

Process Plant Automation System: Pre-hearing assignment.

Instructions: Each team must answer the following questions. **Use images and include references when needed.** The answers **MUST** be uploaded to MyCourses in Word or PDF format **24 hours before attending** the pre-hearing session.

During the pre-hearing session, students will be asked to individually answer questions related to the assignment and material provided. All students must demonstrate sufficient knowledge of the topic. If the pre-hearing evaluation is failed, the evaluation must be done again.

1. What is Industrial Automation? What are its advantages and disadvantages? Name 5 domains in which industrial automation is used.
2. Describe the differences between discrete automation and process automation.
3. What is a distributed control system (DCS)? Explain its components and structure.
4. What are the advantages and disadvantages of having a distributed/decentralized control compared to centralized control? Explain why.
5. What is a Piping and Instrumentation Diagram (P&ID)? Draw the P&ID symbols used for pump, control valve, open tank, pressurized tank and heat exchanger.
6. Explain a (PID) cascade controller configuration. When should it be used?
7. What is OPC Unified Architecture (OPC UA)? Describe some (at least two) of the main features/benefits of using OPC UA particularly in automation!