



Name:			
Enrolment No:			
UPES End Semester Examination, May 2024			
Course: Occupational Health & Safety Engineering Program: B. Tech Civil Course Code: HSFS2019		Semester: IV Time: 03 hrs. Max. Marks: 100	
Instructions: All questions are compulsory.			
SECTION A (5Qx4M=20Marks)			
S. No.		Marks	CO
Q 1	State and elaborate the different types of injuries attained due to material handling.	4	CO1
Q2	State fall protection and state when it is required.	4	CO2
Q3	Define electrical safety and state the most frequent causes of electrical accidents.	4	CO1
Q4	State how to do safe lifting and what shall be taught in a safe lifting training program.	4	CO2
Q5	State the benefits of using chains and wire rope for material handling.	4	CO2
SECTION B (4Qx10M= 40 Marks)			
Q6	<p>On 12 November 2023, a section of the Silkyara Bend–Barkot tunnel, planned to connect National Highway 134 in the Uttarkashi district of Uttarakhand, India, caved in while under construction. The collapse occurred at around 05:30 IST and trapped 41 workers inside the tunnel. Rescue operations were immediately launched, with a number of government agencies involved, including the National Disaster Response Force, the State Disaster Response Force, Uttarakhand Police, engineers from the Indian Army Corps of Engineers, and Project Shivalik of the Border Roads Organization. Initial reports suggested that improper blasting could be the reason for the collapse.</p> <p>Based on the above scenario, answer the following questions.</p> <ol style="list-style-type: none"> Evaluate the steps to be undertaken in mucking after blasting has been completed. Evaluate the precautions that are required for drilling/blasting operations. 	10	CO4

Q7	<p>UPES has decided to come up with a new facility exclusively dedicated to Artificial Intelligence. The construction of the new facility involves extensive excavation works. Answer the following questions accordingly.</p> <ol style="list-style-type: none"> 1. Evaluate, given the terrain of Bidholi, the most common causes for accidents during excavation process. 2. Evaluate the safety precautions that need to be taken in this scenario. 	10	CO4
Q8	<p>Analyze the hazards that are associated with maintenance work to be carried out by at least 2 workers in the Septic tank in the sewage system of UPES. State the precautions to be undertaken.</p>	10	CO3
Q9	<p>State the different hazards that are encountered in construction sites where heavy vehicles such as trucks are in constant use.</p> <p style="text-align: center;">OR</p> <p>Define Process Safety Management and write a short note on any five elements included in PSM.</p>	10	CO1
<p>SECTION-C (2Qx20M=40 Marks)</p>			
Q10	<p>Explain the obligations of the Contractor as far as health and welfare of contractual workers are concerned based on the case study below. While answering the question make a clear distinction regarding responsibilities for the principle employer and the contractors.</p> <p>DMRC has hired 1 main contractor (MC) ABC International having about 2000 workers on DMRC sites. 65% of the workers are contractual. The MC has 3 subcontractors and these subcontractors under different tiers do not employ any contractual worker.</p>	20	CO2
Q11	<div style="text-align: center;">  </div> <p>For the above picture analyze the different hazards and state the precautions to be undertaken when such work is carried out.</p> <p style="text-align: center;">OR</p>	20	CO3

	<p>Analyze the different safety measures to be undertaken for the following:</p> <ol style="list-style-type: none"><li data-bbox="284 231 462 262">1. Buildings<li data-bbox="284 268 625 300">2. Structural Steel Works<li data-bbox="284 306 462 338">3. Chimneys<li data-bbox="284 344 592 375">4. Industrial Structures		
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