

Name:

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2018

Course: M.Tech (CE + PD)

Semester: II

Program: M.Tech (CE + PD)

Time: 03 hrs.

Subject- Principles of Chemical Process Safety.

Code: CHPD 7011

Max. Marks: 100

Instructions: *The question paper consists of three sections. Answer the questions section wise in the answer booklet.

Note: Assume suitable data wherever necessary

SECTION A

Attempt all the questions. All questions carry equal marks

Total Marks=20

S. No.		Marks	CO
Q 1	Define hazard and explain different types of hazards.	4	CO1
Q2	Define set pressure, maximum allowable working pressure, over pressure and accumulation.	4	CO4
Q3	Discuss what do you mean by inherent safety.	4	CO2
Q4	Discuss about different types of personal protective equipment.	4	CO5
Q5	Discuss about accidents and loss statistics.	4	CO1

SECTION B

(Answer all questions, Total Marks=40)

Q6	A 0.1-inch hole forms in a tank containing nitrogen at 13.6092 atm and 80°F. Determine the mass flow rate through this leak. Heat capacity ratio = 1.41, C_0 value for non-choked flow is 0.61 and for choked flow is 1.0, $g_c = 1.0 \text{ kg.m.S}^{-2} \text{ N}^{-1}$.	8	CO3
Q7	Discuss about fires and explosions.	8	CO2
Q8	Discuss about reliefs, relief method and location of reliefs.	8	CO4

Q9	Discuss how toxicants are eliminated from biological organism.	8	CO3
Q10	Discuss briefly about source models.	8	CO2
SECTION-C (Total Marks-40) Answer both the questions.			
Q11	Discuss the flow of liquid through hole in a tank and find out the mass flow rate of the liquid through the hole in a tank at any instant.	20	CO3
Q12	Discuss in detail about the two significant disasters in chemical plant.	20	CO1