

Name:	 UPES UNIVERSITY WITH A PURPOSE
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, Dec 2022

Course: Introduction to Sensor Technology and Instrumentation

Semester: 3rd

Program: B.Tech CSE+ IoT&SC

Time 03 hrs.

Course Code: CSIS 2007

Max. Marks: 100

Instructions: Explain using diagrams, if applicable.

SECTION A

S. No.		Marks	CO
Q 1	Explain the basic architecture of a motion sensor. State two factors of improvement on which future research might focus.	4	CO1
Q 2	List and discuss various sensors whose working is derived from the fundamental concept of hall effect.	4	CO2
Q 3	List and briefly explain the various characteristics of a sensor.	4	CO2
Q 4	Identify the use of gyroscope sensor in healthcare.	4	CO1
Q 5	Discuss the use of accelerometer sensor in automotive.	4	CO2

SECTION B

Q 6	Classify and discuss the various types of measuring forces and the respective sensors that are used to measure pressure of each category. <p style="text-align: center;">OR</p> Identify the use of strain gauge with wheat stone bridge for measuring pressure in different combinations.	10	CO3
Q 7	Discuss and assess following effects in context of sensing some property: a. Hall Effect b. Inverse Piezoelectric Effect	10	CO1
Q 8	Describe the working and application of magnetometer.	10	CO3
Q 9	Discus the concept and process of sensor data analytics in detail.	10	CO2

SECTION-C

Q 10	Generalize the SCADA concept and compare its architecture in different improved generations.	20	CO4
Q 11	How actuators differ in their fundamentals from sensors? Classify and discuss the actuators that provides linear, rotation, discrete and continuous motions respectively. <p style="text-align: center;">OR</p> Demonstrate the working concept of Voice Coil, linear Solenoid and AC motor in detail.	20	CO5