2109230144

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER - 2023

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	List any two units of viscosity.	M1.01	R
2	Working principle of hydrometer is …………..	M1.02	U
3	Most commonly used reference electrode is …………	M1.02	R
4	List any two devices for radiation measurement.	M2.02	R
5	Define dew point.	M2.01	R
6	According to Newton's second law of motion, force is proportional to the product of ……….. and ………….	M3.01	U
7	Revolution counters are used to measure …………	M3.02	U
8	The measurement circuits used in capacitive transducers are ……. and ……..	M4.02	U
9	List the applications of smoke detectors.	M4.03	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	Define absolute, kinematic and relative viscosity.	M1.01	R
2	Draw and label the parts of combination electrode.	M1.02	R
3	Explain the working of hydrometer.	M1.02	U
4	List the applications of psychrometers.	M2.03	R
5	Write notes on the types of radiation.	M2.01	U
6	Compare AC and DC tachometer generator.	M3.03	U
7	Define torque and list the units.	M3.01	R
8	Write short notes on acceleration measurement.	M4.01	U
9	List the applications of nanosensors.	M4.03	R
10	Explain the term MEMS.	M4.01	U

PART C
Answer all questions. Each question carries seven marks

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	Explain the construction and working of Saybolt viscometer.	M1.02	U
	OR		
IV	Explain the differential pressure method of density measurement.	M1.03	U
V	Explain the construction and working of calomel electrode.	M1.02	U
	OR		
VI	Describe the method of density measurement using LVDT.	M1.03	U
VII	Explain the construction and working of a resistive hygrometer.	M2.03	U
	OR		
VIII	Describe the working of Geiger – Muller counter.	M2.02	U
IX	Illustrate the working of strain gauge load cell.	M3.03	U
	OR		
X	Explain the construction and working of an AC tachometer generator.	M3.02	U
XI	Illustrate the working of piezoelectric accelerometer.	M4.02	U
	OR		
XII	Describe the working of ultrasonic thickness transducer.	M4.03	U
XIII	Explain the working of eddy current proximity sensor.	M4.02	U
	OR		
XIV	In an LVDT accelerometer the outputs are 0.4mV/mm with a ± 25 mm core displacement. Spring constant is 300 N/m and mass of the core is 50g. Determine (i) Maximum measurable acceleration. (ii) Natural frequency (iii) Sensitivity of the accelerometer.	M4.03	A

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