Name: **Enrolment No:**	UPES

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

Course HSE in Petroleum Industry **Semester: V**
Programme: BBA OG **Time: 03 hrs.**
Max. Marks: 100 **CC:BDSM 182**
Instructions: Please answer the questions of all sections and questions.

SECTION A

S. No.		Marks	CO
Q 1	**Please state true or false or fill up the blanks as the case may be**	**10X2=20**	**CO2**
	a. Proper documentation leads to employee having access current and correct safety information-T/F b. Safety inspection checklist is a tool for risk prevention-T/F c. Emergency Response is associated with correct reporting of an emergency-T/F d. Establish safeguards to manage hazardous incidents ins one objective of HAZOP-T/F e. HAZID identifies causes., consequences and safeguards against disasters-T/F f. OSHA stands for-T/F g. Diesel Engines is a source of particulate matter-T/F h. NORM stands for_____. i. Process safety is a new indicator reflecting major incidents of HAZARDS-T/F j. Respiratory disease is an occupational illness –T/F		

SECTION B

Q 2	**Please answer in brief:**	**a(15)+b(10)+c(5)=30**	**CO3**
	a. **Write short notes on the following of potential health hazards and their control**. 1. Hazardous Chemicals(5) 2. Silica(5) 3. Hydrogen Sulfide(5) **b. Explain the need for measuring performance of safety measures:-** 1. What to measure – Give 5 factors(5) 2. How to measure- Explain 4Ps (5)		

	c. What would you do in the event of a fire smoke happening? Give and explain at least 5 factor(5)		
	SECTION-C		
Q 3	**Please answer the following questions in detail:**	**10X3=30**	**CO3**
	a. How would you assess risks in your work place ? b. What do you understand by a major emergency? Give some examples. Write 5 steps you would take in handling emergency procedure. c. Write your understanding of occupational illnesses and also the steps for prevention of occupational diseases.		
	SECTION-D		
Q4	**Please read the case and answer the questions:**	**10x2=20**	**CO4**
	A wide variety of methods were used to identify the different types of risks in drilling industry, and among all identified risks the most important risks (66 risks) were determined by expert judgment. The result showed that the lack of 'management'was the most important factor affecting the accidents in Iranian drilling industry. The management factors include general management , HSE management and the relevant institutional mechanisms. All of the weaknesses that have a root in the performance of managers, and management systems are placed in this category. Beside the , the human factor and hardware factor were identified as the next most important risk factors, respectively. External factors and environmental factors were ranked last, regarding their weak role in prevention of accidents in drilling industry of Iran. It should be noted that there may be a strong correlation between different risk factors (e.g. between hardware and human, or between external and management factors). This correlation should be studied in future researches. The result of risk assessment and control analysis of 22 most important risks showed that by the existing controls, the level of most of these risks (RR1s) was in red (intolerable) region,		

but by implementation of appropriate controls, these risks can be reduced to an acceptable level. The priority of strategies to reduce accidents and losses in drilling industry of Iran should be emphasis on the development of time-bounded strategic plans for the implementation of controls proposed in this work. It is expected that this will reduce the level of important risks to the yellow or green (acceptable) region. In the next step, the other significant risks should be assessed likewise, and proper controls should be identified and implemented. This way, it is expected that the level of risks and consequently the number of accidents will be reduced in drilling industry. The method used in this research can similarly be used for reducing accidents and losses in drilling industry of other countries and even in other industries.

The innovative aspects are the following:

- Holistic and macro-scale study: usually in the field of reducing industrial accidents are limited to a particular aspect of a unit or a particular company, for example job hazard analysis (JHA) which is limited to occupational hazards of special activities, or EMEA which is mostly limited to the failure of mechanical components of systems. In contrast, it is not limited to a particular unit or company and it is performed across the total Iranian drilling industry. The types of the risks are a macro-mode and all kinds of risks, including direct, indirect and root risks were considered in the study. Also, a wide variety of methods were used to identify the risks.

- Three levels of risk: Three levels of risks (PR, RR1 and RR2) are defined and analyzed to determine the effectiveness of existing and proposed controls.

- Seven categories of consequence: To clarify the consequences of risks, 7 classes of outcomes are (i.e. workers safety, workers health, environment, operation, asset, legal aspects and reputation).

Q1.Explain the link between the poor management and risk assessment and the consequences(10)

Q2 Explain the relation between risk factors and the strategies in details along with the innovative strategies in detail(10)
