

Name:
Enrolment No:



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

Programme Name: MBA Power Management
Course Name : HSE for Power Industry
Course Code : MBPG 932
Nos. of page(s) :3

Semester :IV
Time: 03hrs
Max. Marks: 100

SECTION A

S. No.		Marks	CO
Q.1	Briefly write: I. ISO ----- II. ALARP is ----- III. BACT is ----- IV. BOD ----- V. OISD is -----	5	CO1
Q.2	Write Short Notes on: • HSE policy • Visitor safety	5	CO2
Q.3	List out various direct & indirect impact of an accident.	5	CO2
Q.4	Discuss various regulations of Petroleum Act 1934?	5	CO2
Q.5	Demonstrate your knowledge on work permit systems and its role in reduction of accidents in industries.	5	CO4
Q.6	Define water pollution and types of water pollution.	5	CO2

SECTION B

Q.7	List out various components of Process Safety Management.	10	CO4
Q.8	Solid waste is increasing day by day due to change of life style. Discuss various methods of solid waste management.	10	CO5
Q.9	Entire world is facing biological disaster in form of Covid-19. Discuss in detail disaster management plan for a power plant.	10	CO5
Q.10	Air pollution due to vehicular movement and industrialization is beyond standard value in most of the metro cities of India. Describe various control equipment for air pollution control.	10	CO5
Q.11	HSE audit is an important study for most of the hazardous industries. Describe different types of HSE audit conducted for hydro power plant.	10	CO3

SECTION-C

Q.10	Find out major causes of the disaster in current case study & your learning as safety officer from this accident?	20	CO5
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CASE STUDY

The **Fukushima Daiichi nuclear disaster** Fukushima Daiichi was a catastrophic failure at the Fukushima I Nuclear Power Plant on 11 March 2011, resulting in a meltdown of three of the plant's six nuclear reactors. The failure occurred when the plant was hit by the tsunami triggered by the Tōhoku earthquake. the plant began releasing substantial amounts of radioactive materials beginning on 12 March, becoming the largest nuclear incident since the 1986 Chernobyl disaster and the second (with Chernobyl) to measure Level 7 on the International Nuclear Event Scale initially releasing an estimated 10-30% of the earlier incident's radiation. In August 2013, it was stated that the massive amount of radioactive water is among the most pressing problems that are affecting the cleanup process, which is expected to take decades. There have been continued spills of contaminated water at the plant, and some into the sea. Plant workers are trying to lower the leaks using measures such as building chemical underground walls, but they have not improved substantially.

Although no short term radiation exposure fatalities were reported, some 300,000 people evacuated the area, approximately 18,500 people died due to the earthquake and tsunami, and as of August 2013 approximately 1,600 deaths were related to the evacuation conditions, such as living in temporary housing and hospital closures. The exact cause of the majority of these evacuation-related deaths were unspecified because that would hinder the deceased relatives' application for financial compensation.

The World Health Organization indicated that evacuees were exposed to so little radiation that radiation-induced health impacts are likely to be below detectable levels, and that any additional cancer risk from radiation was small—extremely small, for the most part—and chiefly limited to those living closest to the plant. A 2013 WHO report predicts that for populations living in the most affected areas there is a 70% higher risk of developing thyroid cancer for girls exposed as infants (but experts said the overall risk was small: the radiation exposure means about 1.25 out of every 100 girls in the area could develop thyroid cancer over their lifetime, instead of the natural rate of about 0.75 percent), a 7% higher risk of leukemia in males exposed as infants,

a 6% higher risk of breast cancer in females exposed as infants and a 4% higher risk, overall, of developing solid cancers for females.

The World Health Organization stated that a 2013 thyroid ultra-sound screening programme was, due to the screening effect, likely to lead to an increase in recorded thyroid cases due to early detection of non-symptomatic disease cases. This screening program found that more than a third (36%) of children in the Prefecture have abnormal growths in their thyroid glands, however whether these growths can be attributed to exposure to nuclear radiation has not yet been proven.

The Fukushima Nuclear Accident Independent Investigation Commission found the nuclear disaster was "manmade" and that its direct causes were all foreseeable. The report also found that the plant was incapable of withstanding the earthquake and tsunami. TEPCO, regulators Nuclear and Industrial Safety Agency (NISA) and NSC and the government body promoting the nuclear power industry (METI), all failed to meet the most basic safety requirements, such as assessing the probability of damage, preparing for containing collateral damage from such a disaster, and developing evacuation plans. A separate study by Stanford researchers found that Japanese plants operated by the largest utility companies were particularly unprotected against potential tsunamis