



MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

SEVENTH SEMESTER B.TECH. (INSTRUMENTATION AND CONTROL ENGG.)

END SEMESTER DEGREE EXAMINATIONS, DECEMBER - 2019

SUBJECT: SMART SENSORS [ICE 4012]

TIME: 3 HOURS

MAX. MARKS: 50

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

- 1A. List of the challenges of smart sensor.
- 1B. Explain the process of sensor signal enhancement.
- 1C. Sketch the different types of two wired communications. (4+3+3)
- 2A. Represent the message frame of MODBUS.
- 2B. Explain the operation of interrupt and pooling in CAN.
- 2C. Compute the network parameter given 5 number of children's, 3 number of Routers and depth of network being 3 for a Zigbee network. (2+3+5)
- 3A. Characterise the transducer channel functional block of 1451.0
- 3B. Depict the working of publish subscribe communication model.
- 3C. List the elements of TED framework with description of its range and size. (4+4+2)
- 4A. Represent the timestamp generation model of 1588-2008 protocol.
- 4B. Explain the concept of dynamic networking in 1451.1.4
- 4C. What are the challenges of the Smart factory? (2+3+5)
- 5A. Sketch the connectivity diagram of Intelligent Transport System.
- 5B. How is the demand management achieved in Smart grid?
- 5C. What is the features of smart grid? (5+2+3)
