ANNA UNIVERSITY COIMBATORE

M.E. / M.Tech. DEGREE EXAMINATIONS : JUNE / JULY 2009

REGULATIONS : 2007

SECOND SEMESTER

071280043 / 071290011 - EMBEDDED SYSTEMS

(COMMON TO POWER ELECTRONICS AND DRIVES / APPLIED ELECTRONICS)

Time: 3 Hours **Max.Marks : 100**

PART - A

(20 x 2 = 40 Marks)

ANSWER ALL QUESTIONS

1. Differentiate interrupt vector from interrupt vector table
2. Write notes on CPSR.
3. Name the services facilitated by the Process Manager
4. What is meant by USART? Why it is used?
5. Compare ARM, Thumb instruction sets.
6. What are the various addressing modes used in ARM?
7. Name the flags of power control register(PCON) in PIC microcontroller
8. What are the three strategies used by RTOS on interrupt source calls?
9. Briefly discuss about PIC 16F8XX memory
10. Name the four approaches used by the embedded system developer to the edit-test-debug cycles.
11. How soft real time system differs from hard real time system?
12. Define: Baud rate. Write the expression for the same.
13. Draw block diagram of a simple integrated development environment (IDE).
14. Write short notes on timers used in PIC microcontrollers.
15. What is called as software-hardware tradeoff?
16. Compare cross complier and cross assembler
17. List out various features of ARM instruction set.

18. What are the various preprocessor structural elements available in C program?
19. Write the steps involved in transfer of values from the arguments of calling function to called function's arguments.
20. Name the four pointers available in the advanced processors.

PART - B

(5 x 12 = 60 Marks)

ANSWER ANY FIVE QUESTIONS

21. a. In detail discuss about the various advantages of assembly language programming and high-level language programming 6

    b. List out the various features of locator. Give the various differences in addressing in linker and locater? 6

22. a. Explain in detail about the various uses of the various sets of instructions as the program elements 4

    b. Draw block diagrams of an emulator and an in-circuit emulator. Discuss in detail about the back support hardware package and In-Circuit Emulator (ICE) subunits and operation of the ICE. 8

23. a. List out the various design principles used when an RTOS is used to design an embedded system. 6

    b. What are the various uses of the data structures in a program element 6

24. a. Discuss about the operation of following modules of PIC microcontroller.
        i. CAPTURE
        ii. PWM
        iii. COMPARE 8

    b. What is called as I^2C? With neat diagrams discuss about the I^2C structure and operation 4

25. a. What is called as logic analyzer? Draw the diagram showing the detailed design development process using the simulation. And list out typical features of simulator. 6

b. Discuss about the various services offered by kernel in an operating system (OS) 6

26. a. How can ISR be executed in two parts? List out features of ISR call. 6

b. Discuss about AMBA bus protocol with neat diagram. 6

27. a. In detail discuss about platform-dependency issues and need for appropriate OS-hardware interface functions 6

b. Draw and explain ARM core data flow model 6

28. a. What is called as Scheduling? In detail discuss about the preemptive scheduling model operation. 6

b. What is called pipelining? With neat diagram explain 3-stage pipeline in ARM processor. 6

******THE END*******