Name: **Enrolment No:**	

UPES

End Semester Examination, May 2025

Course: Data analytics in upstream **Semester: II**

Program: M Tech Petroleum engineering **Time : 03 hrs.**

Course Code: PEAU 8006 P **Max. Marks: 100**

Instructions: Answer all questions. There are internal choices in Q9 and Q10.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Define kurtosis of a dataset.	**4**	**CO1**
Q 2	Enumerate four types of machine learning	**4**	**CO1**
Q 3	Define data science	**4**	**CO1**
Q 4	Define clustering of datasets.	**4**	**CO1**
Q 5	Enumerate 4 Vs of big data.	**4**	**CO1**
	SECTION B **(4Qx10M= 40 Marks)**		
Q 6	Distinguish between supervised and unsupervised machine learning.	**10**	**CO2**
Q 7	Discuss the importance of artificial intelligence in modern day upstream industry with the help of a use case?	**10**	**CO2**
Q 8	Explain the fundamental concept of random forest machine learning and discuss the scenarios where it can be used to forecast events.	**10**	**CO3**
Q 9	Distinguish between standard deviation and mode of a dataset. **OR** Explain with suitable examples what could be outliers in production data generated at oilfields.	**10**	**CO3**
	SECTION-C **(2Qx20M=40 Marks)**		
Q 10	Apply prescriptive, descriptive and predictive data analytics to mitigate stuck pipe drilling hazard from real time drilling data? **OR** Draw a logical diagram to explain how WOB, measured depth, Bit depth and ROP can be estimated from hook load, Drawworks and slip status data.	**20**	**CO4**

Q 11	Apply multiple linear regression ML technique to develop an equation to predict rate of penetration from real time drilling data.	**20**	**CO5**