Q.28 Write any five applications of LVDT.

Q.29 What is thermistor ? What is the working principle of a thermistor?

Q.30 Write any five differences between thermistor and RTD.

Q.31 What is strain gauge? Explain its advantages.

Q.32 How does a piezoelectric transducer converts force into electric charge ? What are the application of piezoelectric transducer ?

Q.33 Explain the principle of operation of shaft encoder . Write any two applications of it.

Q.34 Explain the working of resistive/carbon microphone with diagram.

Q.35 Define sensor and transducer. How they are different from each other?

SECTION-D

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

Q.36 Draw the diagram of potentiometer . Explain its working .write any 2 advantages and disadvantages of it .What are the applications of potentiometer?

Q.37 Draw the diagram of LVDT . Explain the working principle of LVDT. Write any 4 advantages of it. Write any 2 applications of LVDT.

Q.38 Explain is the working principle of capacitive transducer ? Write any 2 advantages and disadvantages of it. How does a differential capacitive pick up is more sensitive?

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3rd Sem / Instrumentation & Control

Subject:- Transducers and Signal Conditioning

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 which of the following should be the characteristic of a transducer?

a) It Should be highly non-linear
b) It should be accurate.
c) It must not be precise.
d) The resolution must be very low.

Q.2 Which of the following is an inverse transducer?

a) RTD
b) Thermistor
c) Piezoelectric transducer
d) Bourdon tube

Q.3 An LVDT works on the principle of

a) Mutual inductance
b) Self inductance
c) Resistance change
d) Capacitance change

Q.4 An accelerometer is made up of

a) Mass-damper system
b) Mass-spring system
c) Spring-damper system
d) Mass-spring-damper system

Q.5 To measure the displacement in nm range, we can use
a) LVDT
b) Potentiometer
c) Capacitive displacement transducer
d) Spring

Q.6 We can convert voltage into frequency with the help of
a) Voltage controlled oscillator
b) Wheat stone bridge
c) RVDT
d) Amplifier

Q.7 A shaft encoder is a/an
a) Electronic device
b) Electromechanical device
c) Mechanical device
d) Electrical device

Q.8 Carbon microphone consists of
a) A thick metal diaphragm
b) A non-metallic diaphragm
c) A thin non-metal diaphragm
d) A thin metal diaphragm

Q.9 RTD stands of
a) Resistance time detector
b) Resistive temperature detector
c) Resistance temperature detector
d) Rise time detector

Q.10 Strain gauge converts
a) Force into electrical quantity
b) Flow into electrical quantity
c) Humidity into electrical quantity
d) None of the these

SECTION-B

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

Q.11 Expand RVDT.

Q.12 Define transducer.

Q.13 Strain gauge converts ____ into electrical quantity .

Q.14 A piezoelectric transducer converts pressure into electric charge.(True/False)

Q.15 What is potentiometer?

Q.16 A high pass filter allow all the frequency components above the lower cut-off frequency. (True/False)

Q.17 Expand RTD.

Q.18 Generally all the transducer should be linear. (True/False)

Q.19 Define accuracy.

Q.20 What is seismic transducer?

SECTION-C

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

Q.21 Write any five selection criteria of transducer.

Q.22 Explain the working of hot wire anemometer . write any two applications of it.

Q.23 Write any five advantages of potentiometer.

Q.24 Explain the working principle of capacitive pick-up . write any three advantages of it.

Q.25 What is shaft encoder? How does it work?

Q.26 Explain how a VCO converts voltage to frequency.

Q.27 What is an accelerometer ? How does it work?