B.TECH DEGREE SEVENTH SEMESTER EXAMINATION NOVEMBER 2016

(2013 SCHEME)

Course Code and Name: 13.706.3 EMBEDDED SYSTEMS

Duration of Exam: 3 hours   Maximum Marks: 100

PART A (Answer all questions. Each carries 2 marks**)**

I.   (a) List four key features of embedded hardware.
        (b) What is UART? Explain the data frame for UART.
        (c) Explain the basic DRAM cell.
        (d) How does a counter perform timer function?
        (e) List the advantages offered by an ASIC for designing an embedded system.
         f) Explain Mutex Operation.
        (g) List out the functions of a kernel. What can be the functions outside the kernel?
        (h) Explain the use of semaphores.
        (i) Describe the functions of linker in embedded programming.
        (j) What is a mailbox? How does a mailbox pass a message during an IPC.

(10*2=20 Marks)

PART B (Answer any one full question from each module.**)**

MODULE I

II.   a) Discuss the recent trends and challenges in the field of Embedded Systems. Also
        discuss the design issues in an embedded system.
(10 Marks)
        b) With a neat diagram, explain the CPU architecture of PIC processor.   *(10 Marks)*
OR
III.   a) Explain the embedded system design process with an example.   *(10 Marks)*
        b) With a neat sketch, explain the structure of a typical embedded system.
(10 Marks)

MODULE II

IV.   a) Describe in detail HDLC protocol.   *(10 Marks)*
        b) Explain the interfacing of 2MB RAM with the processor   *(10 Marks)*

OR

V.   a) Describe the key features of CAN and I^{2}C bus protocol.   *(10 Marks)*

b) How does a DMA help in faster task execution in an embedded system.

(10Marks)

MODULE III

VI.   a) Briefly explain the creation of processes and its management.   *(10 Marks)*

b) Explain about the disk drive partitioning in Linux.

(10 marks)

OR

VII.   a) Discuss the handling of interrupt source call by the RTOS.   *(8 Marks)*

b) Briefly explain the different methods of Inter process Communication.

(12 Marks)

MODULE IV

VIII.   (a)Briefly describe about debugging and emulation.   *(10 Marks)*

(b) Explain the different techniques used for the optimization of memory.

(10 Marks)

OR

IX.   Briefly explain the design methodology of a burglar alarm system.   *(20 Marks)*