
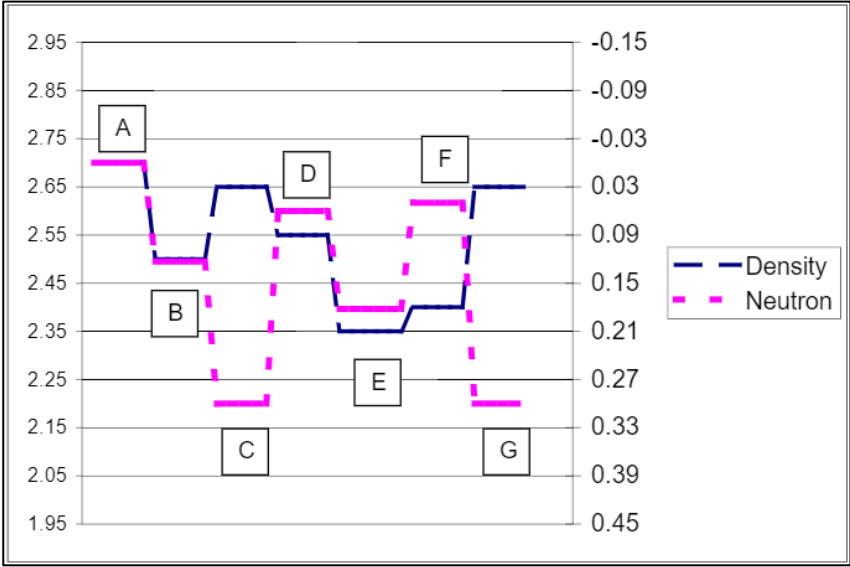


Name:			
Enrolment No:			
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, December 2022			
Course Name: M.Tech. Petroleum Engineering Program: Formation Evaluation & Well Logging Course Code: PEAU 7005 Nos. of page(s) 2 Instructions I. All questions are compulsory. II. Read question carefully and write appropriate answer. III. Write correct unit in after numerical calculation. IV. Use neat diagram with proper labeling to explain the answer.		Semester: I Time: 3 hrs. Max. Marks: 100	
SECTION A (5Qx4M=20Marks)			
S. No.		Marks	CO
Q 1	Define, Movable hydrocarbons, and residual oil saturation.	4	CO1
Q 2	Write a note on sidewall coring and its applications.	4	CO2
Q 3	What is the Importance of examination of well cuttings and core analysis?	4	CO4
Q 4	Explain working procedure of Dual Latero Log.	4	CO3
Q 5	Explain the empirical relationship between water resistivity, porosity and water saturation.	4	CO1
SECTION B (4Qx10M= 40 Marks)			
Q 6	Explain, their working procedure and application of following- a. Induction log b. Temperature log OR Write short notes on the following- a. Compton scattering b. LL3 logging tool	10	CO3
Q 7	Draw and explain resistivity profiles for three versions of fluid distributions in the vicinity of borehole.	10	CO3
Q 8	Explain, Neutron logging with the help of its principle, neutron interaction with matter, neutron energy classification; and draw a rough neutron curve for hydrocarbon bearing sandstone formation that is sandwiched by shale.	10	CO3

Q 9	<p>Explain the following Density and Neutron log responses (A through G). Identify characteristic of each zones [A-G] based on Neutron and Density data given in figure.</p> 	10	CO5
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SECTION-C
(2Qx20M=40 Marks)

Q 10	Describe, the principle and Commonly used tools in electrical resistivity logging. Why do we need different types of resistivity tools?	20	CO5
Q 11	<p>Discuss the various logging methods used in porosity calculation of subsurface lithology. How porosity changed with respect to depth?</p> <p style="text-align: center;">OR</p> <p>In a clean hydrocarbon-bearing sandstone formation, the neutron and density logs read 10 and 38 sandstone porosity units, respectively. The shallowest resistivity reading is 10 ohm-m across the hydrocarbon-bearing formation and the resistivity of mud filtrate at the temperature of the formation is 0.075 Ohm-m. The residual hydrocarbon saturation in the flushed zone is 0.65. What is the in situ hydrocarbon density? Estimate the effective porosity of the formation. Assume that $a=0.81$, m and $n = 2$ in Archie's equation.</p>	20	CO4