

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

**CLASS: BTECH
BRANCH: BT**

**SEMESTER : IV
SESSION : SP/2025**

SUBJECT: EC259 SENSORS AND TRANSDUCERS

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 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.
-

| | | CO | BL |
|--------|---|-------|----|
| Q.1(a) | Define Sensors & Transducers and explain with suitable examples. | [5] 1 | 1 |
| Q.1(b) | Define the important characteristics of sensors. | [5] 1 | 1 |
| Q.2(a) | Design and define the potentiometers, Metal and Semiconductor Strain gauge. | [5] 2 | 2 |
| Q.2(b) | Design the Signal conditioning circuit for piezoresistive pressure sensors. | [5] 2 | 2 |
| Q.3(a) | Design and define the LVDT, RVDT and eddy current transducers. | [5] 2 | 2 |
| Q.3(b) | Define the Hall effects sensors, piezoelectric transducers. | [5] 3 | 3 |
| Q.4(a) | Design and define the parallel plate capacitive sensor and variable permittivity capacitive sensor. | [5] 3 | 3 |
| Q.4(b) | Explain the smart sensors. Show the difference between normal sensors and smart sensors. | [5] 4 | 3 |
| Q.5(a) | Design and define the digital transducers, principles and application of fiber optic sensors. | [5] 5 | 4 |
| Q.5(b) | Explain the biosensors and their important markers. Define the role of silicon sensors in robotics. | [5] 5 | 4 |

:02/05/2025:M