

*MADHAV INSTITUE OF TECHNOLOGY AND SCIENCE, GWALIOR*

**SENSOR TECHNOLOGY**

ASSIGNMENT 6



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**1.EXPLAIN WORKING OF PIEZOELECTRIC SENSORS.**

*Working principle:*

**When a force is applied to a piezoelectric material, an electric charge is generated across the faces of the crystal. This can be measured as a voltage proportional to the pressure.**

*Working:*

1. Piezoelectric crystal is placed between two metal plates where there is no conduction initially.
2. When mechanical force is applied by the plates on the piezoelectric crystal, electric charges get unbalanced.
3. The excessive positive and negative charges come to the either sides of the crystal faces.
4. These gathered charges are collected by the plates, this opposite charge creates a potential difference.
5. Due to the voltage generated, electric current starts flowing which is known as piezoelectricity.

**2.WRITE DOWN THE ADVANTAGES OF PIEZOELECTRIC SENSORS.**

Some of the advantages of piezoelectric sensors are:

1. Offers high frequency response
2. High transient response- detect changes in microseconds and give linear output
3. Ruggedness- suitable for hash environment
4. Small dimensions- easy to handle
5. Wide range operating temperature- between -40°C to 85°C.
6. Insensitive to electromagnetic field and radiations.