End Semester Examination, December 2023

Program Name: M. Sc Petroleum Geoscience **Semester : III**
Course Name: Petroleum Data Management **Time : 3 hrs**
Course Code: PEGS 8035P **Max. Marks: 100**
Nos. of page(s): 2
Instructions: Draw diagrams wherever necessary.

S. No.	SECTION A [5QX4=20MARKS]	Marks	CO
1	Explain the importance of metadata in petroleum data management.	4	CO1
2	List the data types acquired during petroleum exploration.	4	CO2
3	Explain how does effective petroleum data management contribute to the efficiency and success of exploration and production activities in the oil and gas industry.	4	CO2
4	Differences between supervised and unsupervised learning	4	CO3
5	Explain the concept of neural networks in deep learning.	4	CO3
	SECTION B **[4QX10=40 marks]**		
6	Explain how the machine learning techniques can be effectively applied in petroleum exploration.	10	CO3
7	Describe the concept of "big data" relate to data science, and investigate the challenges with large datasets present.	10	CO4
8	Describe how the machine learning algorithms enhance seismic data interpretation in petroleum exploration.	10	CO4
9	Discuss the importance of data quality assurance in petroleum data management, and how can organizations ensure the accuracy and reliability of their data for decision-making. **OR** Elaborate the features that ML models can extract from subsurface data to enhance the understanding of the reservoir.	10	CO4
	Section C **[2Qx20=40marks]**		
10	Analyze how does the seismic and well data be efficiently loaded and integrated in the software platform for petroleum exploration and reservoir characterization. Investigate considerations should be considered during this data loading process.	10+10= 20	CO5

	OR		
	Discuss the application of machine learning in the analysis of following data (i) well log data, and (ii) geochemical data for identifying potential hydrocarbon reservoirs		
11	(a) Draw labelled diagram of the following and elaborate their applications: a) Christmas tree b) Cased hole completion. (b) Analyze a Group Gathering Station and define the functions of separator, demulsifier, desalter and gas compressor with a schematic flow diagram.	**10+10 = 20**	**CO3**