

**TELEMETRY AND REMOTE CONTROL (TLMG1004)**

FINAL EXAM 2019-2T – 29/01/2020

Student:

ID:

*I, the undersigned, hereby declare that I agree to fulfill as a student the Ethics Code from ESPOL, regarding the "Behavior of the Polytechnic Community" in all its articles. Otherwise, I will accept the sanctions that ESPOL may have on me.*

Signature:

CHOOSE THE OPTION THAT FITS THE BEST.

- 1) Which one of the following is a characteristic of the RS-485?
- a) Its maximum data rate is about 1 kbps.
  - b) Its typical logic levels are from 8 to 20 V.
  - c) It could be deployed with a maximum cable length of approximately 1.2 Km.

Chosen option: \_\_\_\_

- 2) The Modbus industrial protocol allows the device communication between:

- a) 1 master and 247 slaves.
- b) 1 master and 274 slaves.
- c) 1 master and 427 slaves.

Chosen option: \_\_\_\_

- 3) Which one is an advantage in a sensor to panel configuration for monitoring?

- a) It is easy to install additional sensors as the monitoring system grows.
- b) It allows real data managing during supervision of manufacturing processes.
- c) It does not need software programming to configure monitoring options.

Chosen option: \_\_\_\_

- 4) A SCADA systems is composed by (choose two):

- a) Remote terminal units.
- b) Human-Machine Interfaces.
- c) Portable batteries.

Chosen options: \_\_\_\_

- 5) Which one of the following statement corresponds to fieldbus:

- a) It is an industrial network system for real-time distributed control that connects instruments in a manufacturing plant.
- b) It is an industrial network systems that only connect to RS-232 interfaces for monitoring and controlling events in manufacturing plants.
- c) It is an industrial network that operates exclusively in ranges from 4A to 20A in processes related to manufacturing.

Chosen option: \_\_\_\_

FOR THE FOLLOWING QUESTIONS, PROVIDE AN EXPLANATION BASED ON TECHNICAL ASPECTS

6) Explain the differences between the HART commands oriented to common practice, universal practice, and instrumental specific. Describe performance scenarios.

7) Provide an explanation about the two formats of HART digital transmission (*Poll/response mode* and *Burst/broadcast mode*).

8) Provide at least three profiles of PROFINET (e.g., CBA, IO, DCP, MRP, etc.) with their respective application and principal advantage