Name: **Enrolment No:**	

UPES
End Semester Examination, May 2025

Course: HSE Challenges in petroleum operations **Semester: II**
Program: M.Tech PE **Time : 03 hrs.**
Course Code: HSFS7022 **Max. Marks: 100**

Instructions:

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q.1	List the eight common types of safety hazards that are commonly encountered in oil and gas operations.	**[4M]**	**CO1**
Q.2	Outline the concept of Administrative Controls as a safety measure in the oil and gas industry and briefly describe their role in mitigating operational hazards.	**[4M]**	**CO1**
Q.3	Explain Process Safety Management (PSM) indicating its significance in hazard identification and risk control within oil and gas operations.	**[4M]**	**CO2**
Q.4	Discuss Health, Safety, and Environment (HSE) Policy highlighting its strategic importance in promoting a proactive safety culture within oil and gas operations.	**[4M]**	**CO2**
Q.5	Defend Workplace Ergonomics to Minimizing Occupational Risks in Industrial Environments	**[4M]**	**CO2**

SECTION B
(4Qx10M= 40 Marks)

Q.6	Reproduce the key objectives and responsibilities outlined by the Oil Industry Safety Directorate (OISD) in its safety guidelines for upstream petroleum operations.	**[10M]**	**CO1**
Q. 7	Describe the various control measures procedures that help to minimize risks in confined spaces within oil and gas installations.	**[10M]**	**CO2**

Q.8	Demonstrate the ecological and socio-economic consequences of an oil spill in a coastal region. **OR,** Illustrate the best practices for sustainable drilling and production in the oil and gas industry by applying relevant technologies and operational strategies that reduce environmental impact, enhance efficiency, and ensure safety.	**[10M]**	**CO3**
Q.9	Analyze the process of gas flaring in petroleum operations and its environmental impacts underscoring the alternative options for flaring.	**[10M]**	**CO4**
SECTION-C (2Qx20M=40 Marks)			
Q.10	Given a scenario where a large crude oil spill has occurred near an ecologically sensitive offshore region, apply your understanding of oil spill response and cleanup techniques to develop a comprehensive response strategy.	**[20M]**	**CO3**
Q.11	Solid waste generation in petroleum operations poses significant environmental and operational challenges. With reference to solid waste pollution in the oil and gas industry, critically analyze the sources, types, and impact of solid waste on both the environment and human health. **OR,** Examine the environmental impact of air pollution on human health and ecosystem during petroleum operations, highlighting key sources of emissions in upstream and downstream activities and the primary mitigative measures currently in place to address air pollution in petroleum operations,	**[20M]**	**CO4**