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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 usage of electronic instruments is becoming more extensive because they have
a) a high sensitivity and reliability
b) a fast response and compatibility with digital computers
c) the capability to respond to signals from remote places
d) all the above

Q.2 What is Helipot?
a) Inductive element b) Capacitive element
c) resistive element d) helipad

Q.3 In semiconductor strain gauges, the change in resistance on application of strain
a) is much higher than that in the case of metal strain gauges and this is mainly due to change in dimensions
b) is much high than that in the case of metal strain gauges and this is mainly due to change in resistivity
c) is lower than that in case of metal strain gauges
d) none of the above

Q.4 The following type of load cells are insensitive to temperature variations:
a) Strain gauge load cells
b) Hydraulic load cells
c) Pneumatic load cells
d) all of the above

Q.5 The unit of torque is
a) N/m b) N.m
c) N/m^2 d) N

Q.6 Gauge pressure is the algebraic difference between
a) Total pressure - static pressure
b) absolute pressure - atmospheric pressure existing at the time of measurement
c) atmospheric pressure existing at the time of measurement - absolute pressure
d) All the above

Q.7 In strain gauge torque transducers, the strain gauge should be mounted at
a) 0 degree to the shaft axis
b) at 45 degree to the shaft axis
c) at 90 degree to the shaft axis
d) at 60 degree to the shaft axis

Q.8 A stroboscope is used to measure
a) pressure b) force
c) torque d) speed

Q.9 Platinum is the commonly used metal for RTDs. This is because
a) Platinum has a constant value of resistance temperature co-efficient of 0.004 degree C for temperature range between 0 to 100 degree C

b) the resistivity of platinum tends to increase less rapidly at higher temperatures
c) platinum is available in pure form for commercial applications and has a stability over higher ranges of temperature
d) All the above

Q.10 For measurement of vibrations, we use
a) Hygrometer b) Capacitive transducer
c) seismic transducer d) stroboscope

SECTION-B

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

Q.11 Define measurement.
Q.12 The load cell converts _____ into electrical signal.
Q.13 _____ (Rochelle salts / Silicon) is a piezoelectric material.
Q.14 Gauge factor is the ratio of_____.
Q.15 RTD is a _____ (linear / Non-linear) thermometer.
Q.16 Write two examples of passive transducers.
Q.17 Define PH value.
Q.18 Define humidity.
Q.19 What is stroboscope.
Q.20 Electromagnetic flow meters works on the principle of_____.

SECTION-C

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

Q.21 What are the importances of measurement?
Q.22 Write short note on Display Devices.

Q.23 List the different method of speed measurement. Explain any one method.
Q.24 Write any five advantages of electrical transducers.
Q.25 What is relative humidity? Explain any one type of hygrometer.
Q.26 Explain electronic pH measurement.
Q.27 Explain the basic principle of ultrasonic flow meter.
Q.28 What is strain gauge? Define Gauge factor?
Q.29 Explain any one method of measurement of vibration?
Q.30 Explain pressure measurement by using Pirani gauge.
Q.31 Write short note on Dynamometer.
Q.32 Explain strain gauge load cell and it's working.
Q.33 List any three advantages and two disadvantages of LVDT.
Q.34 Explain briefly capacitive transducers.
Q.35 Write technical short note on thermocouple.

SECTION-D

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

Q.36 How the pressure is measured by using bourdon tube. Give its advantages and disadvantages?
Q.37 Explain the fundamental principle and construction of bimetallic thermometer.
Q.38 Describe the method for measurements of temperature with the use of
i) RTD and
ii) Thermistors