

Name:

Enrolment No:



End Semester Examination, December 2023

Programme Name: M.Sc (Petroleum Geosciences)

Semester : III

Course Name : Drilling and Production Operations

Time : 3 Hrs.

Course Code : PEGS8006

Max. Marks : 100

Nos. of page(s) : 2

Instructions:

1. All questions are compulsory.
2. Assume any missing data, if any

SECTION A (5Qx4M= 20)						
Q.N.				Marks	CO	
Q1	Mention the objectives of well planning			4	CO1	
Q2	Name the different additives used to change the rheological properties of drilling fluid			4	CO2	
Q3	List four functions of cementation operation			4	CO3	
Q4	List the different functions of a casing head			4	CO4	
Q5	Define a well kick and the primary method of well control.			4	CO5	
SECTION B (4Qx10M= 40)						
Q6	Compile the advantages and disadvantages of oil-based mud.			10	CO2	
Q7	Describe the types of liners with their functions and applications.			10	CO3	
Q8	Draw a labeled diagram of a horizontal separator and discuss its benefits and drawbacks.			10	CO4	
Q9	Define well completion and describe the factors that influence the design of well completions			10	CO4	
SECTION C (2Qx20M= 40)						
Q10	Using the drilling performance data for different bits given below, determine cost per foot for each bit and select the bit that will result in lowest drilling cost. The operating cost of the rig is \$13,000/day and trip time is 12 hours.			20	CO2	
	Bit	Bit Cost (\$)	Rotating Time (Hours)			ROP (Ft./Hr.)
	A	1000	10			15
	B	2500	20			14
	C	3000	40			13

		D	3500	60	12		
Q11	<p>a) Explain the wait and weight method of well killing using illustrative diagrams.</p> <p style="text-align: center;">OR</p> <p>a) Illustrate the advantages and disadvantages of wait and weight method of killing the well.</p> <p>b) An appraisal well, drilled to a target reservoir at 12,500 feet that has a formation gradient of 0.5500 psi/ft is to be killed.</p> <p>i. Calculate the original mud weight in ppg.</p> <p>ii. Calculate the kill mud hydrostatic pressure in psi, if the kill mud weight needs to be more than the formation gradient by 0.5 ppg.</p> <p style="text-align: center;">OR</p> <p>b) Determine the kill mud density for a shut-in-drill pipe pressure of 700 psi at a depth of 10,000 ft. If the original mud weight is 14 ppg and the slow circulating pump pressure is 800 psi, also find the standpipe pressure at start of circulation and final circulating pressure of the system. Assume safety margin of 600 psi</p>	10	+	10	CO5		
