Name: Enrolment No:	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2021

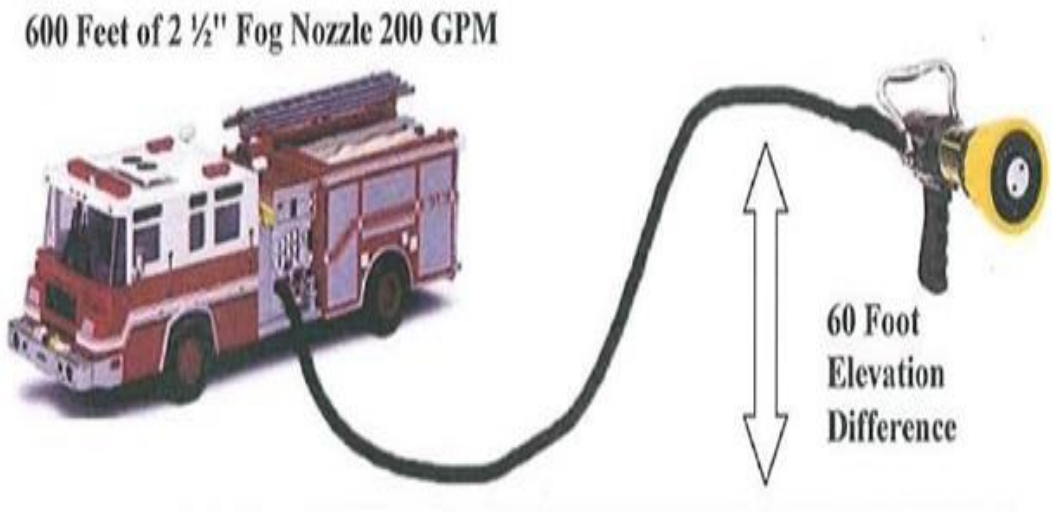
Course: Fire Engineering-II **Semester: IV**
Program: B. Tech-FSE **Time : 3 hrs.**
Course Code: HSFS 3003 **Max. Marks: 100**

SECTION A

S. No.	Answer all the questions	30 Marks	Mapped CO
Q 1	Expand the following: a. NPSH b. PDP c. GVWR d. ERT e. ACFT	5	CO1
Q 2	Brief about classification of fire hoses as per NFPA.	5	CO2
Q 3	Define the following: a. Fire Hose b. Bangor Ladder c. Aerial Ladder d. Rotating Tools e. Flash Over	5	CO2
Q 4	Calculate the duration usage of a open circuit SCBA of 6 liter water capacity 75% filled with compressed air pressurized @ 225 bar. Consider the avg. consumption rate as 30 lpm.	5	CO3
Q 5	Calculate Friction loss assuming maximum discharge condition for a hose of dia 76.2cms connected with solid tip.	5	CO4
Q 6	Brief the meaning of "Try before Pry"	5	CO5

SECTION B

S. No	Answer all the following:	50 Marks	Mapped CO
Q 7	Define "Fire Vehicle". Give a comparison between fire vehicles as per NFPA and IS/OISD.	2+8	CO1
Q 8	Define "Fire Stream". Discuss about various types of fire streams and associated fire nozzles.	2+8	CO2
Q 9	Discuss about various types of air supplying type respiratory protection equipment used by firefighters	10	CO3
Q 10	Calculate the fire water demand for a tank farm area having 4 floating roof tanks arranged in shape of a regular rectangle (formed by joining centers of tanks as vertices) of length 150m & 80m width, whose sizes are as given below. Assume foam dam distance as 0.8m for tanks having capacity less than 2100m^3 and 1m for all of the rest. Also, specify number and combination of pumps (each of 300GPM	10	CO4

	horizontal CFPs with 100 psi pressure rating) if fire water network has to be set up and must be maintained at 10 bar) which is to be supplied from a reservoir having capacity equals to 120% of calculated fire water demand as per OISD. A. Tank-1 & Tank-3 (D*H) - 20*40 B. Tank-2 & Tank-4 (D*H) - 20* 50 (OR) Calculate the following for the case depicted below. i. PDP (given nozzle is of fog type) ii. In addition, calculate the % change in PDP, considering negative elevation. iii. PDP, if solid tip has been used in place of existing for max. discharge condition 		
Q 11	Discuss about various techniques used by firefighters to vent out smoke/other harmful gases of combustion in case of fires.	**10**	**CO5**
	SECTION-C		
S. No	**Answer any one of the following**	**20 Marks**	**Mapped**
Q 12	Assume that one of the academic blocks of UPES are under fire and you're the fire chief/marshal of campus. Explain the steps taken by you to assess the situation and strategy to bring the situation into control. [OR] A one storied furniture mall is under fire and you're the fire chief of that area got a call from fire scene asking for immediate help. When arrived with team, you noticed that entire building is engulfed with flames. Elaborate about the strategic concerns to be considered for determining right course of action. decide the right course of action	**20 Marks**	**CO5**