Name: **Enrolment No:**	

UPES

End Semester Examination, May 2025

Course: Unconventional Hydrocarbon Resources **Semester: II**

Program: Mtech Petroleum Engineering **Time : 03 hrs.**

Course Code: PEGS7041 **Max. Marks: 100**

Instructions: All questions are mandatory.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q1	Define "host molecule" and "guest molecule" in context of gas hydrates.	**4**	**CO1**
Q 2	Define the term "PEAT" with respect to the hydrocarbon industry.	**4**	**CO1**
Q 3	Define "In-situ Retention" of the hydrocarbon with respect to the shale gas.	**4**	**CO1**
Q 4	List out the major "supporting evidence" for the shale gas to be potential alternate fuel.	**4**	**CO2**
Q 5	Mention some of the problems associated with the CBM.	**4**	**CO2**
	SECTION B **(4Qx10M= 40 Marks)**		
Q 6	Explain the key changes that take place in the process of catagenesis during the generation of the HC. Also provide suitable temperature pressure conditions for the process.	**10**	**CO2**
Q 7	Differentiate between "shale gas" and "natural gas".	**10**	**CO3**
Q 8	Enumerate various types of gas-hydrate. Also provide details about their lattice structure.	**10**	**CO3**
Q 9	List out various chemical additives that are used for the formulation of the fracture fluid. Explain the harmful impact of at least two.	**10**	**CO4**
	SECTION-C **(2Qx20M=40 Marks)**		
Q 11	Explain in detail the characteristics of the shale of the shale gas reservoir. Highlight various physical properties with its significance and appropriate range for the shale gas reservoir. OR Describe in detail various parameters that are used for exploring and evaluating the NGHs. Also describe the logical reasoning behind every parameter.	**20**	**CO4**
Q 12	Express your views on the statement. "India will be energy independent by 2050." Highlight various key steps to be taken to achieve it.	**20**	**CO5**