

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, APRIL - 2025**

INDUSTRIAL INSTRUMENTATION

[Maximum marks: 75]

[Time: 3 Hours]

PART A

I. Answer all the following questions in one word or one sentence. Each question carries 1 mark.

(9 x 1 = 9 Marks)

		Module outcome	Cognitive level
1	Define the term pH.	M1.01	R
2	Write any one unit used for density measurement.	M1.01	R
3	Define viscosity.	M1.01	R
4	Give any two names of crystals used in scintillation counter.	M2.02	R
5	Relative humidity is expressed in	M2.01	R
6	Define force.	M3.01	R
7	Write any two examples of electrical tachometer.	M3.01	R
8	Define the principle of operation of seismic mass accelerometers.	M4.02	R
9	List the two types of vibration.	M4.01	R

PART B

II. Answer any eight questions from the following. Each question carries 3 marks.

(8 x 3 = 24 Marks)

		Module outcome	Cognitive level
1	Write the two difference between redwood and saybolt viscometer.	M1.03	U
2	Name any three industries using viscometers to measure the viscosity.	M1.03	U
3	Draw the schematic diagram of dry and wet bulb psychrometer and mark its parts.	M2.02	R
4	Compare the alpha, beta and gamma particles in the nuclear radiation.	M2.03	U
5	Sketch the schematic diagram of resistive hygrometer.	M2.02	U
6	Describe the construction of any one type of electric force transducer.	M3.02	U
7	Draw the schematic diagram of speed measurement using stroboscope.	M3.02	U

8	A hydraulic load cell is used for the force measurement in an industry, the mass of the piston is 0.1 Ton and the area of diaphragm is 1 square meter. The pressure gauge mounted on the hydraulic load cell indicates 100 kg/cm ² . Find how much force acting on the hydraulic load cell.	M3.03	A
9	List any three areas of application of MEMS.	M4.03	U
10	Describe the thickness measurement by using capacitive method.	M4.02	U

PART C

Answer all questions. Each question carries seven marks.

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	Describe the construction and working of hydrometer.	M1.02	U
	OR		
IV	Describe the construction and working of calomel electrode.	M1.02	U
V	Explain the construction and working of capillary tube viscometer.	M1.02	U
	OR		
VI	Explain any one method of density measurement using differential pressure method.	M1.02	U
VII	Explain the construction and working of impedance hygrometer.	M2.02	U
	OR		
VIII	Explain the construction and working of sling psychrometer.	M2.02	U
IX	Illustrate the operation of magnetic drag cup tachometer.	M3.02	U
	OR		
X	Illustrate the working of rotating torque sensor.	M3.02	U
XI	With suitable figures explain the eddy current methods of thickness measurement.	M4.02	U
	OR		
XII	With a neat sketch explain the construction and working of LVDT accelerometer.	M4.02	U
XIII	Describe the construction and operation of a piezoelectric accelerometer.	M4.02	U
	OR		
XIV	Describe the working of an ultrasonic method of thickness measurement.	M4.02	U
