

Teaching Scheme					City Gas Distribution (22PEB301T)					
					Examination Scheme					
L	T	P	C	Hours/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	0	0	3	3	25	50	25	--	--	100

COURSE OBJECTIVES

- To provide a fundamental understanding of the technical and business aspect of the City Gas Distribution network.
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- To make students confident to implement the knowledge of City Gas Distribution in industry.

UNIT I: Introduction of Natural gas and its Value chain**10 Hr.**

Properties of Natural Gas; Update on Gas Discoveries; Demand – Supply Gap; History of GCD in India; LNG, LPG, and CGD business.

Gas Value Chain: Gas Transmission and Distribution System; City Gate Station (CGS); Gas Filtration and Pressure reduction skids; Odorizing unit; Common pressure reduction station (CPRS)/District Regulation Station (DRS); Metering system; Pipeline for CGD network; Steel and PE Pipelines; CNG infrastructure: Mother Station, Online Station, Daughter Station, Daughter Booster Station; SCADA System

UNIT II: Regulatory Framework and Standards for City Gas Distribution**10 Hr.**

Petroleum and Natural Gas Regulatory Board (PNGRB) era; Purpose, role, and functions of PNGRB; Challenges faced by PNGRB; Technical Standards including T4S.

UNIT III: Operation and Maintenance**10 Hr.**

Annual O&M Plan; Steel Pipeline O&M (Cathodic Protection); Maintenance planning.

QHSE: CNG Safety; Emergency Response Plan; Disaster Management Plan; Quality assurance concepts; Inspection and Surveillance; Risk Assessment in CGD Business.

UNIT IV: Business Scenario**9 Hr.**

CGD Business Scenario – India and Abroad; Profile of Major Players; Gas Pricing in CGD; Customer Service Issues in CGD Business; Innovations in CGD; Accelerators and Retarders of CGD business; Case Studies – India and Abroad

Gas Retailing Business: Introducing Gas Retailing; Terminology used in CGD; Various components of CGD Network; CGD Business Segments; CGD Projects – Status in India; CGD Companies in India; Role of CNG and PNG in Gas Distribution; CGD Economics

Max. 39 Hr.

COURSE OUTCOMES

On completion of the course, student will be able to

CO1: Summarize City Gas Distribution value chain and Natural Gas system..

CO2: Acquaint and adapt the roles, functions and objectives of PNGRB

CO3: Explain Piped Natural Gas (PNG) distribution system.

CO4: Classify the types of Compressed Natural Gas (CNG) Stations and explain the CNG infrastructure.

CO5: Practice the HSE measures for safety of CGD sector.

CO6: Assess the steps to be taken in financing the CGD measures.

TEXT/REFERENCE BOOKS

1. Natural Gas: A comprehensive study (Anirbid Sircar and Kriti Yadav).
2. City Gas Distribution: An Indian perspective (Anirbid Sircar, Shreya Sahajpal, Umang Modi).
3. City Gas Distribution in India: Demystifying the Opportunity, Growth and Investment Potential (Infra line Energy)

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks: 100

Part A: 10 Questions each carrying 5 marks

Part B: 5 Questions each carrying 10 marks

Exam Duration: 3 Hr.

50 Marks

50 Marks