Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2020

Course: Safety, Health & Environment Management **Semester: VIII**
Program: B. Tech-GSE **Time: 03 hrs.**
Course Code: ENVO401 **Max. Marks: 100**

Instructions:

SECTION A

S. No.	Attempt all the questions	**30 Marks**	**CO**
Q1.	Expand the following: i. ETP ii. OHSAS iii. CCOE iv. DGCA v. DGFASLI vi. TTS vii. UA/USA viii. PPE ix. RSPM x. PPM	**10**	**CO1**
Q2.	Define the following; (as per IFA, 1948 & EPA 1986) i. Occupational Health ii. Child iii. Accident iv. Hazardous Process v. Machinery vi. Young Person vii. Prime Mover viii. Power ix. Off-site Emergency x. Factory Inspectorate	**20**	**CO1 & CO2**

SECTION B

S. No.	Attempt all the questions	**50 Marks**	**CO**
Q3.	List and discuss the duties of safety officer as per IFA, 1948.	**10**	**CO1**

Q4.	Answer the following: a. Discuss the classification of liquids and petroleum products based on their flammability. b. Define: Flame point, Flammability Range, Flash Point, Auto-Ignition Point and Boiling Point	**10**	**CO2**
Q5.	Explain the Henrich's theory of accident causation along with its limitations.	**10**	**CO2**
Q6.	Define pollution and pollutant. Discuss types of air pollution and pollutants along with their impact on environment.	**10**	**CO4**
Q7.	Describe the operational principles of cyclone separators.	**10**	**CO5**
	SECTION-C		
S. No	**Answer the following.**	**20 Marks**	**CO**
Q8.	***Read the following case study and answer the questions following.*** This case study investigates the factors resulting in an electrostatic ignition incident involving toluene, a prolific charge generator filling a metal bucket via gravity fed 0.75" metal pipping. In this scenario, an operator opened a valve to draw toluene into a metal bucket with toluene from an overhead tank by gravity flow at approximately 5 gallons per minute. The operator hung a metal bucket with a wire bail and plastic handle over a globe valve. The plastic handle on the bail isolated the metal bucket from ground. On opening the valve, the operator backed away from the bucket allowing the toluene to flow as he had previously done several times. Within a few moments, the toluene had ignited causing the operator to immediately leave the scene returning with a small fire extinguisher, which proved inadequate to put the fire out. The operator then left the scene returning with a larger fire extinguisher, however by the time he had returned the fire was out of control and he was unable to close the valve to prevent the flow of toluene to the bucket, which was already over flowing. The investigation into the incident outlined that the operator had opened the valve and backed away from the metal bucket. The operator stated "I was just standing there looking at it when it caught fire". As a result, discharge from the operator could be ruled out as a cause of the incident. A. Point out the causes and sequence of occurrence. B. Discuss the preventive and protective measures that could have avoided this occurrence. [OR] Discuss the following in respect of "BP Texas Refinery Accident" 2005 – 1. Incident Description 2. Sequence of Events 3. Rescue Measures 4. Aftermath	**20 Marks**	**CO4**