Name: Enrolment No:	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: Introduction to Sensor Technology and Instrumentation **Semester: 2nd**
Program: B.Tech CSE+ IoT&SC **Time 03 hrs.**
Course Code: CSIS 1001 **Max. Marks: 100**

Instructions:

SECTION A

S. No.		Marks	CO
Q 1	Illustrate Thermoelectric effect and discuss the effect of temperature on voltage generated.	4	CO2
Q 2	In what circumstances, Monolithic architecture of SCADA should be preferred. Describe along with its working.	4	CO4
Q 3	Generalize the working of a non-contact type temperature sensor.	4	CO1
Q 4	List the characteristics of an OPAMP as an amplifier.	4	CO2
Q 5	On what grounds, ultrasonic sensor performs better than PIR sensor for detecting motion.	4	CO3
	SECTION B		
Q 6	Quote the basic concept of working of capacitive sensors along with the explanation of different terminologies related to capacitive sensors.	10	CO1
Q 7	Tabulate various characteristics that are helpful in describing a sensor.	10	CO3
Q 8	Draw schematic diagram and discuss two combined applications of temperature sensors and chemical sensors. OR Draw schematic diagram and discuss two combined applications of motion sensors and chemical sensors.	10	CO3
Q 9	Discus the working of Data Acquisition System in context of sensors.	10	CO4
	SECTION-C		
Q 10	Examining the various ways for measuring forces, summarize the working of sensors that are used for force measurement. OR Analyze and discuss working of various sensors that are used for measuring pressure.	20	CO2
Q 11	Quote the fundamental concept of accelerometer sensors. Classify and asses different types of sensors for measuring acceleration.	20	CO5

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SECTION A

S. No.		Marks	CO
Q 1	Examine Seebeck effect and relate the voltage generation with temperature gradient.	4	CO2
Q 2	Generalize the working of any accelerometer sensor.	4	CO4
Q 3	Explain the working of infrared pyrometer temperature sensor.	4	CO1
Q 4	List and discuss the applications of an OPAMP.	4	CO2
Q 5	On what grounds, ultrasonic sensor performs better than PIR sensor for detecting motion.	4	CO3
	SECTION B		
Q 6	Identify the process of electric field focusing and recognizing conducting and non-conducting objects in context of capacitive sensors.	10	CO1
Q 7	Using what measures, the consumption of power in sensors and related electronic circuits can be managed.	10	CO3
Q 8	Draw schematic diagram and discuss two combined applications of temperature sensors and chemical sensors. OR Draw schematic diagram and discuss two combined applications of motion sensors and chemical sensors.	10	CO3
Q 9	Stating the need for a Data Acquisition System, examine the key measurement components of a DAQ device.	10	CO4
	SECTION-C		
Q 10	Generalizing the working of various mechanical and electro-mechanical force sensors, justify their applicability and effectiveness.	20	CO2
Q 11	Along with comparison of actuators with sensors, categorize and examine various types of actuators in detail. OR Summarize the objectives of using SCADA system concept. Connect different generations of SCADA architecture as an improvement over the previous generation.	20	CO5