

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

Course: Safety in Petroleum Exploration

Semester: IV

Program: Fire Safety Engineering

Time: Three hrs.

Course Code: HSFS 2012

Max. Marks: 100

Instructions:

- This question paper contains three sections. Answer all sections.
- Please contact me if required at **9837717946**

SECTION A

S. No.		Marks	CO
Q 1	What is the process of petroleum exploration?	5	CO1
Q 2	Why oil and gas industry is so much bothering about personal safety due to COVID-19 situation?	5	CO1
Q 3	What is fire triangle? Explain its significance in safety assurance.	5	CO1
Q 4	What are the key steps involved for successful well bore drilling operation?	5	CO1
Q 5	Use appropriate key words to answer : i. According to environmental protection act, _____ % of mud or cuttings cannot be discharged into sea water. a) 25% b) >50% c) 75% d) >75% ii. _____ is the minimum oxygen concentration below which combustion is not possible, with any fuel mixture.	5	CO1
Q 6	What steps you are taking to safeguard yourself and your family members from Corona Virus?	5	COI

SECTION B

Q 7	Well data Depth (TVD) : 89XX feet (Replace XX with last two digits of your SAP ID) Mud weight : 11.9 ppg Pressure losses at 100 spm Surface lines : 75 psi Drill string : 725 psi Bit : 850 psi Annulus : 100 psi	10	CO2
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	<p>Calculate;</p> <p>a. Static BHP psi</p> <p>b. BHCP psi</p>		
Q8	<p>Highlight the key HSE guidelines for conducting petroleum activities/operations to minimize the risk of environmental damage.</p>	10	CO2
Q9	<p>Brief out important geophysical methods used for petroleum exploration. Explain gravity & seismic methods.</p>	10	CO2
Q10	<p>A triplex pump is pumping a 14.5 ppg mud into the borehole and has a current circulating pressure of 17XX psi and a pump rate of 50 spm. Answer the following based on this data:</p> <p>1) If the pump rate is changed to 35 spm, calculate the new pump pressure (<i>Considering the mud weight remains constant</i>).</p> <p>2) Calculate the new pump pressure if mud weight is changed to 13.2 ppg (<i>assume pump rate remains constant</i>).</p> <p>Note : Replace XX with last two digits of your SAP ID.</p>	10	CO2
Q11	<p>a. Does the process of conducting FMEA delay in the work process?</p> <p>b. Why is Risk Priority Number (RPN) calculated?</p> <p>c. How values of SEV, OCC, and DET are referred for any particular part of the mechanical pump?</p> <p>d. How much time is required for the FMEA in an industry dealing with pump parts?</p> <p>e. Difference between risk assessment and FMEA?</p>	10	CO3
SECTION-C			
Q 12	<p>Assam: Massive fire breaks out at Baghjan OIL field after blowout on 9th June 2020.</p> <p>Give reasonable details to support your answer. You are required to highlight your views on the following points:</p> <p>a. Brief out what happened actually</p> <p>b. Efforts to stem the flow</p> <p>c. Environmental impact consequences</p> <p>d. Three biggest Risks or challenges and how they can be addressed in future.</p>	20	CO3