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END SEMESTER EXAMINATIONS Dec 2013

B.E/Sixth Semester Full Time, (R-2008)

Electrical and Electronics Engineering

EE 9351 EMBEDDED SYSTEM DESIGN

Time: 3 Hours

Max. Marks: 100

Answer ALL Questions

PART – A (10 x 2 = 20 Marks)

1. Distinguish between Hardware, software & Firmware.
2. Give two uses of Processor Stack.
3. What is meant by handshaking in Bus Communication?
4. Write briefly on the Master-Slave concept of the IIC Bus.
5. How are interrupts useful in building embedded system?
6. Justify the need for watchdog-timer & system reset in Embedded Processors.
7. How is time slice scheduling important in RTOS?
8. State any 2 unique features in commercial RTOS that differ it from a general OS.
9. What is need for Linking & debugging?
10. What is the role of Timer Flag in the polled mode and in the interrupt mode?

PART – B (5 x 16 = 80 Marks)

- 11(a). What is TASK: *spawn, suspension, resumption, delay* ? [4+12]
(b) Explain briefly on multitasking RTOS with involving priority level switching & the round-robin scheduling mechanism.
- 12(a). Mention two advantages of the need of special Bus Protocols & Bus drivers for Embedded processors. With neat figures explain on one type of serial communication.

[6+10]

(OR)

12(b) What is the enumeration phase of the USB Protocol ? Discuss with neat figures on the USB Bus communication protocol for establishing system interface via USB interface.

{6+10}

13(a) Explain on how memory management achieved in processors using any 2 memory mapping techniques? Discuss briefly on any 2 Cache replacement techniques stating its importance?

(OR)

{8+8}

13(b) Write briefly on any TWO:

{8+8}

(i) Semaphores

(ii) mailbox & message for Interprocess communications

(iii) Context switching

14.(a) Write briefly on any TWO:

{8+8}

(i) Need for co-processing unit.

(ii) Interrupt Service Routine

(iii) Instruction pipeline

(OR)

14(b) Write briefly the features effective in Building Multitasking in RTOS. Quote the program /logic of any one feature of a commercial RTOS like VxWorks/others.

[13+3]

15a) With neat figures explain the PIC Microcontroller that makes it useful for developing Embedded Applications.

[16]

(OR)

15b) Discuss on the Design Strategies, the algorithm involved in building system automation for the development of any one Embedded Application with quoting a suitable example.

[16]