

Name:
Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2021

Programme Name: B.Tech Applied Petroleum Engineering (Upstream)
Course Name : Drilling Process System Design and Optimization
Course Code : CHGS 3021

Semester : V
Time : 03 hrs
Max. Marks: 100

Instructions :

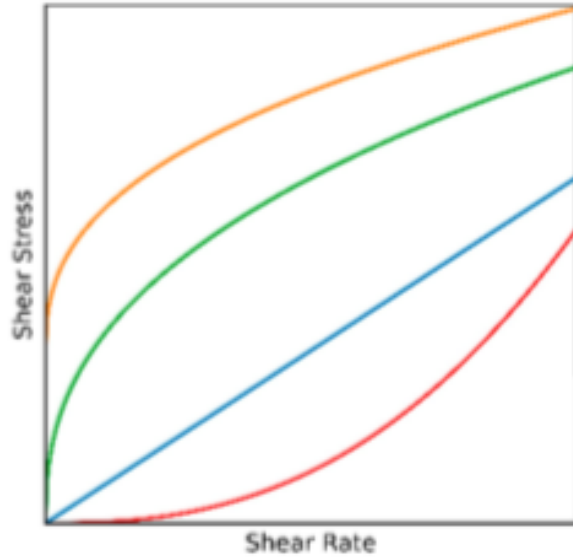
- All questions are compulsory.
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SECTION A
(5 x 4 marks = 20 marks)

S. No.		Marks	CO
Q.1	Define optimization. Is it different from maximization/minimization? Explain.	4	CO1
Q.2	Performance of hired rigs is consistently better than own rigs?	4	CO2
Q.3	Is there any need for optimization in upstream industry? Explain.	4	CO1
Q.4	How would you improve fuel efficiency of diesel engines at drill sites?	4	CO2
Q.5	Increasing WOB does not always increase ROP but is more likely to decrease ROP. Pl justify.	4	CO1

SECTION B
(4 x 10 marks = 40 marks)

Q.6	What are the main components of nonproductive drilling time? What are your suggestions to minimize them?	10	CO3
Q.7	Discuss key reasons for occurrence of downhole issues? As a drilling engineer, what would you suggest to minimize downhole complications?	10	CO3
Q.8	What is circulation loss? As a drilling/mud professional, what are the steps you would take to control it?	10	CO2
Q.9	The graph represents four type of curves for following fluids :	10	CO2



i. Newtonian fluid

ii. Pseudoplastic fluid

iii. Dilatant fluid

iv. Plastic fluid

➤ Identify each curve with type of fluid & write applications of these fluids

SECTION-C
(2 x 20 marks = 40 marks)

Q.10	What are the main components of rig move/mobilization activity? Why it is important for E&P companies to optimize the rig move time?	10+10	CO4
Q.11	<p>With reference to Master of Science in Petroleum Engineering thesis :</p> <p>Title : "ALTERNATE POWER AND ENERGY STORAGE/REUSE FOR DRILLING RIGS: REDUCED COST AND LOWER EMISSIONS PROVIDE LOWER FOOTPRINT FOR DRILLING OPERATIONS"</p> <p>Answer the following questions :</p> <ol style="list-style-type: none"> List out the three point from the abstract Briefly explain the methodology adopted to achieve the desire objectives Land Offshore Containerised Rig (LOC -250) : Draw a table showing power ratings of the equipments falls under Main power consumers. Theoretical energy audit generally result in an overly designed system which will be uneconomic and underutilize. Briefly explain the possible solution. Conclusion points 	4+5+7 +4	CO4