Name: Enrolment No:	UPES UNIVERSITY WITH A PURPOSE

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

Course: Safety in Industrial Operations and Design **Semester: II**
Program: M.Tech. -H.S.E. and H.S.E.-DM
Time 03 hrs.
Course Code: HSFS 7006 **Max. Marks: 100**

Instructions: Read the question properly and give the most relevant answer

SECTION A

S. No.		Marks	CO
Q 1	Classify electrical area on basis of hazards with example.	**4**	**CO2**
Q 2	List the hazards and control measures for operation of pumps in process industry.	**4**	**CO1**
Q 3	Discuss the various factors that favor the location of plant.	**4**	**CO3**
Q 4	Explain 5S .	**4**	**CO2**
Q 5	Describe your understanding about methods for Safe handling of ladder.	**4**	**CO2**
	SECTION B		
Q 6	Present the safety procedure one must adhere during storage of chemicals and petroleum products.	**10**	**CO3**
Q 7	List out the various properties and safe handling procedure of chlorine in Industry.	**10**	**CO2**
Q 8	Classify and explain the ventilation system elaborately.	**10**	**CO1 & CO3**
Q 9	Recall the different configuration of rope, safe procedure to handle rope during lifting and its possible hazards. OR Recite the different requirement of fall arrestor and safety net.	**10**	**CO1**
	SECTION-C		
Q 10	a) Three instruments are developing sound pressure levels of 100 Pa,102 Pa and 105 Pa each. Calculate the average noise level generated and what would be the sound pressure level at 2 m distance. Consider the initial source of measurement as 1 m.	**17 +3**	**CO4 & CO2**

	b) Summarize your understanding about the d B(A) scale.		
Q 11	a) Workers are about to work at 5 m high, as a safety officer develop a work permit program to ensure the safety of the workers. b) List out the possible hazards and control measures of working at height. c) If you found any violation in the working of labor working at height how will you react. (OR) a) Lot of workers in your industry are made to carry the loads manually. Loads may be gunny bags . As a safety officer develop a plan to handle and store the loads in the go down. b) List out the hazards and remedial measure in material handling system you choose in your ware house. c) Discuss the Principles of material handling	**8+7+5**	**CO1 CO3 & CO4**

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SECTION A

S. No.		Marks	CO
Q 1	List the factors one must consider while selecting layout to establish Agro based Industry	**4**	**CO1**
Q 2	Discuss the Safety in operation of Heat Exchanger equipment.	**4**	**CO2**
Q 3	Summarize the importance of Industrial lighting system	**4**	**CO3**
Q 4	Explain the hazards and safe operating procedures of any one of the mechanized material handling equipment.	**4**	**CO2**
Q 5	List the safety measures to be followed while working over fragile roofs	**4**	**CO2**
	SECTION B		
Q 6	Summarize the safety factors to be assured for the operation of Flaring system	**10**	**CO3**
Q 7	List out the various properties and safe handling procedure of Ammonia in Industry.	**10**	**CO2**
Q 8	Explain the hazards of Industrial Noise and recommend control measures.	**10**	**CO1 & CO3**
Q 9	List the various safety methods to be followed to transfer the load from go down to truck. Also discuss the possible causes for the causation of accidents. **(OR)** Recall fall prevention program elaborately	**10**	**CO1**

<table>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4">SECTION-C</td></tr>
<tr><td>Q 10</td><td>a) You are a safety officer working in industry. Consider the following temperature reading are measured in your industry for 8 hours (once in two hours).Calculate the Average WBGT for out door and also for indoor (neglect the data which may not be necessary). All value are in ºC .
<table>
<tr><th>S,No.</th><th>Dry bulb temperature</th><th>Wet bulb temperature</th><th>Globe temperature</th></tr>
<tr><td>1</td><td>45</td><td>30</td><td>45</td></tr>
<tr><td>2</td><td>46</td><td>25</td><td>45</td></tr>
<tr><td>3</td><td>47</td><td>30</td><td>43</td></tr>
<tr><td>4</td><td>50</td><td>34</td><td>50</td></tr>
</table>
b) Differentiate Wet Bulb, Dry Bulb and globe temperature.</td><td>17 +3</td><td>CO4 & CO2</td></tr>
<tr><td>Q 11</td><td>a) You are having a petroleum storage facility in your company as a safety officer how will you safely unload and load the petroleum product.

b) List the possible chances of accident causation in loading and unloading of petroleum

(OR)

a) You are planning to install a reactor in your organization elaborate the safety consideration during selection and operation of reactor.

b) List the possibilities of accident causation in reactor.</td><td>10+10</td><td>CO1 CO3 & CO4</td></tr>
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