

Code: EC7T4A

**IV B.Tech - I Semester – Regular/Supplementary Examinations
October - 2018**

**EMBEDDED AND REAL TIME SYSTEMS
(ELECTRONICS & COMMUNICATION ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11 x 2 = 22 M

1.

- a) What is the difference between the general purpose computing system and embedded system?
- b) What is an embedded firmware?
- c) List out the characteristics of embedded systems.
- d) Draw the FSM model for automatic Tea / Coffee vending machine.
- e) List out the different states in a timer.
- f) Write different modes and devices used for serial communication.
- g) Write IEEE 1394 bus standard.
- h) What is the advantage of piconet?
- i) What is an interrupt response?
- j) Explain the steps involved in the design process of embedded systems.

k) Provide all the requirements need for creating a TCP/IP stack.

PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) Explain the domains and areas of applications of embedded systems. 8 M

b) Classify different communication interfaces of an embedded systems and explain I2C bus in detail. 8 M

3. a) Explain operational quality attributes in detail. 8 M

b) Discuss the different computational models used in embedded system design. 8 M

4. a) Mention different types of serial ports in embedded system and explain RS232C in detail. 8 M

b) What is a timer? How does a counter perform
i) timer functions. ii) time capture functions 8 M

5. a) Demonstrate the features and uses of PCI bus. 8 M

b) Discuss Ethernet standard. 8 M

6. a) Discuss processes and threads in real time operating systems. 8 M

b) With a neat sketch, explain the hardware architecture of adaptive cruise control system in a car. 8 M