

Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End semester Examination, May 2021

Course: Oil and gas informatics
Program: B. Tech GIE
Course Code: (CSOG4003)

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

SECTION A [6x5=30marks]

- 1. Each Question will carry 5 Marks**
- 2. Instruction: Complete the statement / fill the correct answer(s)**

S. No.	Question	CO
Q 1	Define effective porosity and absolute permeability.	C01
Q2	Distinguish between MWD and LWD.	C01
Q3	Define Absorption and Adsorption.	C03
Q4	How digitization in oil and gas will create security risks	C03
Q5	Mention till what extent has digitalization been carried out in our country	C02
Q6	Discuss about basics concepts of Machine learning in oil and gas sector.	C03

SECTION B[5x10=50marks]

- 1. Each question will carry 10 marks**
- 2. Instruction: Write short / brief notes**

Q 7	(a)Discuss different classification of machine learning. (b)Discuss about process of doing Facies classification using machine learning(10).	C03
Q 8	(a)Explain applications of artificial intelligence in oil and gas sector. (b)Discuss how the machine learning can help in reservoir history matching. (4+6=10)	C03

		C03
Q 9	<p>(a) Discuss different classification of machine learning.</p> <p>(b) Discuss how machine learning can help in Petroleum prospect drilling decision analysis. [10 marks]</p> <p style="text-align: center;">OR</p> <p>Elaborate Sour gas and Sweet gas. Discuss the Hazards of Sour gas, Sweet gas and Acid gas and also discuss the toxicity effects of Hydrogen Sulphide gas.</p>	<p>C04</p> <p>C04</p>
Q 10	Define Separators and types of separators. Explain the 3 phase horizontal separator mechanism with neat and clean diagram.	C02
Q 11	<p>Define Artificial methods and their classification. Discuss sucker rod pump method with their diagram and mechanism.</p> <p style="text-align: center;">OR</p> <p>a) Summarize different considerations needed while planning a directional well.</p> <p>b) Explain Kick off point, horizontal drilling and ERD well.</p>	C02
Section C		
<p>1. Question 12 carries 20 Marks.</p> <p>2. Instruction: Write long answer.</p>		
Q12	Refer the following table	C05

Sample	S1 (mg HC/ g Rock)	S2 (mg HC/ g Rock)	Tmax °C	S3 mgCO ₂ / g Rock	TOC (%)
Tadkeshwar					
TG-01	3.58	58.42	420	8	24.27
TG-02	0.12	1.75	434	2.04	3.19
TG-03	0.13	1.2	428	1.5	2.34
TG-04	0.09	1.57	425	2.43	4.69
TG-05	0.05	0.08	394	0.55	0.18
TG-06	0.18	4.35	432	3.07	7.21
TG-07	0.07	0.14	378	0.57	0.32
TG-08	0.04	0.17	342	0.83	0.19
TG-09	0.06	1.28	431	0.35	0.59
TG-10	0.07	0.18	450	1.62	0.21
TG-11	3.12	78.84	414	16.03	47.39
TG-12	2.82	68.42	415	14.34	42.28
<p>Analyze the above rock eval pyrolysis data base of basin X and answer the following question, (a) Calculate HI, OI, PI. (b) interpret the source rock potential © Assess the thermal maturity based on Tmax data (d) Construct van Krevelen diagram and plot your results and recommend for future prospect.</p>					
OR					
Q12	a) Explain natural gas hydrates and their structures in detail with diagram. discuss the application of natural gas hydrates. b) Discuss about EOR and their types. Explain the Huff and Puff method with neat and clean diagram.				C05
(10+10)					