

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, April/May 2018

Course: PETROLEUM TRANSPORT SYSTEM AND OPERATIONS II
Program: M. Tech. PLE
Time: 03 hrs.

Semester: II

Max. Marks: 100

Instructions: All questions are to be answered. Question No: 9 and 11 have a choice in form of OR. One part is to be answered.

SECTION A

S. No.		Marks	CO
Q 1	Various clearances & permissions required to be taken from various authorities during pipeline project execution.	4	CO1
Q 2	Explain the areas where safety consciousness is required during welding in mainline.	4	CO2
Q 3	Describe construction features of gate valve. Indicate where these valves are used.	4	CO3
Q 4	What is slack line flow, its effects & how same can be avoided?	4	CO4
Q 5	Mention various compression processes for pressure boosting in compressors. Write down infinity laws for compressor performance curves.	4	CO5

SECTION B

Q 6	What are the various activities to be performed during station construction works under Composite Works Contract? Indicate process & precautions to be taken while carrying out joint coating to obtain a good joint coating after welding of two pipes.	10	CO1
Q 7	Write down various types of welding defects observed. Explain and differentiate between various types of defects observed due to penetration and fusion.	10	CO2
Q 8	Describe the essential features of SCADA system and modes of communication deployed in pipelines to have seamless communication. How can you minimize the interface generation in multi-product pipelines and reduce the percentage of interface generation?	10	CO4
Q 9	Signify the importance of P&I diagram. What is included and excluded in P&I diagrams? Mention line symbols used for check valve, MOV, safety relief valve, instrument air and pressure transmitter. Mention the nomenclature for pipe & valve used in P&I diagram.	10	CO5

OR

Explain various types of explosion proof induction motors as per NEMA (National Electrical Manufacturers Association). What are the major causes for failure of motors?

CO6

SECTION-C

Q 10

Explain in detail various types of pigging operation carried out during mainline construction of pipeline and their purpose for undertaking pigging operation.

Calculate the pigging efficiency for a pigging operation for following parameters:

PARAMETER	BEFORE PIGGING	AFTER PIGGING
station discharge pressure (kg/sq.cm)	65.34	69.34
Flow rate (kls/hr)	750	850
Back pressure at down station (kg/sq.cm)	15.5	17.31

20

CO2

Q 11

a) What are the main steps while carrying out HDD of the crossing? Mention pre-installation activities before taking up HDD and post installation activities after completion of HDD. Mention various systems deployed for guiding HDD operation.

b) Draw a Standard V-Bevel Butt Joint procedure and indicate welding Sequence. Explain various destructive Tests carried out and most common NDT techniques deployed during mainline inspection of welding. Indicate frequency of radiography inspection for LPG & crude pipelines.

20

CO1

OR

a) In a ROW stretch of 150 Km stretch, increase in pilferage has been reported. Write down in detail, action to be initiated so that pilferage incidents can be minimized.

CO2

	b) How do you prepare “B” type sleeves for application on mainline pipe? State the safety precautions required to be taken while carrying out sleeving operation of same.		
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