UPES
UNIVERSITY OF TOMORROW

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2022

Course: Data Analytics in Upstream   **Semester : II**
Program: M Tech Petroleum Engineering   **Time : 03 hrs.**
Course Code: PEAU7020   **Max. Marks: 100**

Instructions: Attempt all questions. There is internal choice in Q8 and Q10.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q1	Explain the difference between data warehouse and data mart.	4	CO1
Q2	Name four types of machine learning.	4	CO1
Q3	Draw a suitable figure to show the relation between data science, machine learning and artificial intelligence.	4	CO2
Q4	What are 4 Vs of big data? Give example of four big data platforms widely used in industry.	4	CO1
Q5	Name two subtypes of supervised machine learning.	4	CO1

SECTION B
(4Qx10M= 40 Marks)

Q 6	Explain the differences between time series and depth series data generated in upstream operations. Illustrate a case where depth series data is required to understand subsurface geology.	10	CO3
Q7	Describe artificial intelligence and explain how it can enable automation of drilling operations.	10	CO4
Q8	Define the logic of least square method of establishing trend in a large volume of data. **OR** Draw the architecture of perceptron and explain its different components?	10	CO2
Q9	Explain the difference between predictive and descriptive models of data analytics? Illustrate a case where these models can optimize upstream operations.	10	CO3

SECTION-C
(2Qx20M=40 Marks)

Q10	Explain in detail four tiers of data management architecture and discuss in detail the business value generated by each tier of data platform. **OR**	20	CO5

	Evaluate all aspects of efficiency brought by transformation of conventional oil field to a digital oil field?		
Q11	Elaborate in detail different types of data generated in oil and gas upstream operations. Evaluate the optimization and collaboration opportunities created by these data.	**20**	**CO6**