Name: **Enrolment No:**	UPES UNIVERSITY OF TOMORROW

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

END Semester Examination, Dec 2022

Course : Well Site Geology & Formation Evaluation **Semester** : **III**
Programme : MSc (Pet Geo-Sci) **Time** : **03 hrs**
Course Code : PEGS 8005 **Max. Marks** : **100**
Nos. of page(s) : **1**

Instructions: *Assume any data missing*

SNo	SECTION A (5Qx4M=20Marks)	Marks	CO
Q 1	List various method to identify oil signatures in drilling mud	**4**	**CO1**
Q 2	List different laboratory analysis methods to evaluate the porosity of a core	**4**	**CO1**
Q 3	Define invasion of drilling mud during well logging operation	**4**	**CO2**
Q 4	Mention the working principle of operation of a sonic log	**4**	**CO2**
Q 5	Mention various uses of caliper log	**4**	**CO2**
	SECTION B (4Qx10M= 40 Marks)		
Q 6	Explain with schematic elaboration the processes of gamma ray scattering and absorption in radioactive logging	**10**	**CO4**
Q 7	Demonstrate with neat diagram the working principle of Drill Stem Testing (DST).	**10**	**CO5**
Q 8	i. Define Shale Index and Hydrogen Index (HI) ii. Calculate the HI of methane in calcite formation (bulk density of 2.71 g/cc).	**10**	**CO5**
Q 9	A hydrocarbon-bearing calcite formation (hydrocarbon density is 0.8 g/cc and calcite density is 2.71 g/cc) is invaded with mud filtrate of density 1.05 g/cc and its saturation is 82%. Estimate the porosity of the formation if the formation density tool records a formation bulk density of 2.27 g/cc.	**10**	**CO5**
	SECTION-C (2Qx20M=40 Marks)		
Q 10	Elaborate with neat diagram the electro-chemical and electro-kinetic interactions of ions contributing to individual as well as the combined Spontaneous Potential (SP) in the high saline formation Or Explain with neat sketch the working of the induction and proximity log tools	**20**	**CO3**
Q 11	Describe with a sketch the working of formation density log tool and neutron log tool	**20**	**CO4**