Name: Enrolment No:	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: PETROLEUM TRANSPORT SYSTEM AND OPERATIONS II **Semester: II**
Program: M. Tech. PLE **Time : 03 hrs**
Course code: CHPL 7005 **Max. Marks: 100**
Instructions: All questions are to be attempted. Question No: 9 and 11 have a choice in form of OR, one part is to be attempted.

SECTION A

S. No.		Marks	CO
Q 1	Various activities performed during station construction works under Composite Works Contract.	**4**	**CO1**
Q 2	Mention the process of application of continuous sleeve with sketch for a length of 10 meters corroded pipe.	**4**	**CO2**
Q 3	Agencies certifying the equipment's for intrinsic safety.	**4**	**CO6**
Q 4	Explain liquefaction process for LNG.	**4**	**CO3**
Q 5	Indicate at least 10 commands executed by controller in SCC at control room.	**4**	**CO4**

SECTION B

Q 6	a) Describe destructive and non –destructive tests carried out to establish the quality of weld joint. b) What are the various criteria for selection of pipeline route during project work?	**10**	**CO1**
Q 7	You are the maintenance in-charge for maintenance of mainline section from 50 km to 145 km. An increase of pilferage attempts have increased to 12 in financial year 2016-17 in comparison to 2 observed in financial year 2015-16. How will you control the pilferage attempts?	**10**	**CO2**
Q 8	a) Indicate the details included in P&I diagram and its relevance. Mention equipment not covered in P&I diagram. Show symbol for gate & check valve. b) Checks required before launching a pig from the barrel. Mention various	**10**	**CO4**

<table>
<tr><td></td><td>reasons for pig's slippage & stuck up in pipeline.</td><td></td><td></td></tr>
<tr><td>Q 9</td><td>How various products like MS, HSD, SKO, Naptha are pumped in multi-product pipelines? Define quality give away. Indicate the methods adopted for reduction of interface.
OR
Explain various type of class / division system, zone system existing for hazardous location. Indicate area classification for Hazardous area with respect to zones and equipment labelled for temperatures?</td><td>10</td><td>CO4

CO6</td></tr>
<tr><td colspan="4">SECTION-C</td></tr>
<tr><td>Q 10</td><td>Mention purposes for carrying out pigging operation. Mention 5 types of pigs used in pipeline industry. Mention the purpose for each pigging operation.
Calculate the pigging efficiency for a pigging operation for following parameters:
<table><tr><th>PARAMETER</th><th>BEFORE PIGGING</th><th>AFTER PIGGING</th></tr><tr><td>station discharge pressure (kg/sq.cm)</td><td>65.34</td><td>69.34</td></tr><tr><td>Flow rate (kls/hr)</td><td>750</td><td>850</td></tr><tr><td>Back pressure at down station (kg/sq.cm)</td><td>15.5</td><td>17.31</td></tr></table></td><td>20</td><td>CO2</td></tr>
<tr><td>Q 11</td><td>a) In boosting station, prime mover is a turbocharged diesel engine. As operation of prime mover is 24X7 hours, state the protective devices that are provided on this equipment to safeguard damages to its subassemblies.
b) Mention various compression processes for pressure boosting in compressors. Write down infinity laws for compressor performance curves
OR
Describe the essential features of SCADA system and modes of communication deployed in pipelines to have seamless communication. How does PLC operate s in SCADA? Mention the activities monitored in SCADA. How it helps in analysis and control of system? .</td><td>20</td><td>CO1

CO5

CO4</td></tr>
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