
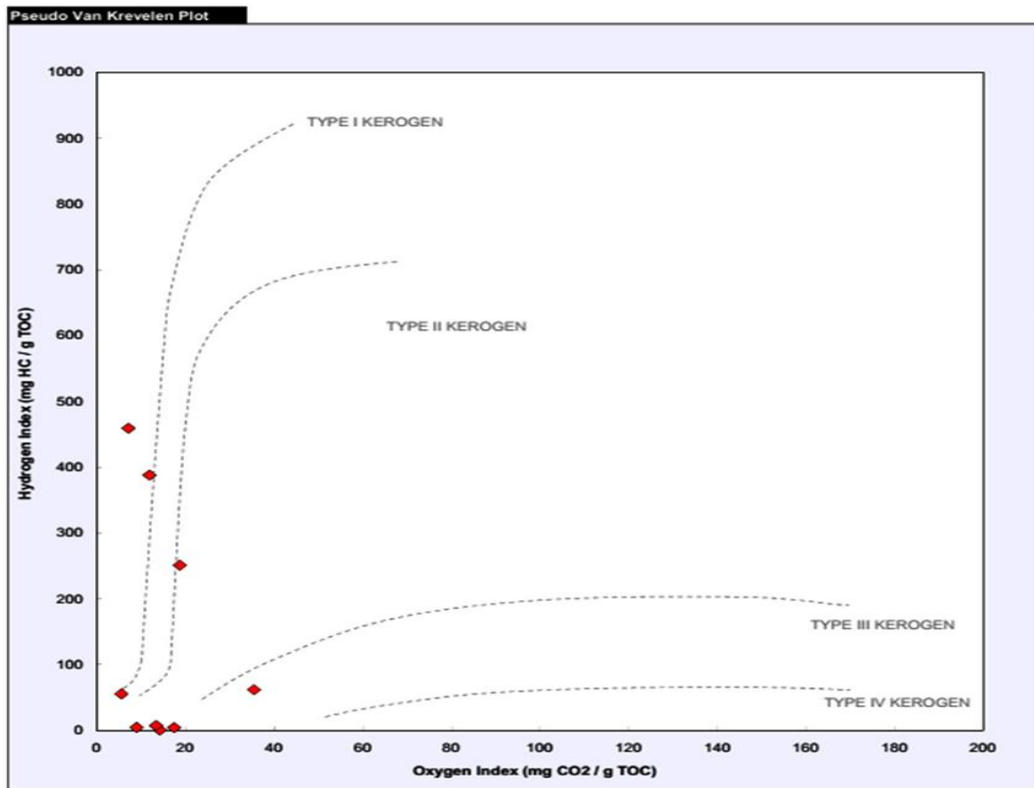


Name:			
Enrolment No:			
UPES End Semester Examination, December 2023			
Program Name: M.Tech. PE Course Name: Geology for Petroleum Engineers Course Code: PEAU 7025 Nos. of page(s): 03		Semester : I Time : 3 hrs Max. Marks : 100	
Instructions: All Questions are compulsory. In section B, Question No. 8 has internal choice to attempt anyone. Similarly, in section C, Question No.10 has internal choice to attempt anyone.			
SECTION A (5Qx4M=20Marks)			
S.No		Marks	CO
Q.1	List four reasons for the failure of NELP.	[4 Marks]	CO1
Q.2	Outline the important features of HELP.	[4 Marks]	CO1
Q.3	Defend why does grain size has a predominant role for the permeability of a rock?	[4 Marks]	CO2
Q.4	Describe the three processes that are included in diagenesis.	[4 Marks]	CO2
Q.5	Distinguish between pour point and dew point of hydrocarbon.	[4 Marks]	CO2
SECTION B (4Qx10M= 40 Marks)			
Q.6	(i) Explain the term sedimentary basin (ii) Classify the Indian sedimentary basins.	[10 Marks]	CO1
Q.7	Describe the factors that control porosity of reservoir rock.	[10 Marks]	CO2
Q.8	Illustrate the three types of hydrocarbon migration with neat figures. OR, Illustrate the structural trapping mechanism for hydrocarbon. Supplement your answer with neat figures.	[10 Marks]	CO3
Q.9	Demonstrate the organic theory for the origin of hydrocarbons outlining the compelling reasons that support the organic theory.	[10 Marks]	CO3

SECTION C
(2Qx20M= 40 Marks)

Q.10	<p>(i) Describe the divergent plate boundary mechanism for basin formation.</p> <p>(ii) Explain Rift basin, Passive Margin Basin and Intracratonic Basin with figures.</p> <p align="center">OR,</p> <p>(iii) Illustrate with neat figures the Ocean - Ocean, Ocean – continent and Continent – continent convergent plate boundary.</p> <p>(iii) Explain with neat figures the Foreland Basins, Trench Basin, Fore Arc Basin and Back Arc Basin</p>	[20 Marks]	CO4
------	---	------------	-----

Q.11	<p>Assess the gas generation potential using Rock Eval Pyrolysis for a shale sample considering free gas released at initial temperature at 350°C , S1 at 15mg HC/gm of rock, pyrolyzed gas released 20 mg HC/gm of rock, S3 as 3.5 mg CO₂/gm of rock, TOC as 15% and T_{max} at 450 °C.</p> <p>(i) Calculate HI, OI & PI for that shale sample.</p> <p>(ii) Interpret thermal maturity zone, kerogen type and also gas generation potential for the above sample.</p>		
------	---	--	--



[20 Marks] CO3