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1st - AN

Question Paper Code : 31283

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Seventh Semester

Electronics and Communication Engineering

080290056 — EMBEDDED SYSTEMS

(Common to Medical Electronics Engineering)

(Regulation 2008)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   How Embedded system is different from conventional PC?

2.   List any four embedded development tools and its functions.

3.   How bit addressing is achieved in memory?

4.   Which functions are called as reentrant functions?

5.   What is the need for capture/compare unit in a microcontroller architecture?

6.   Compare the features of RISC and CISC machine.

7.   Tabulate the difference between conventional operating system with RTOS.

8.   How priority inversion problem occurs?

9.   List the major features of MUCOS RTOS.

10. In how many states a task in an RTOS can exists?

PART B — (5 × 16 = 80 marks)

11. (a) (i) How to create the specifications for an embedded system? Explain it with an example. (8)

     (ii) Explain in detail about the hardware architecture of an embedded system. (8)

Or

     (b) (i) What are the recent trends in embedded systems? How to generate an executable image? (8)

     (ii) Explain the software architecture of an embedded system. (8)

12. (a) (i) How to access the memory mapped I/O devices? Explain it with suitable diagrams. (8)

     (ii) With an example explain how to access shared memory device drivers. (8)

Or

     (b) (i) Give an example for 'C' code to justify the need for passing and retrieving parameters. (8)

     (ii) What are the advantages and disadvantages of automatic allocation, static allocation and dynamic allocation? (8)

13. (a) (i) How many parallel ports are there in PIC 16C series of Microcontroller? Explain the parallel port structure of PIC microcontroller with suitable diagrams. (8)

     (ii) Draw the register file structure of PIC 16 C series of microcontroller and explain different addressing modes. (8)

Or

     (b) (i) What is the significance of V_{Ref} voltage in an ADC? Tabulate the on-chip ADC performance characteristics of PIC microcontroller. (8)

     (ii) Explain the on-chip memory organization of PIC microcontroller. (8)

14. (a) (i) What is shared data problem? How to prevent shared data problem? Explain it with an example. (8)

     (ii) Explain the architecture of the kernel of a RTOS. (8)

Or

(b) (i) Compare the features of message queues, mailboxes, pipes and event functions. (8)

(ii) With an example explain the timer functions of a RTOS? (8)

15. (a) With a block diagram explain how to design an automatic chocolate vending machine using MUCOS RTOS. (16)

Or

(b) Draw the functional block diagram of MUCOS based smart card system and explain the functions of it. (16)

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