Daffodil International University

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Midterm Exam Examination, Summer 2021 @ DIU Blended Learning Center

Course Code: CSE423 (Day), Course Title: Embedded System

Level: 4 Term: 2 Section: PC-A, PC-B, PC-C

Instructor: TNU Modality: Open Book Exam

Date: Sunday 4 July, 2020 Time: Slot B: 01.30 – 4.00(Day)

Two and half hours (2:30), Marks: 25

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1. a) Can we say Arduino is an Embedded system? Provide all possible justifications based on your considerations. **[7]**

b) Mr. X has an Arduino UNO. How much voltage he can provide in that with Vin and barrel jack?

c) What is PWM? Which pins can do PWM? What is the highest value we can write with PWM pins and why?

d) What is the highest value we can get from analog pins of Arduino and why?

2. Which micro-controller is used in Arduino? How that microcontroller is different from a microprocessor and how its working is distinguished from general-purpose computing? Mention 4 special functions of Arduino that we use for Analog and Digital I/O. **[6]**

3. You have a younger brother name Babu. To impress babu you need to make a project with Arduino, 10 LED, 2 push button and other related components. The project will run like the following pattern: **[6]**

- At first round LED 1 will turn on then LED 2 then LED 3 then so on till LED 10.
- Then at second round the LED 1, 2, 3, 4, 5 and 6 will get brightness from 0 to highest value gradually.
- If button 1 is pressed 5 of the LED will blink within 300 milli seconds and rest 5 LED will blink within 1500 milli seconds and this will be happened for 10 times for each time button 1 is pressed.
- If button 2 is pressed for even times LED 1 to LED 5 will be on and rest will be off, if button 2 is pressed for odd times LED 6 to LED 10 will be on and rest will be off.

Now make a code of Arduino for this. Provide necessary diagrams, results discussion and your own opinion

4. Your friend Mushfiq has 2 temperature sensors “T1, T2”, a fan “F”, 2 lights “L1, L2” and 2 day- light LDR sensors “D1, D2” in his home. Now consider the following: **[6]**

- When both T1, T2 > 30 degree of centigrade F will be On.
- When any one of D1, D2 is high only L1 will be On.
- When both D1, D2 is low both L1, L2 will be On.
- In other cases, L1, L2 and F will be Off.