MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

SEVENTH SEMESTER B.TECH. (INSTRUMENTATION AND CONTROL ENGG.)
END SEMESTER DEGREE EXAMINATIONS, MARCH - 2021

> **SMART SENSORS [ICE 4012]**

TIME: 3 HOURS

26-03-2021

MAX. MARKS: 50

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

1A. With a block diagram explain the constituent elements of sensor electronics.
1B. Describe hardware compensation and software compensation. Also compare them.
1C. Briefly explain Sensorization?

(4+4+2)

2A. What are the objectives of smart sensor?
2B. Explain beacon based transmission used for sensor communication in Zigbee.
2C. Differentiate standard and extended CAN frame format

(3+5+2)

3A. Describe fifth and third generation smart sensor. Compare their features.
3B. With a neat block diagram, explain 1451 functionality with its sub-protocol.

(5+5)

4A. IEEE 1588-2008 is included as part of IEEE 1451 protocol. Explain the reasons for the same.
4B. Elaborate the functionalities of IEEE 1451.4.
4C. Specify the operations of IEEE 1451.5.

(5+3+2)

5A. Explain the operation of smart sensor system in ADAS.
5B. Discuss the implementation of smart sensor system for a scenario of smart grid.

(5+5)

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