

Name:

Enrolment No:



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

Program: B. Tech- FSE

Subject (Course): Fire Engineering-II

Course Code : FSEG 301

No. of page/s: 3

Semester – V

Max. Marks : 100

Duration : 3 Hrs

SECTION A

<u>S.No</u>	<u>Answer all the following:</u>	20 Marks	CO
Q 1	Answer the following: Choose the correct answer(s): i. The safe angle for ladder usage is a. Π rad b. 0.5Π rad c. 75° d. None of the above ii. The standard for Fire Apparatus is _____ a. NFPA 1991 b. NFPA 2005 c. OISD GDN 115 d. All the above e. None of the above iii. Hose that is used for drafting water from ponds, lakes and/or any water body containing coagulant solids is _____ iv. The nozzle used for warehouse firefighting is _____	4	CO 2 & CO 4
Q 2	Postulate various parts of an extension ladder	4	CO 4
Q 3	Enlist the size-ups to be done before ventilation.	4	CO 5
Q 4	Brief different types of supply hose lays.	4	CO 4
Q 5	Write a short note on various types of ropes used in fire service.	4	CO 2

SECTION B

<u>S.No</u>	<u>Answer all the following:</u>	40 Marks	CO
Q 5	Explain the classification of 'Ropes' along with their applications and limitations of each type.	[5+3]	CO 4
Q 6	Proper safety gadgets are to be maintained and used safely & efficiently by fire service personnel. Poor maintenance may cause serious problems. In case if	[6+2]	CO4 & CO

	<p>you're a member of any fire service department. Assume you're a fire service professional:</p> <p>If a room is filled with dense black smoke up to almost half volume of the room from roof and you're required to enter such atmosphere for firefighting, then brief the breathing aids that you use to avoid fatality/illness and how will you determine duration of usage</p>		5
Q 7	Discuss various kinds of hoses used in fire service with specifications, applications and limitations. Also, brief the maintenance procedure.	[6+2]	CO 4
Q 8	<p>Answer the following:</p> <p>a. Elaborate the conceptual meaning of the statement: "Try before Pry". [2]</p> <p>b. Also, brief the situations that demand such "Prying", [2]</p> <p>c. Brief the pre-checks/size-ups to be done before 'Prying' . [4]</p> <p>(OR)</p> <p>Describe the operational specifications of Pumper apparatus and quote relevant code/standard(s).</p>	[8]	CO 5 & CO 2 CO 3
Q9	<p>Due to versatility, high outlet pressures 'Centrifugal Pumps' are widely used in fire service. Centrifugal pumps replaced almost all the positive displacement pumps from fire service history. Variety designs/layouts and configurations are used as per application.</p> <p>For an oil & gas terminal depot 4 fire pumps each of 300LPM, 80 psi capacity are proposed to be installed for fetching water from nearby natural water body to reservoir from which it needs to supply all the fixed fire protection facilities. The total firewater demand decided is 100 m³. The capacity of reservoir said to be 120% of firewater demand. Give proper combination/interconnection of pumps in such a way that they could be able to fill reservoir and supply the firewater network @ 10 bar(g).</p> <p>(OR)</p> <p>State the mathematical equation to calculate PDP. Calculate PDP in psi(g) for the following case:</p> <p>A fire apparatus is supplying a portable monitor (whose nozzle is 0.5m vertically off from ground level) delivering solid stream of 500GPM through a 10m long 3" hose. The angle of inclination of monitor is 45° and reach (horizontal) of stream is 20 meters, aiming to put off a structural fire. Consider the total losses in couplings, fittings and appliances as 2 bar(g).</p>	[4+4]	CO 1 & CO 2
		[1+7]	CO 3
SECTION-C			
	Answer the following:	40 Marks	CO
Q 10	<p>Fire service departments deal with all sorts of incidents incl. natural emergencies. It's crucial to collect proper information and decide right course of action. If you're a fire commander:</p> <p>a. Assume you have been notified about fire incident in a nearby hospital midst of a busy street. Enlist & explain various concerns in deciding right course of action</p> <p>b. Give a brief sketch of plan of action in response to this.</p>	[4+10+6]	CO 5 & CO 6

Q 11	<p>Smoke and other combustion products cause maximum fatalities in most of fire incidents. Thus, fire departments take appropriate precautions for avoiding such incidents.</p> <p>Elaborate the strategic techniques followed by fire service departments to avoid fire fighter fatalities in afore said situations. Also, give the comparisons of the same (OR)</p> <p>Discuss the working of “Water Ring Primer” and “Reciprocating Primer”.</p>	<p>[15+5]</p> <p>(OR)</p> <p>[2*10]</p>	<p>CO 5 & CO 6</p> <p>CO 1</p>
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SECTION A

<u>S.No</u>	<u>Answer all the following:</u>	20 Marks	CO
Q 1	Answer the following: I. The type of centrifugal pump used as jockey pump is _____ II. The primer that works on venturi principle is _____ III. The tool used to shear lock cylinder is a. A-tool b. B-tool c. K-tool d. J-tool IV. PPTThe Indian standard for ACFT is a. IS 951 b. IS 903 c. BS 951 d. Any of the above e. All of the above f. None of the above	4	CO1 &CO2
Q 2	Postulate various parts of a straight ladder	4	CO 4
Q 3	Brief about “Firefighter’s Gear”	4	CO 3
Q 4	Write a short note on different types of ropes used in fire service along with their uses and limitations.	4	CO 4
Q 5	Enumerate in short about “Fire ground Operations”	4	CO 4

SECTION B

<u>S.No</u>	<u>Answer all the following:</u>	40 Marks	CO
Q 5	Explain the classification of ‘Fire Service Ladders’ along with applications and limitations of each type.	[5+3]	CO 4
Q 6	Proper safety gadgets are to be maintained and used safely & efficiently by fire service personnel. Poor maintenance may cause serious problems. In case if you’re a member of any fire service department. Assume you’re a fire service professional: If a room is filled with dense black smoke up to almost half volume of the room	[6+2]	CO4 & CO 5

	from roof and you're required to enter such atmosphere for firefighting, then brief the breathing aids that you use to avoid fatality/illness and how will you determine duration of usage		
Q 7	Discuss about various types of PPCs used by fire service personnel.	[8]	CO 4
Q 8	Explain the specifications of 'DCP Tender' (OR) With neat sketches, give the layout of a 'Foam Tender'.	[8]	CO 2
Q9	Describe various types of CFPs as per NFPA to be used in fixed AFPS. (OR) State the mathematical equation to calculate PDP. Calculate PDP in psi(g) for the following case: A fire apparatus is supplying a portable monitor (whose nozzle is 2m vertically off from ground level) delivering fog stream of 500GPM through a 10m long 3" hose. The angle of inclination of monitor is 30° and reach of stream is 10m, aiming to put off a structural fire. Consider the total losses in couplings, fittings and appliances as 2 bar(g).	[8] [1+7]	CO 1 & CO 2 (OR) CO 3
<u>SECTION-C</u>			
	Answer the following:	40 Marks	CO
Q 10	Fire service departments deal with all sorts of incidents incl. natural emergencies. It's crucial to collect proper information and decide right course of action. If you're a fire commander: c. Assume you have been notified about fire incident in a nearby hospital midst of a busy street. Enlist & explain various concerns in deciding right course of action d. Give a brief sketch of plan of action in response to this.	[4+10+6]	CO 5 & CO 6
Q 11	Smoke and other combustion products cause maximum fatalities in most of fire incidents. Thus, fire departments take appropriate precautions for avoiding such incidents. Elaborate the strategic techniques followed by fire service departments to avoid fire fighter fatalities in afore said situations. Also, give the comparisons of the same (OR) Discuss the working of "Exhaust Jet Primer" and "Reciprocating Primer".	[15+5] (OR) [2*10]	CO 5 & CO 6 CO 1