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**17/ENG01/028**

**CHEMICAL ENGINEERING**

**CHE 312 (PROCESS INSTRUMENTATION ASSIGNMENT)**

1) Briefly describe Chemical Process diagram

A Piping and instrumentation diagram (P&ID) or a Piping and instrumentation design is a graphic representation of a process system that includes the piping, vessels, control valves, instrumentation, and other process components and equipment in the system.

A Piping and instrumentation diagram (P&ID) can also be defined as a detailed diagram in the process industry which shows the piping and process equipment together with the instrumentation and control devices.

2i) Outline the purpose of P&ID

a) The P&ID is the primary schematic drawing used for laying out a process control system’s installation. As such, the P&ID is crucial in all stages of process system development and operation.

b) P&IDs also are used as the basis for the live graphic representation of a process system in its HMI (human-machine interface) or other control system.

c) It shows the interconnection of process equipment and the instrumentation used to control the process.

d) They are used as an element of communication between engineering, plant operation, maintenance and construction, since they show detail information of the plant relating to equipment, pipeline, instrumentation and common services.

ii) List the divisions of P&ID

COREN also classifies P&ID as PEFS (Process engineering flow scheme) and some of its divisions are;

a) Piping

b) Instrumentation

c) Utilities

d) Electricals etc.

3) Give five common P&ID symbols with the instrumrnt abbreviations used in instrument diagram

|  |  |  |
| --- | --- | --- |
| a) | ESD – Emergency shutdown valve | ESD  ESD |
| b) | PICA – Pressure indicator control & alarm | 105  PICA |
| c) | Level Transmitter | LT  65 |
| d) | Flow Transmitter | FT |
| e) | Pressure Indicator | PI |

Reference

1) <https://www.lucidchart.com>

2) <https://en.m.wikipedia.org>

3) <https://assuredautomation.com>

4) https://instrumentationandcontrol.net

5) <https://www.camcode.com>

6) <https://www.edrawsoft.com>