Dr Apoorva Dewate — 3/5/2023

Electronics and Comm Engg Deptt, NIT Hamirpur, HP
EC - 321 Microcontroller and Embedded Systems
End-semster Exam 2023

Time Limit: 180mins   ☺   Max Marks: 5 X 10 = 50

Attempt any 5 Questions:

1. Draw the possible scheduling using Earliest-Deadline First algorithm for the following process. Give the CPU utilization factor. Discuss the pros and cons for the same.

Process	Execution Time	Period
P1	1	4
P2	2	5
P3	1	3

2. Write an assembly program using look-up table to find the square root of a number at port0. If the square root is not an integer, then find the square of the number. Give the output at port1.

3. Draw the interface diagram for 8051 with 16KB of program space, 16KB of data ROM starting at 0000, and 16K of RAM starting at 8000H. Use absolute address decoding. Show the address range for each.

4. Interface 8051 with a PC using UART. When the character 'Y' is received by 8051, send the message "I am enjoying life" back to PC. When the character 'N' is received by 8051, send the message "I am not enjoying life" back to PC. Use 9600 baud rate. Show calculations. Meanwhile count the number of times a door bell is pressed using timer0.

5. Write short notes on NVIC in ARM. Explain any 3 features that help speed up the interrupt process. What is priority inversion and how can its effect be minimized? Illustrate with examples.

6. Explain the programmer's model of ARM V7 and the various registers and modes. List the purposes of each of the registers with examples.