



IMS Engineering College, Ghaziabad

Department of Computer Science and Engineering

Subject Name: Sensor & Instrumentation	Subject Code	KOE-044
Date of Handover:	Max Marks	1.5
Date of Submission:		

ASSIGNMENT NO.-2

Q.no	Question	Mapped CO
a.	Explain the construction and principle of working of an optical encoder.	CO1
b.	Explain the construction of wire wound strain gauge and derive the expression for the gauge factor.	CO1
c.	What are the common materials used for piezoelectric sensor. Describe the principle of operation of piezoelectric pressure sensor.	CO1
d.	Describe the working construction of resistance thermometers. Describe the materials used for RTDs, along with their properties. Sketch their typical characteristics.	CO2
e.	A quartz crystal has the dimensions of 2.5mm×2.5mm×1.5mm. Quartz has the following property; charge sensitivity = 24C/N, Young's Modulus = 9.1×10^{11} N/m ² , permittivity = 40.6×10^{-12} F/m. Calculate the value of force, charge and voltage if the crystal is subjected to a strain of 10 μ Strain.	CO2