

<b>Name:</b>	
<b>Enrolment No:</b>	

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**End Semester Examination, December 2018**

<b>Course: Petroleum Geology</b>	<b>Semester: III</b>
<b>Programme: M.Tech Petroleum Engineering</b>	<b>Course Code: PEGS 7002</b>
<b>Time: 03 hrs.</b>	<b>Max. Marks: 100</b>
<b>Instructions:</b>	

**SECTION A**

**All Questions Compulsory**

S. No.	Question	Marks	CO
Q 1	Write short Notes on (a) Recovery factor (b) Oil in Place	[4]	CO6
Q.2	Give full form of the following. (a) IPR (b) NDR (c) OALP (d) PSC	[4]	CO1
Q.3	Calculate the API gravity of the crude with specific gravity of 0.883 and also mention the type of crude.	[4]	CO2
Q.4	Explain Gaining access phase of oil and gas life cycle	[4]	CO1
Q.5	Distinguish between sandstone and carbonate reservoir	[4]	CO2

**SECTION B**

Q.6	The zone in the earth's crust where the oil is generated is called Oil window – Describe oil window with a neat figure.	[10]	CO3
Q.7	Describe the sedimentary basins that are formed due to convergent plate boundary	[10]	CO5
Q.8	(a) Define petroleum system  (b) Describe the conditions that are required to be present for hydrocarbon generation and its accumulation.	[4+6]	CO3
Q.9	(a) Describe oil and gas reserve classification.  (b) Explain Analogy method of reserve estimation	[6+4]	CO6

	<p style="text-align: center;">OR,</p> <p>You are given the following data for the oil field</p> <ul style="list-style-type: none"> <li>• Area = 20,000 acres</li> <li>• Net productive thickness = 50 ft</li> <li>• Porosity = 7%</li> <li>• Average initial water saturation, <math>S_{wi} = 48\%</math></li> <li>• Initial reservoir pressure, <math>p_i = 2970</math> psia</li> <li>• Abandonment pressure, <math>p_a = 350</math> psia</li> <li>• Formation Volume Factor of oil initially, <math>B_o</math> at <math>p_i = 1.78</math> bbl/STB</li> <li>• Formation Volume Factor of oil at abandonment, <math>B_o</math> at <math>p_a = 1.10</math> bbl/STB</li> <li>• Gas Saturation at abandonment, <math>S_g</math> at <math>p_a = 30\%</math></li> <li>• Residual Oil Saturation, <math>S_{or}</math> after water invasion = 25%</li> </ul> <p>Calculate:</p> <ol style="list-style-type: none"> <li>1. Initial oil in place</li> <li>2. Oil in place after volumetric depletion to abandonment pressure</li> <li>3. Oil in place after water invasion at initial pressure</li> <li>4. Oil reserve and Recovery Factor by volumetric depletion to abandonment pressure</li> <li>5. Oil reserve and Recovery factor by full water drive</li> </ol>	<b>[2×5]</b>	
<b>SECTION-C</b>			
Q.10	<p>(a) Define the term sedimentary basin.</p> <p>(b) Describe the theories for basin formation.</p> <p>(c) Describe the various Indian sedimentary basins.</p>	<b>[2+6+12]</b>	<b>CO5</b>
Q.11	<p>(a) Define the term hydrocarbon trap.</p> <p>(b) Describe hydrocarbon trapping mechanism with neat figure.</p> <p style="text-align: center;">OR,</p> <p>(a) Define the term hydrocarbon migration</p> <p>(b) Describe hydrocarbon migration process illustrating its causes. Supplement your answer with a neat figure.</p>	<b>[2+18]</b>	<b>CO4</b>

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