



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

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

SUBJECT: SMART SENSORS [ICE 4012]

TIME: 3 HOURS

03-02-2021

MAX. MARKS: 50

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

- 1A. When is it necessary to transform the sensor needs from inspection to condition monitoring? Justify.
1B. Explain and compare analog and digital compensation techniques. (4+6)
- 2A. Discuss the design aspects of two wire communication.
2B. Illustrate the data transmission using zigbee, (4+6)
- 3A. With the block diagram explain the CAN interconnection in automobile.
3B. Describe an integrated smart sensor. What are its functions?
3C. Compare second and third generation smart sensors with examples. (3+4+3)
- 4A. Outline the state machine for the functionality of 1451.5
4B. Explain the operation of transducer channel status of 1451.3 (5+5)
- 5A. Distinguish the operation of class 1 and class 2 1451.4 system.
5B. With examples discuss two application of smart sensing in vehicle system. (5+5)
