

Question Bank

Ch. 1	<u>Transducer</u>				
Sr. No.	Questions	Nov- 16	April - 17	Nov- 17	April - 18
1.	Define following term. (i) Resolution (ii) Repeatability (iii) Accuracy (iv) Fidelity (v) Absolute pressure (vi) Mechanical hysteresis (vii) Static error	7		7	
2.	Explain Active transducer and Passive transducer. Enlist types of each.	7		7	
3.	What is electrical transducer? Explain its advantages.			3	7

Ch. 2	<u><i>Strain Gauge and Strain Measurement</i></u>				
Sr. No.	Questions	Nov-16	April -17	Nov-17	April -18
1.	What is piezoelectric transducer? Draw its equivalent circuit and derive an expression for the output voltage.	7		7	
2.	What is piezo resistive transducer? Define gauge factor. Derive an expression of the gauge factor for strain gauge in terms of Poisson's ratio.	7			
3.	What is Gauge factor? Derive the expression for Gauge factor in terms of poisson's ratio.	7		7	
4.	How is the temperature compensation carried out using strain gauge in a bridge circuit?			7	4
5.	Explain how the pressure can be measured by inductive transducer.	7			
6.	Explain construction and working principle of LVDT. Explain how it will detect displacement.				7
7.	Differentiate between un bonded and bonded type strain gauge.				3

Ch. 3	<u><i>Displacement Measurement</i></u>				
Sr. No.	Questions	Nov- 16	April - 17	Nov- 17	April - 18
1.	Describe, with neat sketches, construction and working of RVDT with its characteristic, advantages and disadvantages.	7			
2.	Describe torque measurement using proximity sensor. Also write advantages and disadvantages.	7			
3.	Explain principle of operation of L.V.D.T. with its characteristics.		7	7	7
4.	Describe the working principle, construction and application of Proximity sensors.		7		
5.	What is Hall effect? Describe the working principle, construction and application of Hall effect transducer.		7	7	4
6.	Explain working of incremental encoders used for Shaft Speed Measurement.		7		
7.	Explain optical encoder principle used for shaft speed measurement.				7

Ch. 4	<u>Force and Torque Measurement</u>				
Sr. No.	Questions	Nov - 16	April - 17	Nov - 17	April - 18
1.	Explain proving ring type load cell.	7		7	
2.	Explain proving ring type load cell and its advantages.	7		7	
3.	Explain inline rotational torque measurement using strain gauge.		7		
4.	Define Force and Name different types of electrical force sensors.			3	

Ch. 5	<u><i>Pressure Measurement</i></u>				
Sr. No.	Questions	Nov- 16	April - 17	Nov- 17	April - 18
1.	Enlist primary pressure sensing devices. Describe with neat sketch, measurement of pressure using LVDT.	7			
2.	Explain with neat sketch, how McLeod pressure gauge measure vacuum pressure?	7		4	7
3.	Write a short note on: pirani gauge.	7	7		
4.	Explain variable inductance and capacitance transducers for pressure measurement.			3	
5.	Explain Construction and Working of Bourdon Tube.			3	
6.	Define the following (i) Absolute Pressure (ii) Gauge Pressure (iii) Differential Pressure.			3	3
7.	Explain Capacitive Pressure Transducer.			3	
8.	Explain how the pressure can be measured by inductive transducer.				4

Ch. 6	<u><i>Flow measurement</i></u>				
Sr. No.	Questions	Nov- 16	April - 17	Nov- 17	April - 18
1.	Explain hot wire anemometer with neat sketch.	7			
2.	Explain ultrasonic flow meter.	7			
3.	With a neat sketch explain the construction and working of Rotameter.		7	7	
4.	Describe working principle of Electro-magnetic type flow meter, with its merit and demerits.		7	3	
5.	Explain flow measurement technique using Hot Wire Anemometer.			3	
6.	Explain construction and working of Rotameter. State it's advantages and disadvantages.				7
7.	State different methods used for Flow measurement. State advantages and disadvantages of any one of them.				7
8.	Explain any one method used for flow measurement.				4
9.	State different methods used for Flow measurement. State advantages and disadvantages of any one of them.				3

Ch. 7	<u><i>Level Measurement</i></u>				
Sr. No.	Questions	Nov- 16	April - 17	Nov- 17	April - 18
1.	Describe air purge system for level measurement.	7			
2.	Explain operation of capacitive transducers for liquid level measurements.	7			
3.	Explain principle of operation of Capacitive Transducers for level measurements.		7	7	7
4.	Explain Variable Dielectric Constant method for measurement of Liquid level using capacitive transducer.			4	

Ch. 8	<u><i>Temperature Measurement</i></u>				
Sr. No.	Questions	Nov- 16	April - 17	Nov- 17	April - 18
1.	Explain RTD with diagram, construction, principle, working, merits, demerits and application.	7			
2.	What is pyrometer? Enlist the types of pyrometer. Explain any one in brief.	7			
3.	Compare thermocouple, thermistor and RTD.		7	7	
4.	Explain in brief working principle of different temperature sensors– RTD, Thermistor, Thermocouples and Thermopiles and material used for each.		7		
5.	Describe Optical pyrometer for temperature measurement.			4	
6.	State Advantages and Disadvantages of Optical Pyrometer.			3	
7.	Explain Advantages and Disadvantages of Thermistor.			3	4
8.	Describe the construction, theory and working principle of thermocouples. Describe different types of compensations used .		7		
9.	List different types of thermocouples used for temperature measurement. Explain thermoelectric laws used for temperature measurement.				3
10.	Explain how cold junction compensation is done in thermocouple.				4
11.	Explain Muller Bridge configuration for the temperature measurement using RTD.				4
12.	Describe with neat diagram how disappearing filament type optical pyrometer can measure very high temperature. Mention it's merits and demerits.				4

Ch. 9	<u><i>Digital data Acquisition Systems and control</i></u>				
Sr. No.	Questions	Nov- 16	April - 17	Nov- 17	April - 18
1.	Describe major elements of data acquisition system.	7			
2.	Explain the need of recorders. Differentiate strip chart and X-Y recorder.	7			
3.	Describe construction, operation and applications of X-Y recorders.		7	7	
4.	Explain dual slope A/D circuits in digital data acquisition.		7		
5.	Describe operation of sample and hold circuit.			3	
6.	Explain the different components of an Analog Data Acquisition System.			4	
7.	Describe the schematic of strip chart recorder and describe it's working and construction of each components.				4