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)
V. a) Describe the key features of CAN and I²C bus protocol. (10 Marks)
b) How does a DMA help in faster task execution in an embedded system. (10 Marks)

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)