**EGBOCHUKWU EBENEZER UZOCHIWARA**

**17/ENG01/008**

**CHEMICAL ENGINEERING**

**PROCESS INSTRUMENTATION ASSIGNMENT**

* **Question 1:**

**Briefly describe Chemical Process Diagrams**

Chemical process diagrams are diagrams commonly used in **chemical and process engineering** to shows the general flow of plant processes and equipment, engineering details of processes, the equipment, operation, instruments, piping, valves and fittings and certainly also is their arrangement. Chemical process diagrams give the relationship between equipment of a plant and facility and does not show minor details such as piping details and designation.

* **Question 2:**

**Outline the purpose of P&ID and list its divisions**

The purposes of process instrumentation diagrams are to:

1. Show the necessary information in order to understand the relationship between the conceptual design of the process, developed through the PFD and HMB diagrams with reality.
2. Provide link between the conceptual and the actual.
3. Show the interconnection of process equipment and the instrumentation used to control the process.
4. Prepare drawings using a set of symbols in the process industry.
5. Give the overall view of the entire process loop of the facility.
6. Be used as an element of communication between engineering, plant operation, maintenance and construction, since they show information relating to equipment, pipeline, instrumentation and common services.
7. Show the necessary graphical elements to execute, monitor and control specific processes.
8. Serve as an essential document in the process industry as regarding any changes made in the process must be reflected in the diagram.
9. Serve as a foundation of the Electrical/Instrumentation and control engineering packages of deliverables.
10. Show condensed information from multiple specialties.

**P&ID’S DIVISIONS INCLUDE:**

1. Mechanical equipment with names and numbers
2. All valves and their identifications
3. Process piping, sizes and identification
4. Miscellaneous- vents, drains, special fitting, sampling lines, reducers, increasers and swagers.
5. Permanent start-up and flush lines
6. Flow lines
7. Interconnections reference
8. Control inputs and outputs interlock
9. Seismic category
10. Interfaces for class changes
11. Quality level
12. Annunciation inputs
13. Computer control system input
14. Vendor and contractor interfaces
15. Identification of components and subsystem delivered by others
16. Intended physical sequence of the equipment
17. Equipment rating or capacity

* **Question 3:**

**Give five common P&ID symbols with the instrument abbreviations used in instrument diagram**

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| --- | --- | --- | --- |
| **S/N** | **PIDS** | **ABBREVIATIONS** | **SYMBOLS** |
| **1** | **ORIFICE FLANGES** | **ORFF** |  |
| **2** | **BALL VALVE** | **BV** |  |
| **3** | **GATE VALVE** | **GV** |  |
| **4** | **CHECK VALVE** | **CV** |  |
| **5** | **TRANSMITTER** | **XMTR** |  |