


Name:			
Enrolment No:			
<b>UNIVERSITY OF PETROLEUM AND ENERGY STUDIES</b> <b>End Semester Examination, May 2022</b>			
<b>Course: Offshore Operations</b> <b>Program: M Tech Petroleum Engineering</b> <b>Course Code: PEAU7003</b>		<b>Semester : II</b> <b>Time : 03 hrs.</b> <b>Max. Marks: 100</b>	
<b>Instructions:</b> Attempt all questions. There is internal choice in Q8 and Q10.			
<b>SECTION A</b> <b>(5Qx4M=20Marks)</b>			
S. No.		Marks	CO
Q 1	Name 4 critical crewmembers present in offshore drilling platform.	4	CO1
Q2	With suitable diagram, show different components of a drag anchor.	4	CO1
Q3	Name three mobile offshore drilling units along with the water depth to which they can operate.	4	CO1
Q4	Calculate scope of mooring line whose length is 10000 ft and the water depth is 1500 ft.	4	CO2
Q5	Draw a diagram to illustrate three-stage oil and gas separator.	4	CO1
<b>SECTION B</b> <b>(4Qx10M= 40 Marks)</b>			
Q6	Define Beaufort number and discuss how this number describes the sea conditions.	10	CO4
Q7	With suitable diagram, illustrate six types of forces acting on a marine vessel.	10	CO2
Q8	Discuss the sea floor conditions that are suitable for mat foot of a jack up rig. Evaluate the type of jack up foot suitable when the sea floor is hard and uneven.  <b>OR</b> Illustrate the advantages of a cantilever type mast in a jack up rig. With suitable diagram, show the location of mast in a jack up rig during rig move and during drilling a wellbore.	10	CO3
Q9	Explain cold and warm air masses and discuss how they form cold and warm front.	10	XCO4
<b>SECTION-C</b> <b>(2Qx20M=40 Marks)</b>			
Q10	Define heave and discuss the causes of heave motion of a vessel. Elaborate the measures taken to compensate heave motion during drilling of wellbore.	20	CO5

	<b>OR</b>		
	Explain how dynamic positioning system drill ships are more efficient than spread mooring system rigs. Describe in detail three subsystems of DP system.		
Q11	Analyze the difference between circulatory and well control systems of land rig and a drill ship. Discuss the challenges faced while maintaining these systems when drilling a deep water well.	<b>20</b>	<b>CO6</b>