

Instrumentation Project Documentation and Execution [IPDE]

B.E. Sem. VIII [INST]

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	100
Practical & Oral Exam	–	–
Oral Exam	–	25
Term Work	–	25

SYLLABUS

1. The Project

Introduction, predictability, structure, flow and deliverables, Project Planning, Scheduling and Procurement methods and procedures.

2. The Project Team

Customer, designer and constructor

3. Documents to be designed.

1. Piping and Instrumentation diagrams (P&ID) - General description, purpose, contents and practical applications.
2. Instrument Index Sheet
3. Instrument specifications sheet- for temperature, pressure, level, flow instruments and control valves.
4. Instrument Location Plan
5. Cable and Tray Routing
6. Cable Schedule
7. JB Schedule
8. Air header schedule
9. Instrument Hook- up diagrams
10. BoM for erection
11. Loop diagrams- pneumatic, electronic and digital data types.
12. DCS/ SCADA graphics
13. Logic diagrams.

4. Systems Integration

Division of labor, control logic specification, HMI specification Development, System Architecture Design, Network single line diagram generation, Other tasks like control system cabinet design, I/O address assignment (Partitioning)-Hardware & software address, System testing, Factory acceptance test (FAT), Site acceptance test(SAT), commissioning, Operations and maintenance(O&M) manual, and onsite training.

5. Installation Practices

Cable laying (cable trays, cable types, cable glands), tubing, instrument installation, loop checking, calibration, testing and commissioning Procedures.

Standards used in instrumentation project : ISA, ANSI, & NFPA.

6. Advantages of using software packages for documentation. Survey of documentation software packages used in industry viz Intools, EPlan etc.

Reference Books :

1. Applied instrumentation in the process industries (*Andrew Williams*) 2nd Edition, Vol. 2, Gulf publishing company.
2. Successful Instrumentation and Control Systems Design (*Whitt, Michael D.*) ISA Publication.
3. Control System Documentation (*Thomas McAviney and Raymond Mulley*) 2nd Edition, ISA Publication.
4. Basics of Instrumentation (*NJATC*) Cengage Learning.
5. Project planning and Engineering (*Chintan, Hiral Shah*) Chinttan Publication

