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B.E. Degree Examinations, Nov. / Dec. 2012

Electrical and Electronics Engineering

Sixth Semester: F.T.B.E

EE9351 Embedded System Design

Time: 3 Hours

Max.Marks: 100

Answer ALL Questions

PART – A (10 x 2 = 20 Marks)

1. Give two reasons on how an embedded processor is uniquely different than a general purpose processor.
2. What is needed for Watchdog Timer?
3. Explain briefly on CAN Bus.
4. Describe one type of Bus supporting of Master-Slave Configuration in Bus topology?
5. Mention any one design technique that supports Multiple Interrupt handling in Embedded processor.
6. What is non-preemptive Scheduling in RTOS?
7. List the names of any 4 types of commercial RTOS.
8. Explain Buffer overrun & Buffer under run.
9. What is a compiler & a cross compiler?
10. Explain the role of on chip Debugging.

PART – B (5 x 16 = 80 Marks)

11. What is TASK: *spawn, suspension, resumption, delay* ? Explain briefly on multitasking RTOS with involving priority level switching & the co-operative scheduling mechanism.

(4+12)

12.a. Explain with neat diagrams on how the speed of a processor is improved by the DMA services.

(16)

(OR)

12.b With neat Figure describe the Functional Blocks of a typical embedded processor .

(16)

13.a. Describe briefly on the memory management & mapping techniques that enhance the efficiency of the Processor.

(16)

(OR)

13.b. With neat figures explain any TWO of the following

(8+8)

(i) Cache replacement policy

(ii) Software & Hardware Timer .

(iii) Instruction pipeline

14.a. List the various types & need for serial Communication Bus. With neat figure explain on any one type of Serial Communication Bus & its Bus Protocol. (8+8)

(OR)

14a) Write briefly on any two: (8+8)

- (i) Semaphores for intertask communication**
- (ii) mailbox & message for Interprocess communications**
- (iii) pipe & queue for multitasking**

15a) With respect to the Vxworks /any one type of RTOS briefly discuss by quoting either the executable codes / or explain the algorithmic concept on the

(i) Semaphores for intertask communication

(ii) queues for multitasking (8+8)

(OR)

15b) Write briefly on any two: (8+8)

(i) Future trend & challenges in embedded processor design.

(ii) Co-processing unit for Embedded processor.

(iii) Digital display controller using Processor