Name: Enrolment No:	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination May 2019

Course: Fire Risk & Control **Semester: II**
Program: M Tech- HSE / HSE spl. with DM **Time: 03 Hrs**
Course Code: MEEG 852 **Max. Marks: 100**

Instructions:

SECTION A

S. No.	Questions	Marks	CO
Q 1	Name various components of fire hydrant.	**04**	**CO1**
Q 2	Differentiate between Deflagration & Detonation.	**04**	**CO2**
Q 3	Explain the role of free radicals in the fire or combustion process.	**04**	**CO3**
Q 4	Justify the need of inspection and testing of fire sprinkler system.	**04**	**CO3**
Q 5	Explain the requirements of fire safety certificate for any industries or building.	**04**	**CO3**
	SECTION B		
Q 6	Discuss the blast waves. Being a fire safety officer, review the situation or condition of any blast waves and their effect arising due to any source. **OR** A major fire has noticed on 12th floor of a 20 floor building. Evaluate the situation or condition of fire and prepare building fire prevention and protection plan so as to carry out smooth evacuation in a given time.	**10**	**CO4**
Q 7	Explain in detail of fire suppression system and their effectiveness at workplace. Emphasize the design requirements for installation of fire sprinkler system in a room of dimension 12mtr x 12mtr.	**10**	**CO3** **CO4**
Q 8	List out the purpose of providing explosion venting in an equipment or building. Explain the various parameters considered when providing explosion venting.	**10**	**CO2** **CO3**
Q 9	Analyze the role of a fire resistant material in a building or compartment. List out all the various fire resistant material used in a compartment or building.	**10**	**CO4**
	SECTION-C		
Q 10	Brief the Hoses and its types. Prepare a pre-inspection checklist for verifying fire safety condition of any highly hazardous industries.	**20**	**CO1** **CO4**

Q11	Describe in detail of the inspection, testing and maintenance of fire protection equipment's at workplace or in a building. Also, highlight its benefits. OR Explain the stand pipes and its types. Discuss in detail of various classes of standpipes.	**20**	**CO1** **CO2**

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Instructions:

SECTION A

S. No.		Marks	CO
Q 1	Name various extinguishing media and explain the advantage & disadvantage of water as an extinguishing media.	**04**	**CO1**
Q 2	Explosion protection principles are recommend to exclude equipment and component from fire. List explosion protection principle and its purpose.	**04**	**CO1 CO3**
Q 3	Explain the fire gases and name its various types.	**04**	**CO3**
Q 4	Discuss the standpipes and its types.	**04**	**CO2**
Q 5	Highlight the purpose & objective of fire safety certificate as per building regulation Act.	**04**	**CO3**

SECTION B

Q 6	Explain in detail about fire precautions and its types. Create a pre-inspection checklist for fire precautions facilities at workplace. OR Suggest various fire protection facilities / arrangements provided for a crude oil storage tank. Prepare a daily inspection checklist for crude oil storage tank.	**10**	**CO3 CO4**
Q 7	Standpipes helps in delivering water from one place to another or respective floors. Explain in details of standpipe and their various classes.	**10**	**CO1 CO3**
Q 8	Being a safety practitioner, recommend a few improvements required in existing sprinkler system with a specific comment.	**10**	**CO4**
Q 9	List out the purpose of providing explosion venting in an equipment or building. Explain the various parameters considered when providing explosion venting.	**10**	**CO2 CO3**

SECTION-C

<table>
<tr><td>Q 10</td><td>Hoses are widely used equipment for carrying charged water for fire-fighting purposes. Discuss in details of hoses and its types.</td><td>20</td><td>CO1</td></tr>
<tr><td>Q11</td><td>Identify the need of fire resistant material used in industry or in any occupancy. Explain the time & temperature relationship in selection of fire resistant material and their benefits.

OR

(a) Discuss various aspects of fire load and its importance for any occupancy or industrial premises.

(b) A manufacturing process industry uses the following material. Calculate the Fire load by using the following data: -

<table>
<tr><th rowspan="2">Material</th><th rowspan="2">Quantity in Kg.</th><th rowspan="2">Area in Sq. mtr.</th><th colspan="2">Calorific value</th></tr>
<tr><th>(kJ/kg)</th><th>(Kcal/kg)</th></tr>
<tr><td>Paper</td><td>100</td><td>100</td><td>15600</td><td>3725.28</td></tr>
<tr><td>Wood</td><td>2000</td><td>300</td><td>17500</td><td>4179</td></tr>
<tr><td>Coal</td><td>10000</td><td>500</td><td>20000</td><td>4776</td></tr>
<tr><td>Rubber</td><td>500</td><td>200</td><td>40000</td><td>9552</td></tr>
<tr><td>Petroleum product</td><td>5000</td><td>400</td><td>43000</td><td>10268.4</td></tr>
</table></td><td>20</td><td>CO1
CO3

CO2</td></tr>
</table>