Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

SEVENTH SEMESTER BTECH. (E & C) DEGREE END SEMESTER EXAMINATION
DECEMBER 2020/JANUARY 2021
SUBJECT: EMBEDDED NETWORKING (ECE - 4002)

TIME: 3 HOURS **MAX. MARKS: 50**

Instructions to candidates

- Answer **ALL** questions.
- Missing data may be suitably assumed.

1A. Describe the following with relevant diagram in I2C:
i. START and STOP condition ii. Data validity and Byte format
iii. Negative acknowledgement
What are the conditions that lead to the generation of a NACK in I2C?

1B. Explain in detail the hardware and software handshaking in RS232 standard.

(5+5)

2A. Mention the advantages of CAN bus. Explain the different types of termination methods used in CAN bus.

2B. Describe the control transfer data flow method in USB.

(5+5)

3A. What are the different speeds supported by IEEE 802.3 standard? Describe the function of each field in the Ethernet frames. Also mention the size of each field.

3B. What are the advantages of fiber optic cable? Describe the following encoding techniques:
i. Block encoding ii. Manchester encoding iii. Multi-level encoding

(5+5)

4A. What are the methods used to enhance the performance of TCP in embedded systems? Describe the steps involved in sending and receiving messages in embedded system using TCP.

4B. Mention the advantages and disadvantages of Email for embedded system. Describe the requirements for an SMTP clients in Email for embedded systems.

(5+5)

5A. What are the primary resource constraints in wireless sensor network? With neat block diagram, explain the functions of all blocks in wireless sensor node.

5B. Describe the following sleep scheduled techniques used in WSN to enhance lifetime of sensor nodes.
i. Sensor MAC (S-MAC) ii. Data gathering MAC (D-MAC)

(5+5)