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4th Sem / Eltx, Med Eltx, Mecatronics, Power Eltx.
Subject:- Instrumentation/ Instrument Process Control

Time : 3Hrs. M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 The measurement of a quantity
- a) is an act of comparison of an unknown quantity with another quantity
 - b) is an act of comparison of an unknown quantity with a known quantity whose accuracy may be known or may not be known
 - c) is an act of comparison of an unknown quantity with a predefined acceptable standard which is accurately known
 - d) none of these
- Q.2 Piezoelectric transducers are
- a) passive transducers b) active transducer
 - c) inverse transducer d) (b) and (c)
- Q.3 Which of the following represent active transducer?
- a) Thermocouple b) Strain gauge
 - c) Thermistor d) LVDT
- Q.4 In the strain gauge load cells, an elastic member utilize as
- a) Primary transducer
 - b) Secondary transducer

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- c) both of the above
 - d) None of these
- Q.5 Torque is the force acting on a body that produces _____
- a) pressure b) speed
 - c) rotation d) acceleration
- Q.6 Astroscope is used to measure
- a) pressure b) force
 - c) torque d) speed
- Q.7 Force summing device is used to convert applied pressure into _____
- a) force b) displacement
 - c) torque d) All of the above
- Q.8 In ultrasonic flow-meter the backward transit times across the pipe will be
- a) $T=L/(c+v\cos\theta)$ b) $T=L/(c-v\cos\theta)$
 - c) both of the above d) None of the above
- Q.9 The conductor of a RTDs should possess the following properties
- a) the change in resistance per unit change in temperature should be as small as possible
 - b) the resistance of the materials should not have a continuous and stable relationship with temperature
 - c) the change of resistance with temperature should not be a linear function
 - d) none of the above

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- Q.10 A thermistor exhibits
- only a negative change of resistance with increase in temperature
 - only a positive change of resistance with increase in temperature
 - can exhibit either a negative or positive change of resistance with increase
 - none of the above

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 Strain gauge is an active transducer. (True/False)
- Q.12 Expand LCD _____.
- Q.13 Electromagnetic flow meter is independent of liquid density? (True/False)
- Q.14 PH meter is used to measure _____.
- Q.15 The load cell converts _____ into electrical signal.
- Q.16 Expand LVDT _____.
- Q.17 Gauge factor is the ratio of _____.
- Q.18 _____ is the instrument used for measurement of humidity.
- Q.19 Define inverse transducer.
- Q.20 Thermocouple works on _____ effect.

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 Compare the direct and indirect method of measurements.
- Q.22 Explain briefly the elements of general measurement system.

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- Q.23 Explain the working principle of bimetallic thermometer.
- Q.24 Define electrical transducers. Write the differences between active and passive transducers.
- Q.25 What is relative humidity? Explain any one type of hygrometer.
- Q.26 Write a short note on gauge materials and their selections.
- Q.27 Explain any one electric method of level measurement?
- Q.28 Explain pressure measurement by using Pirani gauge?
- Q.29 Explain briefly about radiation pyrometer.
- Q.30 Explain strain gauge load cell and its working.
- Q.31 Explain the working of AC tachometer generation.
- Q.32 Explain briefly piezoelectric transducers.
- Q.33 Write technical short note on thermocouple.
- Q.34 Explain electromagnetic flow meter.
- Q.35 Describe the method for measurements of temperature using RTD.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Explain the construction, principle and working of LVDT. List the advantages and disadvantages of LVDT.
- Q.37 Explain different method of torque measurements.
- Q.38 What is strain gauge? Explain bounded and unbounded strain gauge.

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