

No. of Printed Pages : 4
Roll No.

221051

**5th Sem. / ECE, ECE)
(For speech and Hearing Impaired)
Subject : Instrumentation**

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple Choice Questions. All Questions are compulsory. (6x1=6)

- Q.1 Systematic errors may arise due to different reasons:
a) Instrument error b) Environment error
c) Both A & B d) None of above
- Q.2 The deflection of any instrument is determined by the combined effect of the :
a) Deflecting torque/force
b) Control torque/force
c) Damping torque/force
d) All of these
- Q.3 The integral device that connects the oscilloscope to the test circuit is a :
a) Probe b) Test needle
c) Table cable d) None of these

Q.4 Vacuum tube voltmeter can be used to measure:

- a) DC Voltage
- b) AC Voltage
- c) AC as well as DC voltage
- d) None of these

Q.5 The source of emission of electrons in a CRT is :

- a) PN Junction diode
- b) A barium and strontium oxide coated cathode
- c) Accelerating anode
- d) Pre-accelerating anode

Q.6 LEDs emit light

- a) Only is red color b) Only in yellow colour
- c) Only is green colour d) All of these

SECTION-B

Note: Objective/Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 What do you mean by the term "Measurement".
- Q.8 Define transducers.
- Q.9 Write the principle of Piezoelectric Transducers.

- Q.10 Define Pressure.
- Q.11 What is flow measurement?
- Q.12 Define temperature.

SECTION-C

Note: Short answer type Question. Attempt any eight questions out of Ten Questions. (8x4=32)

- Q.13 What is humidity? What are its different types?
- Q.14 Define the term Instrumentation System.
- Q.15 Write a short note on force.
- Q.16 What is the importance of measurement?
- Q.17 What are the three major components of general measurement system?
- Q.18 What are different types of pressure? Explain its types.
- Q.19 Explain bimetallic thermometer in detail.
- Q.20 How dew is formed?
- Q.21 Describe the important elements of a measurement system.
- Q.22 What are the different methods of measurement?

SECTION-D

Note: Long answer questions. Attempt any two question out of three Questions. (2x8=16)

- Q.23 Compare the direct and indirect method of measurements.
- Q.24 How transducers are classified?
- Q.25 Explain the Piezoelectric Phenomenon and suggest the materials that exhibit this phenomenon.

Q.24 Define torque. What is the unit of torque? Explain measurement of torque using strain gauge torque meter.

Q.25 Write technical note on the following:

- a) Thermocouple
- b) Thermistors

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SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 The primary sensing element may be

- a) Transducer b) Data storage device
- c) Signal conditioning d) PMMC instrument

Q.2 Which transducer is known as 'self generating transducer'?

- a) Analog transducer b) Digital transducer
- c) Passive transducer d) Active transducer

Q.3 Which of the following can be measured using tachometer?

- a) Vibration b) Strain
- c) Acceleration d) Angular speed

Q.4 Thermistors are used for measurement of _____

- a) Displacement b) Torque
- c) Temperature d) pH

Q.5 pH of bases solution is _____

- a) ZERO b) <7
- c) 7 d) >7

Q.6 The humidity is expressed in _____

- a) volts b) Percentage
- c) Ohms d) Decibels

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Define measurand.

Q.8 Gauge Factor = _____

Q.9 Expand RTD _____.

Q.10 Load cell converts _____ into an electrical signal.

Q.11 Ultrasonic flow meters consist of two piezoelectric crystal. (True/False)

Q.12 Piezoelectric crystal can act as an inverse transducer. (True/False)

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SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Define measurement. Draw the block diagram of general measurement system.

Q.14 Write the advantages of electrical transducers.

Q.15 Explain pressure measurement by using bourdon tube.

Q.16 Explain semiconductor strain gauge.

Q.17 Explain the working of LVDT.

Q.18 Write short note on photoelectric tachometer.

Q.19 Explain basic principle of bimetallic thermometer.

Q.20 Explain the basic principle of electromagnetic flow meter.

Q.21 Explain electronic pH measurement.

Q.22 Explain any one indirect method of level measurement.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Explain the classification of transducers.

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SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 The transducers that convert a signal into an output signal which is continuous over time are known as ? (CO1)

- a) Digital transducers b) Analog transducers
c) Active transducers d) Passive transducers

Q.2 A load cell sensor is used to measure? (CO3)

- a) Light intensity b) Force
c) Viscosity d) None of the above

Q.3 The following sensors are used in measurement of temperature except? (CO5)

- a) RTDs b) Thermistor
c) Potentiometer d) Bimetallic strip

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Q.4 Which one of the techniques listed below, represent direct level sensing? (CO5)

- a) Differential pressure level sensors
b) Capacitance level sensing
c) Sight glass
d) None of the above

Q.5 What is the moving part of a linear variable differential transformer? (CO2)

- a) Secondary Winding b) Primary Winding
c) Diaphragm d) Core

Q.6 The quantity of water in a particular volume of air is called (CO5)

- a) Absolute humidity b) Specific humidity
c) Relative humidity d) Humidity during air

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Define a measurement system. (CO1)

Q.8 Describe the function of display devices. (CO1)

Q.9 Define pressure. (CO4)

Q.10 Write the full form of RTD. (CO5)

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Q.11 What do you mean by torque? (CO3)

Q.12 Write the formula of PH. (CO1)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 What is the importance of measurement in engineering. (CO1)

Q.14 Briefly differentiate between active and passive transducers. (CO1)

Q.15 Explain the basics of a capacitive transducer. (CO1)

Q.16 Describe the working principle of electromagnetic Flow meter. (CO4)

Q.17 How vibrations can be measured? (CO5)

Q.18 Explain the basic principle of hair hygrometer. (CO5)

Q.19 Explain the working principle of any pressure cell. (CO4)

Q.20 Describe any one method of speed measurement of motor. (CO3)

Q.21 Explain the basic working of a load cell. (CO3)

Q.22 How pressure is measured using Bourden tube? (CO4)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Explain the construction and working of a thermocouple. Explain in detail how thermocouples are used in industrial applications. (CO5)

Q.24 Explain in detail the construction, working principle and applications of LVDT (CO2)

Q.25 What is strain gauge? Explain its working principle and write the formula of gauge factor. What are the applications of strain gauges. Explain the construction of foil type strain gauge. (CO2)

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