the measurement of…….. humidity.
   s) Capacitance type of moisture measurement is based on change of …….
   t) Continuous on line resistive methods are used for moisture measurements of ……..

Part-B: Answer any four questions

2.	a)	Derive the relationship between volumetric flow rate and pressure difference in head type flowmeters.	8
	b)	Explain the construction and working of venturimeter with a suitable diagram.	6
	c)	Describe the working of a positive displacement type flowmeter with a suitable diagram.	6
3.	a)	Explain the construction and working of the following: (i) Saybolt Viscometer (ii) Ostwald Viscometer (iii) Diaphragm type level gauge	6+7+7=20
4.	a)	Draw the diagram of turbomagnetic flowmeter and explain its operation.	7
	b)	Explain the basic principle of operation of electromagnetic flowmeter using relevant mathematical expressions.	7
	c)	How resistive type methods are used for moisture measurements? Explain using suitable diagrams.	6
5.	a)	Explain sight glass level measuring instrument.	5
	b)	Explain thermal conductivity gas analyzer.	7
	c)	Define chromatography. With a neat block diagram, explain the working of chromatograph.	8
6	a)	Write shorts notes on any three of the following: (i) Dry and wet bulb psychrometer (ii) Coriolis flowmeters (iii) Interferences in instrumentation/measurement system (iv) Turbine mass flowmeters. (v) Area type flowmeters	6*3=18
	b)	What are the three classification of hazardous area?	2

.....