


Name:																			
Enrolment No:																			
UPES End Semester Examination, December 2023																			
Course: Offshore Operations Program: M Tech PE Course Code: PEAU7003 Instructions: All the questions are compulsory		Semester: I Time : 03 hrs. Max. Marks: 100																	
SECTION A (5Qx4M=20Marks)																			
S. No.		Marks	CO																
Q 1	List and explain mobile offshore rigs with reference to the depth of its application.	4	CO1																
Q 2	Define the following terms: Occluded front, Fetch, Steam fog and Temporary guide base	4	CO2																
Q 3	Explain briefly any two components of jack-up rig.	4	CO2																
Q 4	State the difference between catenary mooring and taut mooring system.	4	CO1																
Q 5	Define Coriolis force and show the movement of wind around high and low pressure due to Coriolis force in the northern hemisphere.	4	CO2																
SECTION B (4Qx10M= 40 Marks)																			
Q 6	Describe the oceanographic weather parameters affecting offshore drilling operation	10	CO3																
Q 7	Discuss how the drill ship stability is maintained using DPS system. State the advantages of DPS system.	10	CO3																
Q 8	Explain in detail the components of drilling marine riser system from bottom to top.	10	CO3																
Q 9	Discuss the major components of subsea well completion system in offshore operation.	10	CO4																
SECTION-C (2Qx20M=40 Marks)																			
Q 10	<p>Explain, with the aid of a diagram, the drilling process of a hypothetical directional well from a drillship operating in 1,000 ft water depth. Provide a detailed analysis of the process, considering the following specifications:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Casing and Liner Sizes (inches):</th> <th style="text-align: center;">Hole Size (inches):</th> <th style="text-align: center;">Measured Depth (MD) in feet:</th> <th style="text-align: center;">True Vertical Depth (TVD) in feet:</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">20</td> <td style="text-align: center;">N/A</td> <td style="text-align: center;">2,000</td> <td style="text-align: center;">1,500</td> </tr> <tr> <td style="text-align: center;">13 3/8</td> <td style="text-align: center;">17 1/2</td> <td style="text-align: center;">5,000</td> <td style="text-align: center;">3,800</td> </tr> <tr> <td style="text-align: center;">9 5/8</td> <td style="text-align: center;">12 1/4</td> <td style="text-align: center;">8,500</td> <td style="text-align: center;">6,200</td> </tr> </tbody> </table>	Casing and Liner Sizes (inches):	Hole Size (inches):	Measured Depth (MD) in feet:	True Vertical Depth (TVD) in feet:	20	N/A	2,000	1,500	13 3/8	17 1/2	5,000	3,800	9 5/8	12 1/4	8,500	6,200	20	CO4
Casing and Liner Sizes (inches):	Hole Size (inches):	Measured Depth (MD) in feet:	True Vertical Depth (TVD) in feet:																
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	7	8 1/2	12,000	9,000		
	5 1/2	6	16,000	12,500		
	No Liner		20,000	15,700		
Q 11	<p>Illustrate with the help of diagram the installation procedure for a Jacketed Platform.</p> <p style="text-align: center;">Or</p> <p>Explain briefly the remotely operated vehicle (ROV) used in deep water operations and discuss its components.</p>				20	CO4