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

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

Course: Chemical Process & Plant Safety **Semester: 8**
Program: BTech (CE+RP) **Time 03 hrs.**
Course Code: CHEG324 **Max. Marks: 100**

Instructions:

1. **The exam is closed book and closed notes**
2. **Use of mobile phone and other electronic equipment is strictly prohibited**
3. **Use of unfair means during exam will be severely dealt with.**

SECTION A

S. No.		Marks	CO
Q 1	An outstanding safety program has management systems that _____ _____.	**5**	**CO1**
Q 2	A toxicant which causes birth defect is called a _____.	**5**	**CO2**
Q 3	A release where most of the kinetic energy is converted into internal energy via frictional losses is called _____.	**5**	**CO4**
Q 4	Choose the right answer: Which assumption is not made when determining the concentration profile in the surroundings for the case of a leak through a chimney? a. Ground is an impervious, elastically reflecting boundary. b. Solution obtained by considering an image source below the ground. c. Plume is a slender plume d. Constant eddy diffusivity or dispersion coefficient in all directions.	**5**	**CO5**
Q 5	In the coordinate system used in dispersion modeling, the y-axis is defined to be ____ _____.	**5**	**CO5**
Q 6	An example of a solid oxidizer is _____.	**5**	**CO6**

SECTION B

Q 7	Determine the mixture TLV at 25 degrees Celsius of a gaseous heptane-toluene mixture derived from a liquid consisting of 35% heptane by volume. The individual species TLV of heptane and toluene are 400 and 20 ppm respectively. The vapor pressure of heptane and toluene are 46.4 and 28.2 mm Hg respectively.	**10**	**CO3**
Q 8	Write down the step-wise procedure for calculating the mass flux of gas/vapor through a pipe for the isothermal case.	**10**	**CO4**
Q 9	Describe briefly the eddy diffusivity model. How is it different from the Pasquill-Gifford model?	**10**	**CO5**
Q 10	Describe how you would draw the flammability diagram of a gaseous substance given the LOC and the flammability limits in air as well as the case where only the flammability limits in air are given.	**10**	**CO6**

Q 11	Briefly describe the different properties used to determine the flammability characteristics of liquids and vapors.	**10**	**CO6**
SECTION C			
Q 12	Describe the different steps you would undertake to determine the area to be evacuated in case of leak of a highly flammable vapor.	**20**	**CO4, CO5, CO6**