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

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination (Online Mode)

Course: Safety, health and environment in petroleum industry **Semester: V**
Program: B. Tech APE GAS **Time : 03 hrs.**
Course Code: ENVO 405 **Max. Marks: 100**

Instructions:

SECTION A

Each Question will carry 5 Marks

S. No.		Marks	CO
Q 1	Fire and explosion accidents can be prevented using the knowledge ----------	**5**	**CO5**
Q2	What is the importance of occupational health? a) It concentrates relationship between work and individual health and prevent from ill health. b) It provides the legal obligation c) Occupational health is important to understand the hygiene requirement d) It is important to maintain good relationship between employee and employer	**5**	**CO5**
Q3	What hazard do safety googles protect against? a) Heat b) Dust c) Strong light	**5**	**CO1**
Q4	What is impossible for gloves to protect against? a) Hazardous substances b) Cold or heat c) Rotating parts	**5**	**CO2**
Q5	Hazardous substances are classified by category. What are some of these categories?	**5**	**CO3**
Q6	What is a) A hazard b) A risk	**5**	**CO4**

SECTION B

Each question will carry 10 marks

Q 7	What are the impacts of drilling mud discharge in ocean environment?	**10**	**CO1**
Q8	What are the outcomes of Hazard identification and Operability (HAZOP) analysis?	**10**	**CO2**
Q9	Explain the Fire and Explosion characteristics of a material.	**10**	**CO3**

<table>
<tr><td>Q10</td><td>Explain Primary and Secondary Key words of HAZOP with examples</td><td>10</td><td>CO4</td></tr>
<tr><td>Q11</td><td>What are the stability classifications of atmosphere in dispersion modeling?</td><td>10</td><td>CO5</td></tr>
<tr><td colspan="4">SECTION-C
Each Question carries 20 Marks.</td></tr>
<tr><td>Q 12</td><td>Why Health safety and Environmental Management is important in Petroleum and offshore industry? Explain with the help of an industry disaster with its causes and consequences.

Or

Explain the steps to draw a flammability diagram. Draw a flammability diagram for Methane (CH_4).

$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$
<table><tr><td>Characteristics of Methane</td><td></td></tr><tr><td>Flammability limit in air</td><td>LFL: 5.3% fuel in air</td></tr><tr><td></td><td>UFL: 15% fuel in air</td></tr><tr><td>Flammability limit as pure form</td><td>LFL: 5.1% fuel in oxygen</td></tr><tr><td></td><td>UFL: 61% fuel in oxygen</td></tr><tr><td>LOC</td><td>12% oxygen</td></tr></table></td><td>20</td><td>CO5</td></tr>
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