

- Q.23 List the different methods 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 Write a short note on gauge materials and their selections.
- 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 its working.
- Q.33 Explain pressure measurement by using bellows.
- Q.34 Draw the functional block diagram of data acquisition system and explain briefly the function of each block.
- Q.35 Write technical short note on thermocouple.

#### SECTION-D

**Note: Long answer 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 the fundamental principle and construction of bimetallic thermometers.
- Q.38 Describe the method for measurements of temperature with the use of i) RTD and ii) Thermistors.

#### 3rd Sem.

**Branch : Mechatronics**

**Sub.: Electronic Instrumentation**

Time : 3 Hrs.

M.M. : 100

#### SECTION-A

**Note: Multiple type Questions. All Questions are compulsory. (10x1=10)**

- Q.1 A Graphic recorder is:  
 a) An inverse transducer b) An output transducer  
 c) Both A & B d) Active transducer
- Q.2 What is a Helipot?  
 a) Inductive element b) Resistive element  
 c) Capacitive 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 higher 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 types 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)  $\text{N/m}^2$   
c) N.m                                        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) degree to the shaft axis  
b) at 45 degree to the shaft axis  
c) at 60 degree to the shaft axis  
d) at 90 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 a 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) Capacitive transducer  
b) Hygrometer  
c) Seismic transducer  
d) Stroboscope

### SECTION-B

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

- Q.11 Measurement is an act of \_\_\_\_\_ of a quantity with a standard quantity.
- 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 \_\_\_\_\_ and \_\_\_\_\_ ions determine the acidity and alkalinity of a solution.
- Q.18 Define humidity.
- Q.19 What is a stroboscope?
- Q.20 Electromagnetic flow meters work 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.