

Question Paper

Exam Date & Time: 28-Nov-2022 (09:00 AM - 12:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

MANIPAL INSTITUTE OF TECHNOLOGY, MANIPAL, SEVENTH SEMESTER B.TECH END SEMESTER EXAMINATIONS,
NOV/DEC 2022

Smart Sensor [ICE 4058]

Marks: 50

Duration: 180 mins.

A

Answer all the questions.

Instructions to Candidates: Answer ALL questions Missing data may be suitably assumed

- 1) Explain the working of following circuits using diagram. (5)
 - A) a). Pressure sensor circuit using an instrumentation amplifier.
b). Sleep mode operational amplifier. [CO1, PO1, PO2, PO3, BL2]
 - B) With the block diagram explain the working of Generic control system. [CO1, PO1, PO2, PO3, BL1] (2)
 - C) Explain various algorithms used for pattern recognition. [CO4, PO1, PO4, PO5, BL3] (3)
- 2) Describe the working of network capable application processor with its diagram. (5)
[CO2, PO1, PO2, PO3, PO4, PO5, BL2]
 - A)
 - B) Explain the concept of sensor plug and play. [CO2, PO1, PO2, PO3, PO4, PO5, BL2] (2)
 - C) Using a diagram explain the characteristics of surface acoustical devices. [CO3, PO1, PO2, PO3, PO4, PO5, BL3] (3)
- 3) Describe various choices that exists in the RF front end of a portable communication product with its block diagram. [CO3, PO1, PO2, PO3, PO4, PO5, BL2] (4)
 - A)
 - B) Explain network communication models used in IEEE 1451.1 standard. [CO2, PO1, PO2, PO3, PO4, PO5, BL2] (3)
 - C) Draw the flowchart of IEEE 1451.4 TEDS system. [CO2, PO1, PO2, PO3, PO4, PO5, BL2] (3)
- 4) Explain the different blocks of flowchart of 1451.4 TEDS system. [CO2, PO1, PO2, PO3, PO4, PO5, BL2] (4)
 - A)
 - B) Explain the working of remote sensing system with a diagram. [CO3, PO1, PO2, PO3, PO4, PO5, BL2] (2)
 - C) Answer following questions: (4)
 - a). Discuss the various communication protocols which are used in smart home automation system.
 - b). Write different characteristics that should exhibit for a sensor used in an IoT network. [CO5,

PO1, PO5, BL3]

- 5) Draw the diagram of distributed systems interface. Explain how can it be used for automotive safety network. [CO2, PO1, PO2, PO3, PO4, PO5, BL2] (5)
- A)
- B) What is Biometric sensor? List the operations that can be performed on the images captured by biometric sensor. [CO5, PO1, PO5, BL3] (2)
- C) With the block diagram explain components used in a biometric system. [CO5, PO1, PO5, BL3] (3)

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