Hall Ticket No | | | | | | | | | | | Question Paper Code: BES209

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

M.Tech I Semester End Examinations (Regular) - January, 2018

Regulation: IARE–R16

EMBEDDED NETWORKING

(Embedded Systems)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

UNIT – I

1. (a) With neat block diagram and timing diagram explain synchronous and asynchronous serial communication. **[7M]**
   (b) Describe serial peripheral interface. Discuss on inter integrated circuits. **[7M]**
2. (a) List different types of bus interface. Discuss on ISA bus interface **[7M]**
   (b) List the components of embedded systems. What are the constraints in embedded networks? **[7M]**

UNIT – II

3. (a) With neat block diagram describe CAN controller. Discuss different types of error identified by CAN. **[7M]**
   (b) Explain the following with respect to CAN **[7M]**
      i. Bit stuffing
      ii. Data frame
      iii. Remote frame
4. (a) Mention and describe different USB bus states. Draw circuit diagram to interface USB with PIC microcontroller. **[7M]**
   (b) Name all common USB descriptors. Illustrate the descriptors hierarchy. **[7M]**

UNIT – III

5. (a) Explain the different types of cables suitable for Ethernet. Describe advantages and disadvantages of these cables. Compare their performance. **[7M]**
   (b) Illustrate interfacing Ethernet switches. Describe how packets are transferred during this communication process. **[7M]**
6. (a) Why Ethernet is popular and widely used in networking? Discuss its limitations. **[7M]**
   (b) With a neat sketch illustrate the use of Ethernet controllers in interfacing to network cables. **[7M]**

UNIT – IV

7. (a) Explain supporting UDP for serving web pages with dynamic data in embedded systems. **[7M]**

   (b) How many fields are there in TCP header segment? Mention the significance of each field. **[7M]**

8. (a) Explain common gateway interface (CGI) protocol to interface embedded systems and to serve web pages to respond to user input. **[7M]**

   (b) Draw network protocol stack and illustrate the significance of UDP and TCP in stack. Explain the communication process between user interface and network. **[7M]**

UNIT – V

9. (a) How wireless sensor network different from general network of computers. List applications of WSN. **[7M]**

   (b) What are the different topologies suitable for wireless sensor network. Compare the performance of these topologies. **[7M]**

10. (a) How to achieve energy efficient wireless sensor network? Explain the components responsible to reduce the energy consumed in the network. **[7M]**

    (b) Explain in detail about data centric routing with its application. **[7M]**