Code No: N0423/R07 **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, Feb/Mar 2011
MICRO CONTROLLERS AND APPLICATIONS
(Common to Electronics & Communication Engineering, Bio-Medical Engineering and Electronics & Telematics)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. Bring out the functional difference between microprocessors and microcontroller by drawing their basic block diagrams. [16]
2. Write a program to add 4, 32bit numbers using 8051 μC assembly language. [16]
3. Write short notes on the following:
   (a) Non maskable interrupts.
   (b) Exceptions. [2×8]
4. (a) Write short notes on TCON register.
   (b) Give instructions to set the register PSW & PC. [8+8]
5. Use an 8-bit D/A converter which generaters 1000Hz sine wave. 166 decimal samples are stoled in a look up table and fed to the converter at a rate of one sample per 6 μ sec. The look uptable is pointed by DPTR and R_1 is used to count the samples. Write assembly language program to initialize the D/A converter which is interfaced to 8051. [16]
6. (a) List the best strategies for synchronisation between the tasks and ISRS.
   (b) Explain the terms process descriptor and process control block [16]
7. (a) How do we program bit rate/clock rate during the synchronous function in an 80196? Explain for a bit rate of 9600 bud/sec
   (b) What is an overrun error?
   (c) For a 12 MHZ crystal with 80196, what is the period between the two inputs to FRC timer 1? [16]
8. (a) Draw and explain the ARM core dataflow model.
   (b) What are the various condition flags in ARM? [8+8]

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Code No: N0423/R07 **Set No. 2**

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

Answer any FIVE Questions
All Questions carry equal marks

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1. How the mapping of control address data select and control signal in microprocessor can be map on to 8051 environment? [16]
2. Explain in detail the function of CPU registers. [16]
3. What are the instructions that will enable and disable interrupts explain in detail? [16]
4. Write what in the value (in hex) loaded into TH, TR, TF for to program timers for mode2.
   (a) MOV THO, #OOH
   (b) MOV TRO, #12H
   (c) usTFO, #BH. [16]
5. Use an 8-bit D/A converter which generaters 1000Hz sine wave. 166 decimal samples are stoled in a look up table and fed to the converter at a rate of one sample per 6 μ sec. The look uptable is pointed by DPTR and R_1 is used to count the samples. Write assembly language program to initialize the D/A converter which is interfaced to 8051. [16]
6. 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]
7. Draw 80196 Verticle windows. What are the uses of vertical windows? What are the advantages of providing adjustable vertical window size? [16]
8. (a) What is current program status register? Explain the generic structure of program status register as ARM core.
   (b) What are the various processor modes of ARM. What is thin order of privilage? Explain. [8+8]

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Code No: N0423/R07 **Set No. 3**

IV B.Tech I Semester Supplementary Examinations, Feb/Mar 2011
MICRO CONTROLLERS AND APPLICATIONS
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Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Write a program to arrange the given numbers in ascending and descending order using assembly language program of 8051. [16]
2. Write a program to add 4, 32bit numbers using 8051 μC assembly language. [16]
3. Narrate module coupling in interrupt service routine using 8051 interrupt structure. [16]
4. Write a routine for delay that a timer starts to the time the TF flag in raised. [16]
5. (a) LCD display module takes a certain time for the excuction of its own instruction. This delay is varaiable and depends on many factors. Discuss this issue and findout the solutions to make the software independent of actual LCD interface Hardware.
   (b) What are the various selection criteria between LCD and LED display. [8+8]
6. (a) When do we use cooperative scheduling and do we use preemptive scheduling?
   (b) Explain the importance of each of the following metrics of a real time system
   (i) through put
   (ii) interrupt latencies,
   (iii) average response times and
   (iv) deadline misses [8+8]
7. (a) List the special function registers of 80196. How does 26 byte addresses accommodate more than 26 special function register bytes?
   (b) Describe the function of HSO and HSI unit in 80196 [8+8]
8. (a) How can we change the PSR contents through instructions in ARM? Explain different PSR instructions in ARM.
   (b) Explain how a constant is loaded into a general purpose register of ARM processor.
   (c) What is Thumb state? [6+6+4]

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Code No: N0423/R07 **Set No. 4**

IV B.Tech I Semester Supplementary Examinations, Feb/Mar 2011
MICRO CONTROLLERS AND APPLICATIONS
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Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Draw and explain the block diagram of external data memory interface. [16]
2. Describe the procedure for I/O bit manipulation programming? [16]
3. How do you compare interrupts Vs polling? [16]
4. (a) Find the timer's clock frequency and its period for various 8051-based systems with the following frequencies.
   i. 8MHz
   ii. 4MHz
   iii. 16MHz.
   (b) Write about GATE in TMOD register. [8+8]
5. (a) LCD display module takes a certain time for the excuction of its own instruction. This delay is varaiable and depends on many factors. Discuss this issue and findout the solutions to make the software independent of actual LCD interface Hardware.
   (b) What are the various selection criteria between LCD and LED display. [8+8]
6. (a) Explain round robin and pre emptive scheduling with examples. When do we use each of them?
   (b) How does a semaphore handles a critical section of a task? [10+6]
7. (a) What are the uses of the bits in interupt pending register? How do we use these for the interupt servicing at timer 1 and timer 2 in 80196?
   (b) How do we reset the timer 2 in 80196? [10+6]
8. (a) What are the Thumb version load-store multiple instructions? Explain them with example.
   (b) Explain how Thumb state changes to ARM state and vice verse. [8+8]

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