BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BE **SEMESTER : VII/ADD**
BRANCH: EEE/MECH/PROD/ECE **SESSION : MO/18**

SUBJECT: MEC1047 SENSOR AND TRANSDUCER

TIME: 3:00 HRS. **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Differentiate between transducer and sensor with example.	[2]
Q.1(b)	What are the different types for which transducer's are classified? Give examples in each classes.	[4]
Q.1(c)	Discuss different characteristics of sensor. Also explain the different types of sensor failures.	[6]
Q.2(a)	What is strain gauge? Explain their types.	[2]
Q.2(b)	What are the different types of Inductive sensors? How is displacement measured by such sensors?	[4]
Q.2(c)	Explain working principle of Eddy Current Sensor and its application in speed measurement (tachometer).	[6]
Q.3(a)	List out some low temperature thermal sensor.	[2]
Q.3(b)	How does an acoustic temperature work? What are the different types of acoustic sensors?	[4]
Q.3(c)	What is Quartz crystal thermoelectric sensor? Also discuss the types of photo detectors.	[6]
Q.4(a)	Explain Electro-analytical Sensor.	[2]
Q.4(b)	Explain Standard Hydrogen Electrode (SHE).	[4]
Q.4(c)	Discuss about the molecular selective electrode by giving its constructional details.	[6]
Q.5(a)	What are the different types of protocol used in smart transmitter data communication?	[2]
Q.5(b)	Explain Intelligent sensor using suitable block diagram.	[4]
Q.5(c)	By giving a complete architecture of Automation explain the role of smart sensor.	[6]
Q.6(a)	Define digital transducer.	[2]
Q.6(b)	Explain the working principle of resistive digital encoder and its advantage disadvantage.	[4]
Q.6(c)	Discuss about the major differences between Zener barrier and Galvanic isolator. Also explain the details of temperature switches.	[6]
Q.7(a)	What are the different technologies used today in sensors development briefly explain?	[2]
Q.7(b)	Explain about the Automotive sensor with appropriate diagram.	[4]
Q.7(c)	Explain about the MEMS and its basic processes.	[6]

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