Department of Computer Science & Engineering

University of Asia Pacific (UAP)

Program: B.Sc. in Computer Science and Engineering

Final Examination	**Fall 2020**	**3rd Year 2nd Semester**
Course Code: CSE 315	**Course Title: Peripheral and Interfacing**	**Credits: 3**
Full Marks: 120* (Written)		**Duration: 2 Hours**

* Total Marks of Final Examination: 150 (Written: 120 + Viva: 30)

Instructions:

1. There are **Four (4)** Questions. Answer all of them. All questions are of equal value. Part marks are shown in the margins.
2. Non-programmable calculators are allowed.

1. **a)** Suppose you are working for Leads Corporation as an IoT engineer. Recently, the project manager has assigned you to a project in which you will have to save Temperature and Humidity of their office's locality in a text file and report him directly. 30
Please write the code for the above scenario with Arduino circuit design.

2. **a)** Take last three digits of your registration number and take the last bits of each number. Like, if your ID is 1720789 then last three digits are 7, 8, and 9 convert each number to its corresponding binaries and take last bits of each [7=011**1**, 8=100**0**, 9=100**1**] here, the last three bits are **1,0,1.** Now input the bits through A, B, C of the circuit and determine the output on X, Y. 30
Write the code for the above scenario with Arduino circuit design. The bit extraction must be done through code.

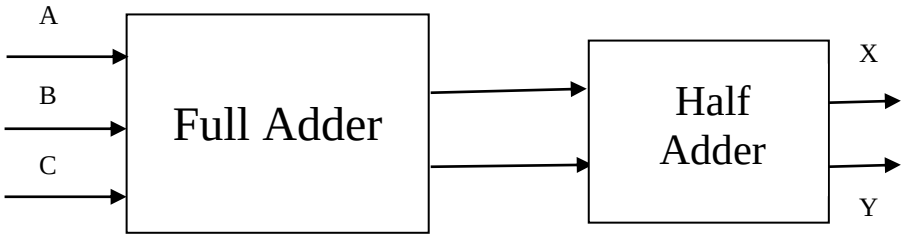

Figure 2-A: A circuit with a Full adder and Half Adder

3. **a)** Design a 2-bit ALU using function for Arduino. 20
Please draw the corresponding circuit diagram using Arduino.

b) Write a code and draw a circuit using single digit 7 segment to display the last digit of your registration id. 10
Please note that the 7-segment display must be a common anode variation.

4. **a)** Design a reverse counter using figure 4-A. The counter will count from 1000 to 0 automatically in the decreasing order. As an instance- 1000, 999, 998, 997, …, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0. 30

Figure 4-A: A Four-digit seven segment display

OR

a) Suppose, you have been hired by Brunswick Corporation as an IoT engineer. You have been assigned to a survey project in which you have to send the daily temperature and humidity of each hour, and you also have to send the average temperature and humidity of a week of your locality to their main office (Lake Forest, Illinois, United States) through ThingSpeak channel. The channel has been created by them with your UAP registration id and the API key is your eight-digit date of birth (e.g., 31121999) concatenated with 'brunXuap'. Write the code for above scenario and solve the above-mentioned Internet of Things related problem. 30