

## JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY-GURUJADA VIZINAGARAM

## III B. Tech I Semester Regular Examinations November -2025

## INSTRUMENTATION &amp; CONTROL SYSTEMS

## (ME)

Time: 3 hours

Max. Marks: 70

The Question paper consists of Part A &amp; Part B.

Part A is compulsory, Answer all questions. Part B Answers any one question from each unit.

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1		PART-A	(20Marks)
	a)	Why hysteresis phenomena is more predominant in design of instruments	[2]
	b)	State the different national and international organizations to ensure the standardization of the instruments	[2]
	c)	List out the properties required for the manometric liquid used in the manometers	[2]
	d)	Which material used for the filament in the RTD thermometer. State its characteristics in measurement of temperature	[2]
	e)	Distinguish between cryogenic fuel level indicators and bubbler level indicators	[2]
	f)	What are the demerits of a capacitive level indicator	[2]
	g)	Define relative humidity and specific humidity	[2]
	h)	Mention the applications of electrical strain gauges	[2]
	i)	Give the classification of control systems.	[2]
	j)	What are torsion meters?	[2]
		PART-B	(50Marks)
		Question from Unit - I	
2	a)	What are the different sources of errors involved in the measuring instruments? Explain them in detailed	[5]
	b)	Explain the direct and indirect methods involved in the measurement systems	[5]
		(OR)	
3	a)	Explain the generalized measurement system with one the mechanical instrument used in our daily life	[5]
	b)	Explain the working of capacitive transducer to measure the displacement. What are the variables can be changed in the capacitive transducer for measurement of displacement	[5]
		Question from Unit - II	
4	a)	Compare the characteristics of the materials used for resistance thermometers and thermistors and list out the advantages and disadvantages of resistance thermometer and thermistor	[5]
	b)	Discuss the working of Ionization gauge with neat sketch	[5]
		(OR)	
5	a)	Discuss the total radiation pyrometer with neat sketch	[5]
	b)	Explain the working principles involved in the manometers and differential manometers with neat sketches	[5]
		Question from Unit - III	
6	a)	Explain how Doppler effect is used for measurement of flow velocities in ultrasonic flow meters.	[5]

	b)	Discuss the operating and working principles involved in the cryogenic fuel level indicator with neat sketch	[5]
		(OR)	
7	a)	Discuss the working of the turbine flow meter with neat sketch	[5]
	b)	Explain the operating and working principles involved in the stroboscope measuring instrument with the neat sketch	[5]
		Question from <b>Unit - IV</b>	
8		What are the different instruments used for static strain measurement. Discuss in detail with neat sketches.	[10]
		(OR)	
9	a)	With the help of suitable diagrams, explain the construction, working and application of vibrometers.	[5]
	b)	Distinguish between bonded and unbonded type of resistance strain gauges	[5]
		Question from <b>Unit - V</b>	
10	a)	What are the various elements of control system? Explain in brief	[5]
	b)	Explain, with a neat sketch, the construction and working of dynamometer for measurement of power	[5]
		(OR)	
11	a)	Explain, with a neat sketch, the construction and working of torsion meter for measurement of torque	[5]
	b)	With suitable examples, bring out the advantages of closed-loop systems over open loop systems.	[5]

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