SET-1

Code No: 37071

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

R05 IV B.Tech. I Semester Supplementary Exams, May/June – 2009

MICROCONTROLLER AND APPLICATIONS

(Electronics and Communications Engineering and Biomedical Engineering and Electronics and Telematics Engineering)

Time: 3 hours Max. Marks.80

Answer any Five questions

All questions carry equal marks

1a)	Draw the architecture of a 8051 micro controller and explain?	(12M)
b)	Mention the resources in advanced micro controllers?	(4M)
2a)	Draw the memory organization in 8051?	(10M)
b)	How do having separate caches for instruction, data, and branch help?	(6M)
3a)	Explain the interrupt structure in 8051?	(8M)
b)	How is the vector address used for interrupt source?	(8M)
4a)	Draw and discuss the formats of TMOD and PSW of 8051 micro controller?	(8M)
b)	Discuss the following signal descriptions: i)INT0/INT1 ii)TXD iii)T0 and T1 iv)RD	(8M)
5a)	Interface the 8051 with Analog to digital converter.	(8M)
b)	Explain about Robotics and Embedded control in micro controllers.	(8M)
6a)	Write the basic design principles when using an RTOS	(10M)
b)	Describe briefly about ISR handling in an RTOS environment	(6M)
7a)	Explain the memory map in Intel 80196 family	(8M)
b)	Describe I/O ports available in 16-bit micro controllers	(8M)
8a)	Write about 32/16-bit ARM instruction set?	(8M)
b)	Write the features of ARM7 architecture?	(8M)

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SET-2

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1a) Draw the pin diagram of 8051 micro controller and explain the function of pins?
b) Mention the differences between micro controllers micro processors? (10+6M)

2a) Describe the interfacing of External RAM and ROM with 8051? (10M)
b) Explain data and bit manipulation instructions? (6M)

3a) Define context, interrupt latency and interrupt service routine (10M)
b) What are advantages and disadvantages of interrupt driven data transfer? (6M)

4a) AN 8051 based system required external memory of four 8k bytes of SRAM each and two chips of EPROM of size 4k bytes. The EPROM starts at 1000H. SRAM address map follows EPROM map give the complete memory interface. (16M)

5a) Interface Keyboard/Display controller(8279) with 8051 (10M)
b) What is the need of interfacing and write the differences of interfacing in Micro controllers and Micro Processors. (6M)

6a) Write the software development tools available for Micro controllers? (6M)
b) Mention the advantages of usng RTOS in design and running of 8051 and List RTOS services? (10M)

7a) Draw and Explain the architecture of 16-bit micro controllers? (10M)
b) Mention the differences between 16-bit micro controllers and 8-bit micro controllers? (6M)

8a) Write about ARM architecture and compare with 8051 micro controller architecture (10M)
b) Explain briefly about ARM instruction set? (6M)

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SET-3

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1a)	Explain the function and formats of counters and Timers in 8051? (10M)	
b)	List out the interrupts available in 8051 and explain briefly?	(6M)
2a)	Write the process of assembling and running an 8051 program?	(8M)
b)	Write the Loop and Jump instructions in 8051?	(8M)
3a)	Write the procedure for programming 8051 to transfer data serially?	(8M)
b)	Write the program for the 8051 to transfer letter 'A' serially at 4800 baud rate continuously?	(8M)
4a)	Assuming XTAL=11.0592 MHz, Write a program to generate a square wave of 50MHz frequency on pin $P_{2.3}$?	(8M)
b)	Explain the basic registers of Timers in 8051?	(8M)
5a)	Explain the interfacing of printer with 8051?	(8M)
b)	Write the program to interface ADC with 8051	(8M)
6a)	Write about RTX51 Full preemptive scheduling?	(8M)
b)	Explain multi tasking system and write the uses of RTOS in design?	(8M)
7a)	Draw and Explain the architecture of 80196?	(12M)
b)	Write about internal special function registers?	(4M)
8a)	Describe about ARM architecture, organization and specifications?	(12M)
b)	Write addressing modes of ARM MCU?	(4M)

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SET-4

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MICROCONTROLLER AND APPLICATIONS

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Time: 3 hours Max. Marks.80

Answer any Five questions

All questions carry equal marks

1a)	Mention the differences between the Micro controllers and General purpose processors ?	(6M)
b)	Write the criteria for choosing a micro controller and micro controller resources?	(10M)
2a)	Explain the memory organization in 8051?	(10M)
b)	Write about the ports available in 8051?	(6M)
3a)	Explain the data and bit manipulation instructions in 8051 with examples?	(8M)
b)	Write the steps in executing an interrupt in micro controller?	(8M)
4a)	What value do we need to load into the Timer's registers if we Want to have a time delay of 5ms. Show the program for Timer 0 to Create a pulse width of 5ms on $P_{2.3}$ (Assume XTAL=11.0592MHz)	(8M)
b)	Write the Mode2 programming of Timers in 8051 in detail	(8M)
5a)	Interface the stepper motor with 8051 to rotate continuously?	(8M)
b)	Generate the Sine wave by using DAC interfacing with 8051	(8M)
6a)	Write about ARM architecture and compare with 8051 micro controller architecture?	(10M)
b)	Explain briefly about ARM instruction set	(6M)
7a)	Explain the following i) Process management ii)Memory management iii) Device management	(10M)
b)	Differentiate between the Operating system and Real time operating system with examples?	(6M)
8a)	Give the programmer model for ARM?	(8M)
b)	List the SFRs in 80196.How do the the 26B addresses accommodate more than 26sf6 bytes?	(8M)

x-x-x