



HINDUSTAN PETROLEUM CORPORATION LIMITED

Regd. Office: 17, Jamshedji Tata Road, Mumbai - 400020.

CIN NO: L23201MH1952GOI008858

SYLLABUS FOR COMPUTER BASED TEST **CITY GAS DISTRIBUTION (O&M) POSITIONS**

UNIT I: Basics and Development of City Gas Distribution

- 1) Properties of Natural Gas; Unit conversion in NG, Calorific equivalence with other fuels like LPG/HSD
- 2) Demand assessment of PNG Domestic, Industrial, Commercial & CNG
- 3) Design and development of CGD: Design Basis of CGD network and its components, Network simulation, Development of P&ID/Line schematic, Detailed Engineering and Material Take-off
- 4) Components of Gas Value Chain: Sub-Transmission pipeline, City Gate, Station (CGS); Custody transfer Metering; Odorizing unit; District Regulation Station (DRS); **Decompression Unit (DCU)**; Steel and PE Pipelines; CNG Mother/Online / **Daughter**/Daughter Booster Station; PNG infrastructure for domestic, Industrial & commercial consumers, Virtual pipeline
- 5) Constructions Management: Procurement and management of project Inventory, Project Planning, Scheduling and Monitoring

UNIT II: Regulatory Framework and Standards for City Gas Distribution

- 1) PNGRB regulations/guidelines related to PNG, CNG and City Gas/Local Natural Gas pipelines, T4S standards, ERDMP & IMS regulations, Quality of Service regulations
- 2) Related standards- OISD 226/OISD-179, ANSI B31.8,
- 3) Petroleum Act, **Pollution Control Acts, Factories Act**, Gas Cylinder Rules, PESO approval process, Drawing and documentation for steel, PNG and CNG facilities.
- 4) Statutory permissions and Land / ROU procurement from authorities

UNIT III: Operation and Maintenance

- 1) Commissioning and takeover of CGD facilities; Knowledge of baseline documents
- 2) CGD Operations
 - a. CGD personnel and operator qualification,
 - b. Critical CGD operations parameters
 - c. Basic operating principles, Operating Manual & procedures
 - d. Pipeline pressure monitoring & Leak detection
 - e. Gas procurement scheduling & nominations, Gas measurement, Billing and payments for customers, Reconciliation, **Gas Loss control**
 - f. SCADA/IIOT/GIS based monitoring and control of CGD operations
 - g. Gas Price build-up for CNG and PNG
 - h. Basic concepts like Priority panel, safety settings in CNG Filling for Cars and mobile cascades
 - i. OPEX & its Components**
- 3) Asset Integrity Management: Pipeline Integrity monitoring & maintenance
 - a. Annual O&M Plan; Maintenance planning and procedure
 - a. j. Schedules in Integrity Management System**
 - b. k. Steel Pipeline O&M (Surveillance Patrolling / Cathodic Protection/ SV maintenance)
 - c. l. MDPE network patrolling and maintenance, Lock test, LMC upkeep
 - d. m. CNG Maintenance: Compressors, Energy management, Cascades, dispensers and instrumentation trip interlock

e. n. Emergency tools & Tackles, PPE

Unit IV: QHSE

Construction safety, Project procedures and Risk minimization, CNG Safety, PNG Safety, Resolution of Customer complaints on service, quality & quantity; Emergency Response Plan, Safety communications, Safety features such as SRV, Interlock, Creep, Active and monitor regulation, gas detection, MP & LP network, Markers, Audit and compliances, **Safety in CNG Logistics (LCV/HCV movement)**

NOTE: The syllabus/topics mentioned are indicative in nature. Candidates are expected to possess significant knowledge/proficiency pertaining to the relevant subjects and their qualifying degree.