

CVM UNIVERSITYM.Sc. Instrumentation & Control, Sem-1st

Examination February 2021

Course Code: 101390101, **Paper Title:** Transducers**Time:** 02:00 PM to 04:00 PM**TOTAL MARKS:** 60**Date:** 22th Feb. 2021**Note:** (1) Attempt all question

(2) Figure to the Right side indicate marks

Q. 1 (A) Answer the following multiple choice question.**[08]**

- (1) For instrumentation and measurements, Stress is define as force per unit _____ .
 (A) Area (C) Length
 (B) Thickness (D) None of above
- (2) Foil type strain gauges have _____ .
 (A) batter thermal and physical strength (C) Poor resonance and electrical strength
 (B) poor thermal and physical strength (D) All of above
- (3) As per Bernoulli's equation Quantity of fluid Between two points is _____ .
 (A) Increase (C) Constant
 (B) Decrease (D) None of above
- (4) Ultra-sonic flow meters working principle is _____ .
 (A) Kirchoff current law (C) Kirchoff voltage law
 (B) Ohms low (D) None of above
- (5) Temperature measurement range for LM 335 is _____
 (A) 40° to 100° (C) -40° to 100°
 (B) 40° to 1000° (D) None of above
- (6) In load cell _____ is use as transducer for weight measurement.
 (A) Thermocouple (C) Both (A) & (B)
 (B) Strain gauge (D) None of above
- (7) From Ionization _____ is separated.
 (A) Ions & electron (C) Both (A) & (B)
 (B) Neutron & proton (D) None of above
- (8) Hall's effect is use for _____ .
 (A) Calculate the Carrier Concentration (C) Both (A) & (B)
 (B) Determine the Type of Semiconductor (D) None of above

Q.1 (B) Answer the following (Fill in the blank & True / False)**[08]**

- (1) For strain gauge material named Nicrome have ____ % share of Nickle.
- (2) Pressure can be classified in _____ pressure & elastic pressure.
- (3) The triple point of pure water is at _____ °F .
- (4) Cadmium sulphide has max response at a wave length ____ nm to up to 1000 nm.
- (5) Capacitive transducer can work by changing distance between two plates. **True / False**
- (6) Mechanical properties of monocrystalline silicon have low hysteresis and high repeatability. **True / False**
- (7) An IC Temperature Sensor is a two / three terminal integrated circuit. **True / False**
- (8) Lead sulphide IR to 3000 nm Sensitive to weak source of radiation and Response time is 0.1 ms. **True / False**

Q.2 Answer the following.(attempt any six, each two marks) [12]

- (1) Define active & passive transducer with examples in each type.
- (2) Write a short note on Synchros & resolvers.
- (3) Draw Rotameter structure diagram.
- (4) Explain Cup type anemometer.
- (5) Explain Carnot cycle for temperature.
- (6) Explain working of Pyrometer.
- (7) Enlist force measurements techniques
- (8) List three different basic construction types of platinum resistance thermometer and draw any one

Q.3 (A) Write a note on electric wired strain gauge & unbounded strain gauge with necessary diagram [05]

(B) A strain gauge device has following configuration [03]
Initial resistance of wire is =120 ohm
Strain $\Delta L / L = 500 \mu\epsilon$
Change in resistance $\Delta R / R = 0.001$
Find gauge factor?
Find change in resistance?

OR

Q.3 Explain principle of displacement for Resister and inductor using suitable example and diagrams [08]

Q.4 With necessary diagram show working principle of head type flow meter. [08]

OR

Q.4 Elaborate Pezo resistive and Pezo junction, Explain solid state needle construction and working for pressure measurement. [08]

Q.5 With neat diagram explain construction, principle, working, types and usage of thermocouple. [08]

OR

Q.5 What is force? Explain proving ring and beam cantilever working with neat diagram & list applications. [08]

Q. 6 Explain Hall's effect and its principals; list any eight applications for Hall's effects. [08]

OR

Q. 6 What is photo emissive device? Explain photo multiplier tube with diagram. [08]

-: All The Best:-