

KATHMANDU UNIVERSITY

End Semester Examination

January/February 2024

Level : B.Sc.

Year : III

Time : 2 hrs. 30 mins.

Course : ESEE 304

Semester : I

F.M. : 40

08 FEB 2024

SECTION "B"

[2Q × 10 = 20 marks]

Attempt *ALL* questions.

1. The death of migrant workers in Gulf countries during the construction of facilities for the World Cup 2022 has been a significant humanitarian concern. Reports indicate that many migrant workers, often from vulnerable backgrounds, have faced harsh working conditions, leading to numerous fatalities. Among these were many Nepali migrant workers as well. The construction boom for the World Cup has exposed serious violations of occupational health and safety (OSH) standards, emphasizing the urgent need for effective OSH management systems in the region. The Government of Nepal needs to implement a comprehensive OSHMS to address these issues, ensuring proper hazard identification, worker training, leadership commitment, and continuous evaluation and improvement. As an aspiring Environmental Science undergraduate student specializing in Occupational Health and Safety (OSH), your task is to design a comprehensive OSH Management System (OSHMS) for the government to address the critical issues faced by Nepali migrant workers in the Gulf countries. This comprehensive OSHMS should be tailored to address the unique risks associated with the construction industry in the Gulf region. You may include the following in your response:
 - a. Outline the key components/principles of an OSH-MS that would effectively mitigate the challenges faced by migrant workers in the Gulf countries during the construction for the World Cup 2022.
 - b. Clarify how your proposed system would ensure hazard identification, provide adequate worker training, secure leadership commitment, and establish mechanisms for continuous evaluation and improvement.
 - c. Design a brief plan of action on how you would implement this system.

2. You have been appointed as the Environmental Health and Safety Officer in Bir Hospital, which is an urban hospital known for its high patient traffic and diverse medical services. Recently, there have been reports of healthcare workers experiencing respiratory issues and skin irritations in a specific ward where patients with infectious diseases are treated. A notable portion of the staff show symptoms of red rashes in their hands, and cheeks. Some healthcare workers feel difficulty in breathing due to nose blockade and continuous itching around their chest. Given the nature of the ward's services, healthcare workers frequently engage in activities that involve close contact with patients, handling potentially hazardous

substances, and implementing infection control measures. In addition to healthcare workers, residents living in proximity to the hospital's dumping site have reported similar health problems. Concerns have been raised about the potential environmental and biological hazards in this ward. Your task is to conduct a comprehensive risk assessment for the hospital ward, focusing on environmental and biological hazards.

In your response, address the following aspects:

- a. Clearly identify the environmental and biological hazards based on the reported health issues among healthcare workers. Explain how you would gather information about the incidents, considering the nature of healthcare settings.
- b. List out the potential risks associated with the identified hazard, and discuss the sources, events, and factors contributing to the risks in a hospital setting.
- c. Assess the potential consequences of the hazards, considering both immediate health impacts and the risk of spreading infections.
- d. Propose diverse control measures to mitigate the identified risks in a hospital environment.
- e. Discuss your plans on regular monitoring and review of the risk assessment, particularly in healthcare settings where infectious diseases may pose dynamic challenges.

SECTION "C"

[4Q × 5 = 20 marks]

Attempt *ANY FOUR* questions. *Question 8 is compulsory.*

3. List out the importance of physical and cognitive ergonomics. Provide examples to illustrate the application of ergonomic principles in both physical and cognitive aspects of work. [3+2]
4. Describe in detail about all biosafety levels and their characteristics.
5. Describe the key principles of Occupational health and safety management systems.
6. What are the OSHA standards for construction safety?
7. Discuss in detail about the essential fire prevention techniques at the workplace.
8. Write short note on *ANY TWO*: [2Q × 2.5 = 5 marks]
 - a. Machine Safety and Electrical Safety
 - b. Manual handling and storage of materials in a workplace
 - c. Human Factors Theory

