

Name:
Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: Fire Engineering-I
Program: B. Tech-FSE
Course Code: HSFS 2005

Semester: IV
Time : 3 hrs.
Max. Marks: 100

Instructions: 1. Standards IS 2190 and NBC 2016 (part-4) shall be provided to the students.

SECTION A

S. No.	Answer all the questions	20 Marks	Mapped CO
Q 1	Expand the following: a. FFFP b. MAP c. PFPS d. AFPS	4	CO1
Q 2	Differentiate between “Boil Over” and “Slop Over”	4	CO 5
Q 3	Name various extinguishing agents and enlist their effect on fire	4	CO 1
Q 4	Define “Explosion”. Brief about the classification of explosions.	4	CO 6
Q 5	Explain the meaning of the following name plate details of portable fire extinguishers. i. 9A:21B:C ii. 2A: 13B	4	CO 3

SECTION B

S. No	Answer all the following:	40 Marks	Mapped CO
Q 6	Define Foam. Discuss the action of foam on fire and list various types of foam agents used in fire service along with their applications and limitations.	2+3+5	CO1
Q 7	Discuss about stages of fire occurring in controlled environment. Also, name the suitable detector for each stage.	2 + 8	CO 2
Q 8	Expand and define VCE. Explain the causes and phenomenon (sequence of events) of occurrence of VCE in case of BP Texas refinery explosion, 2005.	1+1+8	CO 6
Q 9	Discuss the procedure to decide the extent of fire proofing. Also, mention the national/international standards/codes of reference. (OR) Discuss the classification of HC storage tanks and mention code of reference. Also, with neat sketches explain the foam protection system to be installed in storage tanks containing flammable liquids as per OISD.	8+2 4+6	CO 5 CO4

SECTION-C

S. No	Answer the following	40	Mapped
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Instructions:

SECTION A

S. No.	Answer all the questions	20 Marks	Mapped CO
Q 1	Expand the following: a. AFFF b. DAP c. VCE d. PFPS	4	CO1
Q 2	Differentiate between “Jet Fire” and “Pool Fire”	4	CO 1, CO2
Q 3	List the steps in operation of an extinguisher	4	CO 1
Q 4	List all the standards (national & international) to be referred for extinguishers, sprinkler systems, fire pumps and spray systems.	4	CO 6
Q 5	Explain the meaning of the following name plate details of portable fire extinguishers. iii. 6A:21B:C iv. 1A: 9B	4	CO 3

SECTION B

S. No	Answer all the following:	40 Marks	Mapped CO
Q 6	Discuss the action of DCP and CO ₂ on fire and list various types of DCP agents and types of CO ₂ storage systems used in fire service along with their applications and limitations.	2+2+6	CO1
Q 7	Compartmentation is the process of segregating various areas in built spaces (buildings) with fire resistant materials. Doing so leads to limit the extent of fire to an area and prevents the fast escalation. However, if conditions are favorable this may lead to local overheating and fire may go out of control. Explain the stages of compartmental fire growth with necessary sketches and list the associated fire detectors.	2 + 8	CO 2
Q 8	Define “Boil Over” and “Slop Over” and discuss the phenomena of both.	1+1+4+4	CO 5
Q 9	Discuss the procedure to decide the extent of fire proofing. Also, mention the national/international standards/codes of reference.	8+2	CO 5 & CO 6

	(OR) Discuss the classification of HC storage tanks and mention code of reference. Also, with neat sketches explain the foam protection system to be installed in storage tanks containing flammable liquids as per OISD.	4+6	
SECTION-C			
S. No	Answer the following	40 Marks	Mapped CO
Q 10	Expand and define BLEVE. Explain the causes, process of occurrence and aftermath effects of BLEVE on a flammable liquid storage tank.	1+2+4+6+7	CO 6
Q 11	Explain the specifications of Pre-action and Deluge type sprinkler system with necessary sketches, applications and restoration procedures. (OR) With neat sketches describe the TFS of CO ₂ and DCP along with applications and limitations.	8+12 20	CO 4