



Daffodil International University
Faculty of Science & Information Technology
Midterm Examination, FALL-2023
Course Code: CSE231

Course Title: Microprocessor, Embedded Systems and IoT

Level: 3

Term:1

Batch:60

Time: 1 Hour and 30 Minutes

Marks: 25

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	<p>a. For the memory location whose physical address is specified by 1256Ah, give the address in segment: offset form for segments 1256h and 1240h.</p> <p>b. A memory location has a physical address of A3E7Bh. In what segment does it have an offset of 5D2Fh?</p>	[5]	CO1
2.	<p>For each of the cases below, determine the value of SF, ZF, PF, CF and OF and justify the values with proper reason.</p> <p>a. ADD AX,BX Where AX Contain 7FFFh and BX Contain 001h</p> <p>b. SUB AX,BX where AX contains 8000h and BX contains 0001h</p>	[2.5*2]= 5	CO2
3	<p>Apply the assembly code of the loop using LOOP instruction to get the output even numbers between 0 and 10.</p>	[5]	CO3
4.	<p>Suppose you're a developer for designing the traffic light control sequence as described the step below :</p> <p>1. In that, first the Lane 1 gets its Green light turned. Hence, in all the other Lanes, their corresponding Red lights are turned on. After a time delay of predefined time say 5 seconds, the Green light in Lane 3 must be turned on and the Green light in Lane 1 must be turned off.</p> <p>2. As a warning indicator, the Yellow light in Lane 1 is turned on indicating that the red light is about to light up. Similarly, the yellow light in Lane 3 is also turned as an indication that the green light is about to be turned on.</p> <p>3. The yellow lights in Lanes 1 and 3 are turned for a small duration say 2 seconds after with the red light in Lane 1 is turned on and green light in Lane 3 is also turned on.</p>	[10]	CO4

	<p>4. The green light in Lane 3 is also turned on for a predefined time and the process moves forward to Lane 4 and finally Lane 2.</p> <p>5. The system then loops back to Lane 1 where the process mentioned above will be repeated all over again."</p> <p>How would you program the Arduino to handle this specific traffic pattern, including the timing of green, red, and yellow lights, to efficiently manage traffic at a busy intersection of 4 way lanes with proper diagram?</p>		
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