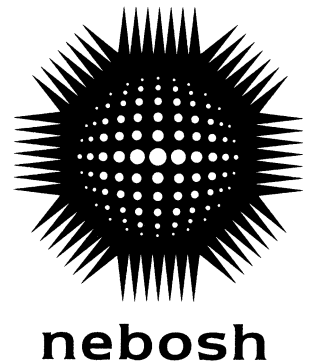


NEBOSH

**KNOW – WORKPLACE HEALTH AND SAFETY
PRINCIPLES (INTERNATIONAL)**

UNIT DI1:

For: **NEBOSH Level 6 International Diploma for Occupational Health and Safety
Management Professionals**



PAPER 1 OF 2

Guidance to learners

There are **two** question papers for this assessment. This paper (**Paper 1 of 2**) contains questions based on a fictitious scenario (100 available marks).

All the tasks and activities in all parts of the assessment are mandatory.

You will have 4 weeks (20 working days) to complete **both papers** of the assessment.

Please refer to your registration confirmation email for the upload deadline.

Please note that NEBOSH will be unable to accept your assessment once the deadline has passed.

You **must** use the answer template for **Paper 1**.

This assessment is not invigilated, and you are free to use any learning resources to which you have access, eg your course notes, or the HSE website, etc.

By submitting this completed assessment for marking, you are declaring it is entirely your own work. Knowingly claiming work to be your own when it is someone else's work is malpractice, which carries severe penalties. This means that you must **not** collaborate with or copy work from others. Neither should you 'cut and paste' blocks of text from the Internet or other sources.

Scenario-based questions

The assessment begins with a scenario to set the scene. You will then need to complete a series of tasks based on this scenario. Each task will consist of one or more questions. Your responses to **most** of these tasks should wholly, or partly, draw on relevant information from the scenario. The task will clearly state the extent to which this is required.

The marks available are shown in brackets to the right of each question, or part of each question. This will help guide you to the amount of information required in your response. In general, one mark is given for each correct technical point that is clearly demonstrated. Avoid writing too little as this will make it difficult for the Examiner to award marks. Single word answers or lists are unlikely to gain marks as this would not normally be enough to show understanding or a connection with the scenario.

Please attempt **ALL** tasks.

SCENARIO

Looplands is a large, privately-owned theme park recently built on land previously occupied by an industrial site. In this area, much of the industry has been lost and there is a high rate of unemployment. The owners of the theme park have therefore been praised for bringing much-needed employment to the area, as well as the promise of large numbers of tourists, who are likely to spend money locally. Looplands' mission statement is to provide *"the most thrilling entertainment for the greatest amount of people and provide work for the local community."*

For most of the year, there are 100 people employed in the theme park. These include administrators, managers, supervisors, operational workers, and maintenance workers. During the summer months (the theme park's busiest period) the number of workers rises to 400. These additional workers are employed on temporary contracts. These temporary workers help to monitor and control the rides, assist visitors around the park, as well as serving in the many food stalls and cafés. Alcoholic drinks are available in some of the cafés. Temporary workers are often given the task of cleaning and tidying up at the end of each day, and this can include dealing with a lot of unpleasant mess left by the visitors, such as vomit and urine.

Since Looplands opened to the public three years ago, new rides and attractions have been added every year. Some rides are modified during the winter when it's quieter, to make them more appealing. Sometimes this means that their layout and operation can change. Each ride has its own control system.

The control panels (components and layout) are different for each ride. The position of a switch or lever on a control panel on one ride may indicate 'on'; while a similar-looking switch or lever on another ride may have the opposite function. All workers are trained on the basic functions of what each control does. The layout of each control system is something the workers get used to, once they have been operating each ride for a while.

The main attraction at the theme park is a ride called 'Cascadia' and is one of the largest roller coaster rides in the world. Up to 40 people ride in a single carriage that runs along a winding track, ending in a dramatic 50-metre near-vertical drop. There are three carriages on the ride, but only one runs on the track at any given time. This allows for each carriage to return to the starting point while another carriage is loaded with another 40 passengers.

The roller coaster's track was made by a specialist organisation, who are located close to the theme park. However, the three carriages were made in a different country, where different safety laws apply. The manufacturers of the roller coaster's track installed electrical wiring around the track that allows the operator to monitor the carriage's speed. This can provide an early warning of any problems with the ride, and allows remote operation of braking mechanisms on the track if the carriage is going too fast.

Each seat within the carriage is fitted with a restraint; this is a solid metal bar (lock bar) that folds down over the passenger's shoulders and chest, and locks them into their seat. The lock bars have three positions: an upright position - to allow passengers to board and alight from the carriage; a semi-closed position - to allow the passenger to get comfortable before locking themselves in; and a locked position - that can only be unlocked by the operator once the carriage has returned to the end of the ride.

When Looplands' owners were buying the carriages, they asked the manufacturers to add an interlock system to each of the locking bars. This system would help ensure that the lock bars are properly engaged and secured before the ride can start, so that the ride would then comply with the local safety laws where the theme park is located. However, the carriage manufacturer built the carriages to comply with the standards in their own country, and this did not require the fitting of these devices. They were unwilling to modify their carriages to include this safety feature. They also stated to Looplands' owners that if an interlock system was fitted later by someone else it would invalidate the warranty on the carriages. Looplands' owners then explored paying a local organisation to add this safety feature after they had bought the carriages, but this would have been extremely expensive. The owners decided not to fit the interlock system to the carriages, because it would delay opening the ride, and they did not want to lose any business.

An alternative solution was developed where each carriage would be checked before the launch button was pressed. One worker is to stand either side of the carriage to visually check that all of the locking bars are in the locked position. A third worker will monitor the carriage using the security cameras from the control room next to the launch point.

The risk assessment for the Cascadia ride states that there is a risk of passengers falling from the carriages. It notes that training workers to check the lock bars before the carriage leaves is a suitable control measure. The risk assessment also records the need for sufficient break times. It states that workers should take a 30-minute break during the morning and the afternoon, as well as taking 45 minutes at lunch time. Other control measures include swapping workers between rides so that they do not spend all of their time on a single ride and become complacent or inattentive. Supervision is to be provided on all rides by permanent workers.

After three years of operation, Looplands has become an extremely popular attraction. Visitor numbers during the peak season regularly exceed 20 000 people per day, making it a very profitable business. Despite the numbers of visitors, the only incidents reported to management have been a few bruises from people tripping over, and the occasional child becoming separated from their parents. The theme park owners are very proud of their safety record.

The training regime has been planned by the park owners to make sure that all workers are given four hours of training. This training covers ride operations including emergency stop controls, working at height, and customer courtesy. Permanent supervisors receive an additional four hours of training in the winter, however, there is no record of how training progression is tracked. This winter training includes how each ride works, the various safety features and where the power switches are located. During very busy times, temporary supervisors are appointed and selected from the pool of temporary workers.

The training programmes are all created in-house by a small team of managers and maintenance workers, who refer to the safety documentation supplied by the various manufacturers of the rides. The same training programmes have been used since the theme park opened. If operators or supervisors make mistakes following their training they are reprimanded or even dismissed from their employment. The high level of unemployment in the area around the park means that there are always people looking for work, so workers are easily replaced.

One full-time maintenance worker who has worked at the theme park since it first opened, has recently been given responsibility for health and safety on the site, as the managers have confidence in their ability. Although they have no formal qualification, they have shown aptitude in the area of health and safety. Before working at the theme park, they had worked at a factory maintaining large,

complex manufacturing machines. They also have experience of safety procedures and technology to control the risks. This extra health and safety responsibility has not been formally recognised in their employment contract.

The maintenance worker is aware that there have been two serious accidents at other theme parks in the country in recent years. Both were caused by mechanical failures, so they have prioritised maintenance and repairs to help ensure the highest safety of the rides. Maintenance and repair are a big feature of the risk assessments that they wrote themselves. The owners of the theme park agree that public safety is paramount. They are happy that this maintenance worker is keen to prioritise safety in this way, so they do not feel the need to approve the risk assessments. These risk assessments, combined with the training programmes, the levels of supervision on site, and the strict disciplining of workers, leaves the owners feeling comfortable that risks are under control.

During one particularly busy, hot, summer day, Workers A, B, and a temporary supervisor (Supervisor C) are given the job of looking after Cascadia. This temporary worker has proved to be a valuable member of the team, so they were promoted to temporary supervisor two weeks ago. Due to the busy summer period, their additional supervisor training has not yet taken place. Supervisor C is also short in stature compared to other workers at the park. Other workers often joke about this, and this makes Supervisor C feel self-conscious. Worker A and Supervisor C stand either side of a carriage as it leaves the launch point to check that each locking bar is in place. Worker B monitors the entire launch area on the security cameras, from the control room. During the day, the two workers forget to swap places, and Supervisor C stays at the launch point as there are no other supervisors available that day.

In the afternoon, a group of five visitors have arrived at the theme park; one member of the group had recently won a sum of money and decided to treat their friends to a day out. The group are all unemployed, so a day at the theme park is something that they are excited about. They even organised a bus to take them to the park so that they can enjoy some alcoholic drinks while they are there. During the day, the group consume many alcoholic drinks, and their drunken behaviour and horseplay becomes more extreme. The group decide that they want to try the Cascadia ride.

It is late in the afternoon, and as usual, Cascadia has been a popular ride all day. Worker A and Supervisor C have been standing in the sun all day. They both decide to take a break. The breaks are usually staggered across the whole theme park so that no ride is ever left unattended. However, because the park is so busy there are not enough workers to cover break times, so Supervisor C decides to close Cascadia temporarily while they have a short break. This has caused some frustration with the drunken group of visitors, who have just arrived to go on the ride. Worker A and Supervisor C begin to feel uneasy because they can hear the impatient comments and commotion from this group while the ride is closed. Their noisy chanting is upsetting some of the other visitors. Worker A and Supervisor C decide to return and open the ride after only 10 minutes of their break, and take up their positions either side of the carriage at the launch point. They begin to work quickly to keep the queue moving and there is a loud cheer from all of those waiting. One of the drunken group's members eagerly climbs into the carriage to take their seat. Worker A and Supervisor C are trying to control the crowd to make sure that the correct number of people get on the ride. There is a lot of impatience from the customers, as they have been waiting in the hot sunshine. Worker B, in the control room, is busy resetting the controls to enable the ride to run again.

One of the drunken group's members, who is already in the carriage, shouts to a friend standing outside the carriage that they have forgotten their mobile phone. The friend holds it up in the air and waves it, loudly taunting their friend in the carriage. The member of the group in the carriage, who has not yet locked their bar down across their lap, jumps out of the carriage and snatches the mobile phone from their friend. They laugh and return to their seat.

At the same time, Worker A and Supervisor C have finally controlled the crowd trying to get on the ride. They turn back to the carriage to quickly scan each passenger, checking that the locking bars are in the fully locked position. Many onlookers are taking videos of the ride as it starts. As the carriage starts to move off, Supervisor C thinks that they have seen one lock bar not fully down. They are aware this has happened a few times before because they have heard other supervisors

mention it during break times; however, they do not know how to report it, nor has it been reported before. Previously, the ride has been stopped in time, by the supervisor alerting other workers.

Supervisor C begins to raise their arm to indicate to Worker B in the control room to stop the ride, but they are unsure of what they have seen. Because they are not quite tall enough, it is often difficult for them to see over the heads of all of the passengers in the carriage. They are worried that stopping the ride at this point will cause a delay while Worker B resets the controls. The carriage starts moving and the passengers on board scream with excitement.

As the carriage approaches the final drop, the member of the drunken group who retrieved their mobile phone realises that the locking bar in front of them seems loose. Grabbing it in both hands, they try to force it down but a sudden jolt of the carriage on the tracks makes them lurch forward, raising the bar into the upright position. At this moment, the ride reaches its final drop. They are thrown forward and ejected out of the carriage. The 50-metre fall proves fatal.

The day after the accident, one of the owners interviews Supervisor C. As Supervisor C was in charge, the owner does not feel it is necessary to interview anyone else. Supervisor C is greatly distressed about what has happened and keeps repeating that the sun was in their eyes and that they could not see the position of the lock bars properly. The owner asks why the supervisor was not wearing sunglasses to help them see in bright sunshine. The supervisor thinks for a moment and then admits that they left their sunglasses in the rest area. They go on to explain that everyone was in such a rush to finish their break and get back to letting customers on the ride that they must have forgotten to pick up the sunglasses. The owner notes down the cause of the accident as Supervisor C forgetting to wear their proper equipment. By this point, the news of the accident has spread and has been reported on television news channels.

Shortly afterwards, the owners are advised that the enforcing authority has decided to begin criminal legal proceedings against them. One of the owners, who has been on a directors' safety awareness course, remembers a process called the '5 Whys'. They feel that this might help their case and completes a '5 Whys' investigation on their own, and sends it to the theme park's insurance organisation. However, the insurance organisation requires a thorough investigation to be completed by an external and qualified health and safety practitioner.

Supporting Documents

1. 5-Whys analysis

Task 1: Corrective actions required at the level of undertaking, and media influence

- 1 Assume that the International Labour Organisation's (ILO's) Occupational Safety and Health Convention 1981 (No.155) and associated Recommendation R164 – Occupational Safety and Health Recommendation, 1981 (No.164) are used as law in Looplands' country of operation.

This includes the actions required at the level of the undertaking under Article 16 and Recommendation 10 respectively.

- (a) Propose corrective actions to meet the requirements of Recommendation 10 of R164 that might prevent similar accidents. (10)

Note: Your answer must be based on the scenario only.

- (b) How can the media (print, broadcast, social) affect public perception of health and safety at Looplands after the accident? (3)

Note: Your answer must be based on the scenario only.

Task 2: Why health and safety risks must be integrated into main business risk

- 2 An investigation into the accident has criticised the theme park for putting profit before safety.

How can Looplands demonstrate that they consider health and safety risks as equal to other business risks? (18)

Note: You should support your answer, where applicable, using relevant information from the scenario.

Task 3: Training

- 3 (a) Giving reasons, explain under what circumstances training should be given at Looplands. (11)

Note: Your answer must be based on the scenario only.

- (b) In the British Health and Safety Executive's (HSE's) guidance document 'Health and safety training: a brief guide' (INDG345), Step 5 'Check that the training has worked' provides a framework for evaluation.

Evaluate whether training at Looplands has worked. (12)

Note: Your answer must be based on the scenario only.

Task 4: Commenting on the '5 Whys' techniques, likely active and latent failures

- 4 (a) Comment on how effectively the '5 Whys technique' was applied by one of the owners to investigate the accident. (12)
- Note:** You should support your answer, where applicable, using relevant information from the scenario and **supporting document 1**.
- (b) The full external investigation found that the accident had both active and latent failures.
- (i) Comment on the likely *active* failures that led to the accident. (7)
- Note:** Your answer must be based on the scenario only.
- (ii) Comment on the likely *latent* failures that led to the accident. (15)
- Note:** You should support your answer, where applicable, using relevant information from the scenario.

Task 5: Proactive safety management

- 5 Comment on the benefits to Looplands of extending their current traditional approach to safety with proactive safety (Safety II). (12)
- Note:** Your answer must be based on the scenario only.

Disclaimer

This case study is entirely fictional. It has been crafted to simulate a realistic situation in order to assess your ability to apply theoretical knowledge to practical problems. Some details in this case study may reflect the author's real-world insights or experiences. However, for the purpose of assessment, factual details have been changed or fictionalised. No element of the content is intended as a factual representation of any specific person, organisation, or event.

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