

FOURTH SEMESTER B.TECH. (INSTRUMENTATION AND CONTROL ENGG.) END SEMESTER DEGREE EXAMINATION, JUNE - 2019

SUBJECT: SENSOR TECHNOLOGY [ICE 3284]

TIME: 3 HOURS

MAX. MARKS: 50

Instructions to candidates : Answer ALL questions and missing data may be suitably assumed.

- 1A Explain the sensor limitations in the measuring environment.
- 1B Demonstrate sensor characteristics with a suitable example.
- 1C List the parameters required to check for cabling of the sensor in measuring environment.
- 2A Illustrate any two types of structure for piezoelectric accelerometers.
- 2B Derive the expression for sensitivity of capacitive accelerometer.
- 2C List the applications of piezoresistive and capacitive accelerometers.
- 3A Write the target considerations required for the design of inductive displacement sensor.
- 3B Explain different types of principles involved in the measurement of displacement using capacitive sensor.
- 3C Explain the any two application of Hall Effect sensor.
- 3D The output of an LVDT is connected to a 5V voltmeter through an amplifier whose amplification factor is 250. An output of 2mv appears across the terminals f LVDT when the core moves through a distance of 0.5mm. Calculate the sensitivity of the LVDT and that of the whole set up. The milli voltmeter scale has 100 divisions. The scale can be read to 1/5 of a division. Calculate the resolution of the instrument in mm.

(2+3+3+2)

(3+4+3)

(4+3+3)

- 4A Describe any two applications of photo conductive cell.
- 4B Write a short note on
 - i. Bio-sensor.
 - ii. Metal oxide chemical sensor.
- 4C Briefly discuss on the resource constraints that governs the choice of WSN sensor nodes.
- 5A What are various features of a typical smart sensor?
- 5B Describe any two applications of wireless sensor networks.
- 5C Discuss different types of network topologies used in wireless sensor networks.

(3+3+4)

(3+4+3)
