Q. Code:477443

Reg. No. | | | | | | | | | | | | | |

M.E./ M. TECH.DEGREE EXAMINATIONS, MAY 2024

Second Semester

CL22007 – GAS TRANSPORTATION

(Chemical Engineering)

(Regulation2022)

TIME:3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Identify and compare the right type of transport processes for gases.	**3**
CO 2	Elaborate the various types of pipe flows, pipeline protection techniques.	**4**
CO 3	Design pipeline for gas transportation.	**4**
CO 4	Enumerate the contribution of pipeline design for field development.	**4**
CO 5	Illustrate the pipeline integrity and environmental, legal, safety considerations and implications.	**4**

PART- A(20x2=40Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Categorize pipeline accessories.	**1**	**3**
2.	Mention the average dimension of a pipeline.	**1**	**2**
3.	List a few major pipelines.	**1**	**2**
4.	Highlight the purpose of a slurry pipeline.	**1**	**2**
5.	Annotate the significance of Critical Reynolds number.	**2**	**3**
6.	Sketch the velocity profile of a fully developed flow in a pipeline.	**2**	**3**
7.	Identify the types of pneumatic pipelines.	**2**	**2**
8.	Define: Lift off velocity.	**2**	**2**
9.	Give examples for non-metallic pipes.	**3**	**2**
10.	Mention the significance of Pressure Regulating Valve.	**3**	**3**
11.	Define: Cavitation.	**3**	**2**
12.	Exemplify Head meters.	**3**	**2**
13.	Differentiate Lining and Coating.	**4**	**3**
14.	Categorize different types of corrosion.	**4**	**3**
15.	Highlight the significance of Directional Drilling.	**4**	**3**
16.	Give a note on Trenchless construction.	**4**	**2**
17.	Classify buried pipes with examples.	**5**	**2**
18.	Cite the significance of Integrity Monitoring in pipelines.	**5**	**3**
19.	List the methods used for pipeline maintenance.	**5**	**2**

20.	Exemplify automated control mechanisms in pipelines.	**5**	**3**	

PART- B (5x 10=50Marks)

		Marks	CO	RBT LEVEL
21. (a)	Develop the timeline of pipeline transportation in the modern age based on technological advancements.	**(10)**	**1**	**4**
	(OR)			
(b)	Enumerate the advantages of pipeline transport in significance to refinery product transportation.	**(10)**	**1**	**4**
22. (a)	Derive Hagen Poisuelle equation and highlight its significance in pipeline transportation.	**(10)**	**2**	**3**
	(OR)			
(b)	Elaborate in detail about the system description of HCP and PCP.	**(10)**	**2**	**3**
23. (a)	Compile the usage of scrapers in pipelines, its types and explain the construction of a pigging system with a neat sketch.	**(10)**	**3**	**3**
	(OR)			
(b)	Classify Pipeline accessories and explain the working principle of any two in detail.	**(10)**	**3**	**3**
24. (a)	Discuss in detail about cathodic protection technique.	**(10)**	**4**	**3**
	(OR)			
(b)	Outline the procedure involved in planning and construction of a pipeline.	**(10)**	**4**	**3**
25. (a)	Analyze the cost effectiveness of pipelines with any two alternative modes of transport.	**(10)**	**5**	**4**
	(OR)			
(b)	Evaluate in detail about the safety and environmental issues about pipelines.	**(10)**	**5**	**4**

PART- C (1x 10=10Marks)

(Q.No.26 is compulsory)

		Marks	CO	RBT LEVEL
26.	Analyze the advantages and disadvantages of the equipments used for fluid	**(10)**	**3**	**4**

transportation in pipelines.

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