Code No: 07A7EC16 **R07** **Set No. 2**

IV B.Tech I Semester Examinations,MAY 2011
MICRO CONTROLLERS AND APPLICATIONS
Common to Bio-Medical Engineering, Electronics And Telematics, Electronics And Communication Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Explain Round robin pre emptive multi-tasking algorithm.
   (b) Explain Interrrupt latency, interrupt response time and interrupt recovery time in real time operating system [8+8]
2. (a) Explain the working of 8051 oscillator and clock.
   (b) Explain the use of SFRS. [8+8]
3. Describe RISC architecture features. List the innovative feature in a RISC with respect to CISC. [16]
4. How can we rotate satellite dish axis by 30^0 from the present angular position using a stepper motor and 8051 microcontroller? Design a suitable circuit and write assembly language code for 8051. The step angle is 1.8^0 assume current position is 0^0. [16]
5. Write a program to arrange the given numbers in ascending and descending order using assembly language program of 8051. [16]
6. Explain in detail all kinds of interrupts by giving the block diagrams of the different mechanisms. [16]
7. How do you find the TH & TL Values when crystal frequency is 12MHz for the system 8051? [16]
8. (a) Explain IOCO and IOSO register for timer 1 in 80196
   (b) what are the interrupt sources for synchronous serial transmission and reception in 80196? What are the identification flags and local enable bits for these sources? [8+8]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: 07A7EC16 **R07** **Set No. 4**

IV B.Tech I Semester Examinations,MAY 2011
MICRO CONTROLLERS AND APPLICATIONS
Common to Bio-Medical Engineering, Electronics And Telematics, Electronics And Communication Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) What are the advantages of dividing an application into multiple tasks? What is a task control block?
   (b) Explain the mailbox. Show how a task sends message to another task waiting for the message to start. Also show how a task sends a message pointer to another task waiting for that to start [6+10]
2. (a) Give the programmer model of ARM.
   (b) Explain SWI instruction in ARM and give its applications. [8+8]
3. List the interrupts of the 8051 and discuss in detail. [16]
4. Program timer '0' in 'C' to generate a square wave of 6KHz. Assume XTAL = 12MHz. [16]
5. (a) Bit 0 at the INT-PENDING register of 80196 gets. How do we find its timer that overflows?
   (b) Explain about the high speed output CAM in 80196?
   (c) How do we reset timer 2 in 80196? [6+6+4]
6. (a) Compose a 40-value look up table that will generate a saw tooth wave using an 8 bit D/A converter.
   (b) Write an assembly language program to initialize the above D/A converter which is interfaced to 8051. [8+8]
7. Give flag settings of the following instructions. [8×2]
   (a) ADDC
   (b) RRC
   (c) SETBC
   (d) POP
   (e) XCH
   (f) CLR
   (g) ORL
   (h) ANL.

8. (a) Narrate how the design of the internal RAM in 8051 can take place.
   (b) Write about EPROM in 8051. [8+8]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: 07A7EC16 **R07** **Set No. 1**

IV B.Tech I Semester Examinations,MAY 2011
MICRO CONTROLLERS AND APPLICATIONS
Common to Bio-Medical Engineering, Electronics And Telematics, Electronics And Communication Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Explain different data processing instructions in ARM 7 (with examples).
   (b) What is Barrel shifter? How does it increase the speed of execution in ARM processor. [10+6]
2. How do you program the 8051 microcontroller in mode2?
3. How do we initiate round robin time slice scheduling? Give atleast two examples of the need for round robin scheduling. [16]
4. What are the steps involved in MODE1 programming and give an example? [16]
5. What are the methodologies adopted in organizing register banks 0 to 3. [16]
6. (a) How do we program bud rates during the UART functions in 80196?
   (b) How do we program a software timer for an interupt after 4.096 ms in 80196 using a crystal of 12 MHz? [8+8]
7. Write an assembly language program to display the character found in location on char 1 to char 4 on four common cathode 7 segment displays. Port 1 holds the lower byte of charater and port 3 holds higher byte. Timer 0 generates a 2.5ms delay interval between characters in an interrupt mode. use a look up table to convert the code from hex to a corresponding pattern. R_0 points to the displayed character. [16]
8. Write a program to send 50 output pulses to vary the duration of pulse using NOP. [16]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: 07A7EC16 **R07** **Set No. 3**

IV B.Tech I Semester Examinations,MAY 2011
MICRO CONTROLLERS AND APPLICATIONS
Common to Bio-Medical Engineering, Electronics And Telematics, Electronics And Communication Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) What is the difference between Interrupt request (IRQ) and fast interrupt request (FIQ) in ARM. Explain?
   (b) Compare the CPSR and SPSR registers formats and their purpose in different modes of ARM processor operations. [8+8]
2. Write short notes on the following:
   (a) Serial data buffer.
   (b) Addressing modes of 8051 MC
   (c) CPU times with suitable diagrams. [5+5+6]
3. Discuss briefly MODE 0, MODE 1 & MODE 2 of 8051 controller. [16]
4. (a) Draw the memory map of 80196. What architectural features are included in 80196 over 8051
   (b) How does the PUSH and POP occur using stack pointer of 80196? [8+8]
5. (a) Write an algorithm for sending ASCII codes in a FIFO repeatedly upto maximum 32 times when a key is pressed for a duration more than 200ms. Key is repeatdly passed every 200ms. Write 8051 assembly routine also
   (b) Draw an interface for 3 scan lines and 5 return lines in a keypad. [8+8]
6. (a) Give procedure to reset TMOD register.
   (b) Does programming TMOD register effects PSW? It so how? [8+8]
7. How do you provide the mechanism so that a polled interrupt controller can receive two simultaneous interrupts in a system? [16]
8. How do we initiate pre emptive scheduling and assign prioritieus to the tasks for scheduling? Give two examples of the need for pre emptive scheduling? [16]

⋆ ⋆ ⋆ ⋆ ⋆