Temasek POLYTECHNIC | School of Engineering

Lab Test - SAMPLE -

/ 50

Advanced Skills Practices (EED3014)
Time allowed: 1 hr

Name :	Adm No :	Class: PE04

1. This is an **open book** test
2. Write all your answers in this test paper
3. **No** thumb drive/ storage device/ Internet access

Cheating is a very serious offence. Those caught cheating during a test will be given zero mark for the test and will be severely dealt with.

Q1. Write a Python program to perform the following tasks continuosly:

a) count the number of times the **button_1** is pressed. Each time button_1 is pressed, display the **count** value on the screen, and turn ON the Red LED for 1 second.

b) Reduce the count when **button_2** is pressed.
Each time button_2 is pressed, display the count value, and blink the Red LED twice. In each blink, the Red LED is turned ON for 0.5s and OFF for 0.5s.
Do not reduce the count value if its value is 0. Instead, blink the Red LED trice.

Note: GPIO Pin 27 Red LED, GPIO Pin 4 button_1, GPIO Pin 5 button_2

[30 Marks]

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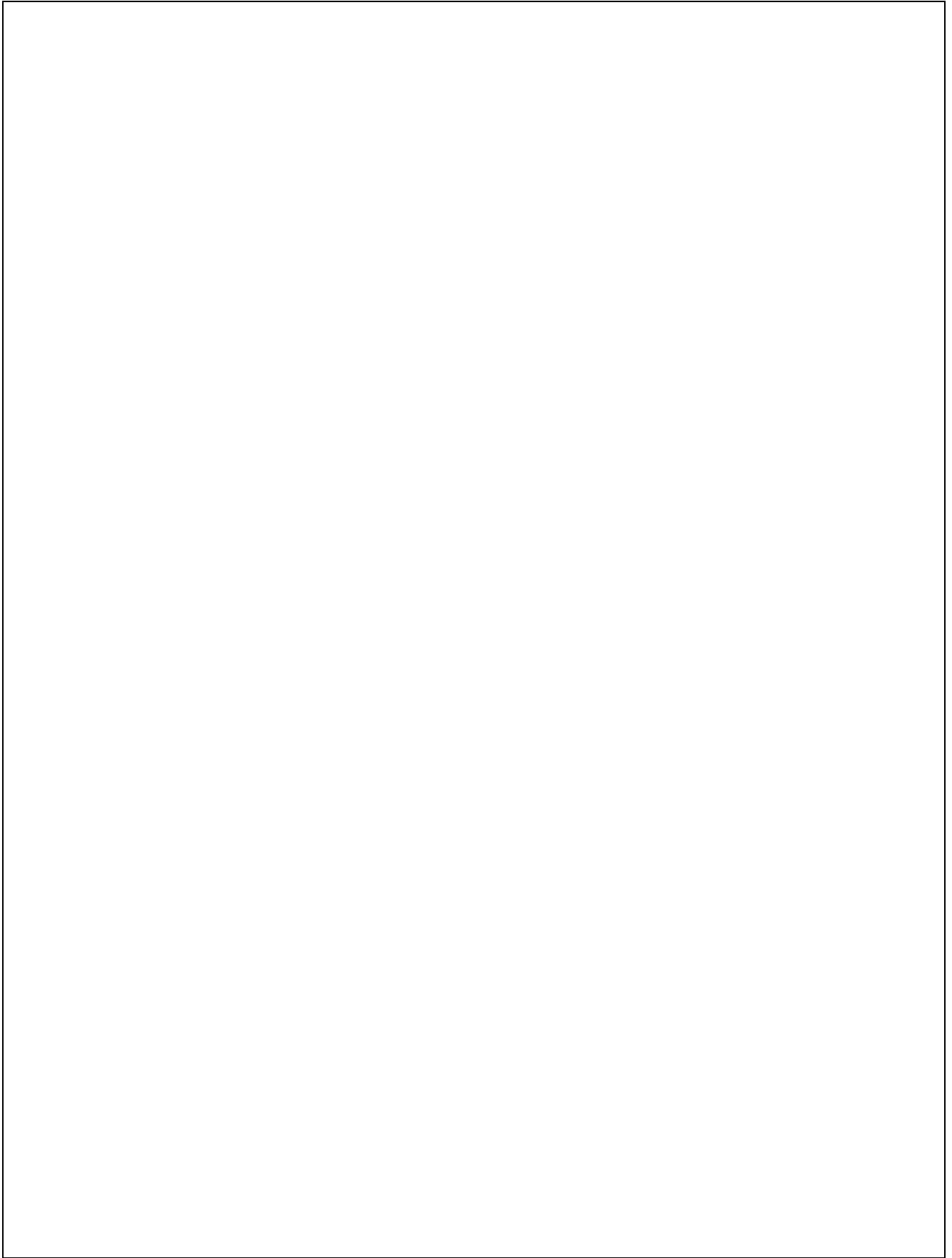
(Tutor's Signature)

Q2. Write a Python program to count the number of large and small dust particles. Your program must have at least one **user defined function**.

- the user will be prompted to type in the diameter of the detected dust particle in micro-metre. The number of large and small particles are then updated and displayed.

- A large dust particle has a diameter larger than 50 micro-metre.

- If a large particle diameter is entered, the Red LED will be turned ON for 1s. Otherwise, the Green LED will be turned ON for 1s.

- the user can undo the latest diameter he entered wrongly by pressing the button, and the previous number of large and small particles will be restored and displayed.

- The program repeats continuously.

   Note: GPIO Pin 27 Red LED, GPIO 22 Green LED, GPIO Pin 4 button

   [20 marks]

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(Tutor's Signature)

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