

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI**  
**(MID SEMESTER EXAMINATION SP/2024)**

**CLASS: BTECH**  
**BRANCH: ECE**

**SEMESTER :VI**  
**SESSION :SP/2024**

**SUBJECT: EC357 INTRODUCTION TO INDUSTRIAL INSTRUMENTATION**  
**TIME: 02 Hours** **FULL MARKS: 25**

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates
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		CO	BL
Q.1(a)	Describe active and passive transducers with examples.	[2]	1 1
Q.1(b)	What are smart sensors? Explain the essential elements of a smart sensor unit with a neat diagram.	[3]	1 1,2
Q.2(a)	Illustrate the working of fiber optic sensors with the help of a block diagram.	[2]	1 2
Q.2(b)	Write the advantages of silicon sensors. Explain the concept of liquid flow measurement using a silicon sensor.	[3]	1 2
Q.3(a)	Describe the basic construction and operation of an electrochemical cell.	[2]	1 1
Q.3(b)	Explain the configuration of a generalized biosensor. Discuss various types of biosensors.	[3]	1 2
Q.4(a)	Discuss the commonly known ionizing radiations and the detectors used for their measurement.	[2]	1 2
Q.4(b)	Demonstrate the construction and working of Ionization chamber.	[3]	1 3
Q.5(a)	Why signal conditioning is necessary in a DAS? Explain ratiometric conversion and logarithm conversion.	[2]	2 2
Q.5(b)	State the important factors that decide the configuration and subsystem of DAS. Draw schematic block diagram of a General Data Acquisition System and explain it.	[3]	2 1,2

:::23/02/2024 M:::