

No. of Printed Pages : 4 181041/121043/62444
Roll No. /030954A/105955/31062

**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 A stroboscope 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 posses 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 it's 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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