

Name:	
Enrolment No:	

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

Course: Behavioral Based Safety Management

Semester: I

Programme: M Tech HSE & HSE-DM

Time: 03 hrs.

No of pages: 2

Max. Marks: 100

Instructions:

SECTION A

S. No.	Question	Marks	CO
Q 1	Differentiate a) Basic causes and immediate causes of an incident. b) Accident and Incident c) Attitude and Behavior. d) Safety audit and Inspection.	8	CO2
Q 2	Outline various lagging and leading indicators used to measure safety performance	4	CO2
Q 3	Explain different levels of emergencies as per ERDMP Regulations, 2010	4	CO3
Q 4	Illustrate Bradley DuPont curve. Explain each stages of maturity.	4	CO1

SECTION B

Q 5	What is the philosophy of behavior based safety? How 'ABC' model is used to improve behaviors.	(3+5)	CO1
Q 6	Summarize the key elements of OSHA PSM standard.	8	CO5
Q 7	What is hierarchy of risk control? Discuss hierarchy of risk control using suitable examples.	8	CO2
Q 8	Heinrich's theory have greatest impact on the practice of safety and have done the most harm. Discuss	8	CO4
Q 9	What are the objectives of accident investigation? 'Every accident is a symptom of system failure' - Examine the statement.	(4+4)	CO4

SECTION-C

Q 10	What is risk management? Explain the risk management process according to ISO 31000 using suitable examples.	20	CO2
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Q 11

a). Ganga, the young worker employed in the silk reeling unit, was certified by the doctor in the government hospital to be inflicted with 28% disability from the third degree burns she suffered from accident during the course of work. Her salary was Rs. 50/- per day. The Minimum wage notified for that employment was Rs. 65/- per day. The relevant factor is 228.54. The accident occurred in 29th September 1998 and compensation was paid only in December 2003.
Calculate total amount to be paid to the worker.

10

b1). An organization that manufactures components for the automotive industry is based on a single site and employs 750 people. The table below provide recent accident data recorded at the company.

Year	No. of accidents	No. of near misses	Average hours worked	Days lost due to accidents
2014	10	4	3520	500
2015	12	8	3500	80
2016	12	10	3500	600
2017	15	17	3530	600

Calculate the accident frequency, severity and incidence rate for these years. Also, comment on the safety performance of the organization.

10

Or

b2). Safety policy of an organization is given below; Identify the conformity with legal and ISO 45001 requirements.

SAFETY POLICY

Ensure the education, interest and awareness training of new employees in safe working methods before the assumption of duty.

Ensure that the organization is a safe place, and the environment, facilities, equipment and substances are subject to safe systems of work to prevent risks to health or safety.

Promote personal responsibility and effort on the part of everyone to avoid and prevent health hazards and injuries to themselves and to others who may be affected by their acts or omissions and to co-operate with the organization to comply with its duties, requirements and statutory obligations

Ensure the use of defensive driving techniques by car drivers and machinery operators.

Ensure that safety is a line management responsibility.

Monitor effectiveness of safety policy.

Display and publicize this statement and review it at least bi-annually.

10

Signature
Safety Manger

CO3

CONFIDENTIAL

Name of Examination <small>(Please tick, symbol is given)</small>	:	MID		END		SUPPLE	☐
Name of the School <small>(Please tick, symbol is given)</small>	:	SOE	☐	SOCS		SOP	
Programme	:	M Tech HSE & M Tech HSE-DM					
Semester	:	I					
Name of the Course	:	Behavioral Based Safety Management					
Course Code	:	HSFS 7004					
Name of Question Paper Setter	:	Arun P A					
Employee Code	:	40001673					
Mobile & Extension	:						
Note: Please mention additional Stationery to be provided, during examination such as Table/Graph Sheet etc. else mention "NOT APPLICABLE":							
FOR SRE DEPARTMENT							
Date of Examination	:						
Time of Examination	:						
No. of Copies (for Print)	:						

Note: - Pl. start your question paper from next page

Model Question Paper (Blank) is on next page

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SECTION A

S. No.		Marks	CO
Q 1	Differentiate a) Reportable and non-reportable accidents. b) Emergency and Disaster c) Attitude and Behavior. d) Active monitoring and Reactive monitoring	8	CO2
Q 2	Describe the elements in 5W1H methodology	4	CO4
Q 3	Differentiate partial and total disablements	4	CO3
Q 4	What are the direct and indirect cost of accidents?	4	CO2

SECTION B

Q 5	What is risk assessment? Explain different activities in risk assessment.	10	CO2												
Q 6	Summarize the key elements of OSHA PSM standard.	10	CO5												
Q 7	<p>Number of employees worked in Avnet Industries for the year 2016 is given below. Total working days during the year was 300 and average working hours for an employee was 8 hours. An overtime of 1500 hours was also reported in the year.</p> <table border="1"><thead><tr><th>Time period- 2016</th><th>Morning Shift</th><th>Night Shift</th></tr></thead><tbody><tr><td>January to April</td><td align="center">1000</td><td align="center">1000</td></tr><tr><td>May to August</td><td align="center">2000</td><td align="center">1000</td></tr><tr><td>September to December</td><td align="center">1000</td><td align="center">2000</td></tr></tbody></table> <p>The following are the injury statistics of the company for the year 2016</p> <ul style="list-style-type: none">a) Number of fatalities - 3b) Number of reportable accidents – 7c) Number of lost time accidents - 15d) Number of first Aid injuries- 20 <p>Calculate reportable accident, lost time injury frequency rates and incidence rates for the year 2016</p>	Time period- 2016	Morning Shift	Night Shift	January to April	1000	1000	May to August	2000	1000	September to December	1000	2000	10	CO3
Time period- 2016	Morning Shift	Night Shift													
January to April	1000	1000													
May to August	2000	1000													
September to December	1000	2000													

Q 8	<p>Safety policy of an organization is given below; Identify the conformity with legal and ISO 45001 requirements.</p> <p style="text-align: center;">Safety Policy</p> <p style="text-align: center;">We are committed to consistently working in a safe manner. Our company commitment, as well as our personal commitment, is to maintain a safe, injury – free work and to be in compliance with all associated regulations.</p> <p style="text-align: center;">To accomplish this goal, Rapid Cutting Technologies Processors will commit the necessary engineering and technical resources, encourage development of safe work attitudes, develop and communicate safety programs and standards. We are all responsible for our personal safety as well as the safety of those around us.</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>	10	CO3
SECTION-C			
Q 9	What is Behavior Based Safety? Explain the steps involved in implementation of BBS Program.	20	CO1
Q 10	<p>A forklift skidded on an oil spill causing serious injury to a visitor.</p> <ol style="list-style-type: none"> a. You immediately reached the accident spot, explain how you are going to respond to this accident b. Explain why this accident should be investigated c. What are the different evidences that you will scrutinize to identify the root cause of this accident? <p style="text-align: center;">Or</p> <p>Ms. Lisa Evans, QC supervisor at ABC warehouse sustained leg injury on account of hit by forklift, FL-01 while she was engaged in warehouse material inspection. This incident happened when new operator Mr. Bob Daniel was operating the equipment and it happened during early hours of the shift. Identify the potential root causes using 4M analysis</p>	8+4+8 20	CO4