Name: **Enrolment No:**	

UPES

End Semester Examination, May 2025

Course: Environmental Engineering & Management **Semester : VI**

Program: B.Tech (FSE) **Time : 03 hrs.**

Course Code: HSFS3010 **Max. Marks : 100**

SECTION A (5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Assess the influence of atmospheric stability variations on the dispersion patterns of air pollutants and the subsequent performance of air pollution mitigation strategies.	**4**	**CO2**
Q 2	Discuss the fundamental components and policy implications of the Environmental Impact Assessment (EIA) process as outlined in the latest Government of India notification.	**4**	**CO2**
Q 3	Critically evaluate how a cyclone separator contributes to the control of particulate emissions in industrial air pollution management systems.	**4**	**CO1**
Q 4	Assess the influence of atmospheric stability variations on the dispersion patterns of air pollutants and the subsequent performance of air pollution mitigation strategies.	**4**	**CO2**
Q 5	Enumerate and interpret different types of lapse rates, explaining their relevance to environmental stability and air quality modeling.	**4**	**CO2**
SECTION B (4Qx10M= 40 Marks)			
Q 6	Highlight the strengths and weaknesses of current practices, and explore barriers and enablers to meaningful stakeholder involvement across varied development contexts.	**10**	**CO5**
Q 7	Analyze the operational differences between the Hauled Container System and the Stationary Container System in waste management, considering factors such as waste collection efficiency, resource allocation, and environmental sustainability..	**10**	**CO3**
Q 8	Support your explanation with an illustrative diagram, showing how stability affects plume shapes such as looping, coning, and fanning	**10**	**CO4**
Q 9	Provide a detailed explanation of the Gaussian plume dispersion equation for gaseous pollutants, elucidating its mathematical formulation and practical applications in air quality modeling and pollution control strategies. **OR** Critically assess and elaborate on the multiple factors influencing the vermi-composting process.	**10**	**CO3**

SECTION-C (2Qx20M=40 Marks)			
Q 10	Interpret the mechanisms of dry and wet scrubber, their practical applications in mitigating air pollution, and workings involved in their operation, while critically assessing their efficacy in diverse environmental contexts.	**20**	**CO4**
Q 11	Develop a comprehensive explanation of the key considerations in the design of landfills, integrating various environmental, engineering, and regulatory factors. Support your explanation by creating a well-labeled diagram that illustrates the essential components and features crucial for ensuring the effectiveness and sustainability of landfill designs OR A large power plant has a 200 m stack with inside diameter of 1.5m. The exit velocity of the stack gas is estimated at 8m/s at the temperature of 130^0C. Ambient temperature is 23^0C and the wind at stack height is estimated to be 3m/s. Estimate the total effective height of the stack. If a) The atmosphere is stable with temperature increasing at the rate of 3^0C/km. b) The temperature is slightly unstable.	**20**	**CO5**