INDIRA TECHNICAL EDUCATION SOCIETY, NASHIK

CERTIFICATE COURSE
PIPING DRAFTING & DESIGNING (PDD)
PAPER - I

EXAM SCHEME: **THEORY PAPER – I - 100 MARKS – 3 HRS.**
(DRAWING) PAPER – II –100 MARKS – 3HRS.

[PDD - I / DPDD – II / DPES - III]

THEORY SYLLABUS

1. **INTRODUCTION :**
   a. Role of Piping Draughtsman / Designer & its need in industries.
   b . Scope of Work for Piping Drafting and Design.

2. Definition of piping & its description, its uses, material manufacturing methods, different codes and specification, Piping Abbreviations, Pipe data tables, Types of pipe joints and its ends.

3. Comparison of Piping versus machine drawing.

4. Types of drawing.

5. Concept and symbols used in piping drawing.

6. Scales for piping drawing.

7. Fittings or Piping Components.

a	Pipe fittings	Elblow, tee, reducers etc., it uses, symbols, specification, material, rating.
b.	Special fittings	Weldolet, Elbolet, Latrolet etc. it uses, symbols, specification, material,
c.	Valves	Definition of valve, types, uses, valve operators, advantages and disadvantages.
d.	Other Components	Strainers, Drip legs, Reinforcement saddle, different types of flanges and its rating.

8. **INSULATION** : Purpose of insulation , Insulating material i.e. cold service & hot service, Requirements of insulation, Heat conservation , Installation.

9. **INSTRUMENTATION** : Basic function of instruments, Instruments identification, Symbols, Instrument piping.

10. **STEAM TRACING OF PROCESS LINES** : Scope, Design, Steam Pressure, Basic details, Sizing of steam tracers, Steam supply to tracers , steam tracing of valves.

11. **PROCESS PLANT TERMS** : Refinery, Gasoline Plant, Hydrocarbon, Chemical plant, Tank farm.

12. **PROCESS PLANT UTILITIES** : Utility , Steam , Condensate, Fuel Oil, Instrument air, Utility air, Cooling water, Drains, Flare system.

13. **PROCESS PLANT EQUIPMENT** : Vessel, Over head accumulator, Exchanger, Pumps, Compressor, Fired Heater, Boiler, Storage Tanks.

14. **DIFFERENT DIAGRAMS** : Schematic or block diagram, Flow diagram, Piping & instrumentation diagram, Piping drawing or layout, Site plan, Key plan, Equipment arrangement drawing, Plot plan , Drawing from other source, Isometric.

15. Tips for a good Plant Layout, loads on structural support (Permanent loads, Temporary loads, Special loads), Supporting structure on pipe lines (Fixed supports, supports moveable along axis, Supports moveable along and Transverse to Axis), Platforms and ladders, Foundation, Pipe clamping and supporting devices, Flexible hanger supports, supporting span distances.

16. **PUMPS** : Correct and incorrect methods of suction piping to centrifugal pump, importance of providing jacking type support on suction & discharge piping.

17. Compressors, Exchangers basic type and its piping.

18. Different arrangement of piping around control valve depending upon space limitations, Tower , piping for cone roof and floating roof tank.

19. **PRESSURE RELIEVING DEVICES** : Safety valve inlet piping, block valves, safety valve discharge piping, hazardous fluids, drain hole plug, flashing liquid, piping support , back pressure.

(PDD - PAPER – II)

[PDD - II / DPDD – III / DPES - IV]

SYLLABUS

DRAWING PAPER

1. Process equipment symbols.
2. Symbols for Pipe fittings and Valves.
3. Projection exercise – I
4. Projection exercise – II
5. Isometric to Orthographic exercise – I
6. Isometric to Orthographic exercise – II
7. Schematic Diagram
8. Flow diagram
9. Piping and Instrumentation diagram.
10. Equipment arrangement layout.
11. Different arrangement of control stations.
12. Piping Layout – Plan.
13. Piping Layout – Elevation / Section.
14. Orthographic to Isometric exercise with B.O.M. – I
15. Orthographic to Isometric exercise with B.O.M. – II

SCHEME OF EXAMINATION

Theory Paper - I	3 Hours	100 Marks
DWG Paper - II	3 Hours	100 Marks