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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, February/March-2022
ELECTRONIC SENSORS
(Common to EEE, CSE, IT)

Time: 3 Hours   **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1.a) What is a strain gauge? Explain the operation of Strain gauge.
  b) Briefly define and explain all the static characteristics of transducers. [8+7]

2.a) Derive an expression for sensitivity of a piezo-resistive crystal subjected to a strain.
  b) Explain in detail about Linearity and sensitivity of a sensor. [8+7]

3.a) What is the principle of gas thermometric sensors? Briefly explain about gas thermometric sensors.
  b) Define thermal sensor. Classify various temperature sensors. [10+5]

4.a) Explain in detail about the magnetic thermometer.
  b) Explain the working principle of nuclear quadrupole resonance thermometer. [8+7]

5.a) Explain the principle of operation of anisotropic magneto resistive (AMR) sensors.
  b) Define Hall Effect, draw and explain the Hall Effect sensor. [8+7]

6.a) With a neat sketch explain the functioning of Eddy current transducer.
  b) Explain in detail about the construction and working principle of synchros. [8+7]

7.a) What are the commonly used photoresistor materials? Discuss their spectral ranges and usable resistance ratio ranges.
  b) Describe the basic construction and working of an electro chemical cell. [8+7]

8.a) Describe the concept of smart sensors? Explain the essential elements of a "Smart sensor" unit with a neat diagram.
  b) Describe the technique of computing air speed on aircraft by measuring the static pressure, total pressure and temperature. [8+7]

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