

Instructions to candidates

Duration: One (01) hour.

Number of questions: Two (02) Essay Questions.

Mark allocation: 100 mark.

Answer all questions

1.

- a. Explain what is **mechatronics** by giving a suitable definition. (10 mark)
- b. Give five (05) examples for mechatronics systems. (05 mark)
- c. Briefly describe each component of a mechatronics system. (10 mark)
- d. Explain the terms **Sensor** and **Actuator** by giving three examples for each separately. (12 mark)
- e. Provide five (05) factors which are need to be considered when selecting a sensor for a particular application. (05 mark)
- f. Explain the difference between a hydraulic system and a pneumatic system. (08 mark)

2.

- a. Compare and contrast **microprocessor** and **microcontroller**. (08 mark)
- b. Write down a **C program** to light an array of 8 LEDs connected to **PORT C** of a **16F877A** pic microcontroller. (10 mark)
- c. Explain, how would you interface a **push button** to a microcontroller pin. (07 mark)
- d. What is a **Hall Effect Sensor**? (05 mark)
- e. What are the other ways to measure rotational motion? (05 mark)
- f. Briefly explain, how would you design a machine to measure the speed of wind. (15 mark)

