Code No: 156DK

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year II Semester Examinations, February - 2023
BASICS OF SENSORS TECHNOLOGY
(Common to ECE, CSE, IT)

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

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	State the working principle of Sensors.	[2]
b)	Classify different types of sensors.	[3]
c)	What is the Piezoelectric effect?	[2]
d)	Write the applications of thermocouples.	[3]
e)	Define relative velocity.	[2]
f)	Write the applications of gyroscopes.	[3]
g)	List the Different Methods of measuring consistency and Viscosity.	[2]
h)	Give specific gravity scales used in Petroleum Industries.	[3]
i)	What is a master sensor?	[2]
j)	Briefly explain the Variable Frequency Drive.	[3]

PART – B

(50 Marks)

2.a) Differentiate between thermistor and resistance temperature detector.
b) Explain how capacitance can be used for sensing. [5+5]

OR

3.a) Explain the operation of LVDT with a neat sketch.
b) Enumerate the different cases of Eddy current sensors. [5+5]

4.a) Formulate the working principle of the piezoelectric sensor with an illustrative diagram.
b) A piezoelectric sensor has C = 500 pF. The sensor leakage resistance is 10GΩ. The amplifier input is 5MΩ. Compute the lower corner frequency. [6+4]

OR

5.a) Explain the Laws of Thermocouples.
b) Discuss the cold junction compensation in thermocouples circuits. [6+4]

6. Discuss the various methods to measure rotational velocity. [10]

OR

7. Explain the density measurement using the strain gauge load cell method and the buoyancy method. [10]

8. Draw and explain the industrial consistency meter to measure the consistency. [10]

OR

9. Explain how level meters and microphones are helpful in measuring sound. [10]

10. Explain the interfacing of the density sensor. [10]

OR

11. With a neat sketch, explain the interfacing of the viscosity sensor. [10]

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