Department of Computer Science & Engineering

University of Asia Pacific (UAP)

Program: B.Sc. in Computer Science and Engineering

Final Examination **Spring 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 at the center of Figure 1. Now you have to take an input, the input will be the last three digits of your registration id. Rotate the servo motor up to the taken input and measure the distance (e.g., radius of the circle) between you and the circumference of the circle. Measure the area of Figure 1. 30

Write a code to solve the aforementioned problem.

[Please note that, the sonar sensor is place on top of your servo motor and the distance you have received from the sonar sensor is the radius of the circle. The servo will be at 0^{o} initially.]

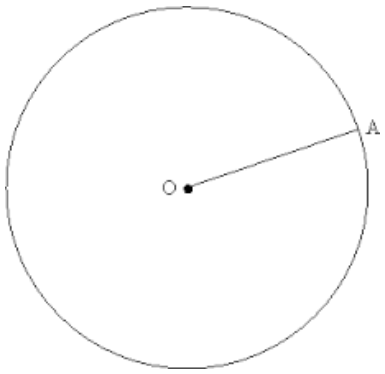
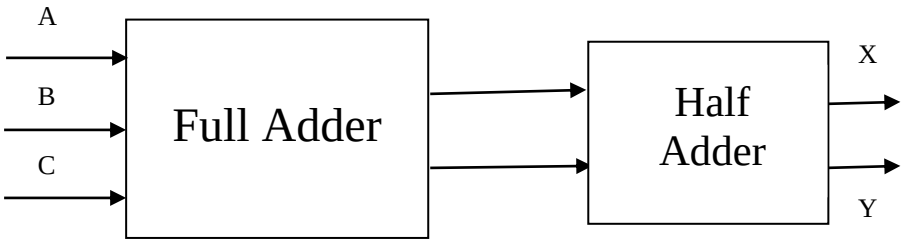


Figure 1: A circle

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. Write the code for the above scenario. 30



3. **a)** Simplify the equation using Boolean Algebra and write a sketch for the final equation. 15

$F= AB\overline{C}\,(D+\overline{D})+A\overline{B}\overline{C}D+ACD(\overline{B}+B)+AC\overline{D}(B+\overline{B})$

b) Write a code using 7 segment to display the last digit of your registration id. 15

4. **a)** Suppose, you will have to operate some variables of Arduino sketch bit by bit. In this situation which type of operator you will use. Show each of the operators example. 20

b) Write short note on: Serial.read() and function definition 10

OR

a) Suppose, you will have to perform some comparative operations in Arduino sketch. In this situation which type of operator you will use. Show each of the operators example. 20

b) Write short note on: Serial.print() and function prototyping 10