

INTERNATIONAL DIPLOMA IN SAFETY ENGINEERING (IDSE)

Sample Unit 2 Exam

Principles and Application of Science and Technology in Occupational Health and Safety



FORMAT	QUESTIONS	TOTAL MARKS	PASS BENCHMARK
Open book	15 compulsory	150 marks	75 / 150

Exam instructions

- 01 This is an open-book, non-invigilated practice paper. You may consult books and online reference material. This sample may be shared with prospective learners; it is not a live assessment or a certification result.
- 02 Answer all 15 questions. Section A carries 50 marks; Section B carries 100 marks. Each question carries 10 marks. The practice pass benchmark is 75 out of 150.
- 03 For a realistic practice attempt, allow a 24-hour completion window. This PDF has no online timer or submission facility; follow your registration instructions for any live assessment.
- 04 Write your answers in a separate document and clearly identify the unit and question number. The maximum length is 500 words per question, including any table you provide.
- 05 Apply every answer to the relevant scenario. Explain your reasoning and use specific workplace evidence or examples. Unsupported phrases such as 'poor training' or 'lack of management commitment' do not demonstrate analysis.
- 06 Use the marking guidance beneath each question to understand the expected depth and balance. Relevant, reasoned and concise answers earn marks; length alone does not. Avoid irrelevant material.
- 07 Write entirely in your own words. To practise under live-exam conditions, do not copy from reference sources, use AI tools to prepare answers, or ask another person to complete or write any part of your response.
- 08 Where a question asks for a checklist or table, use the column headings provided. State reasonable assumptions explicitly and distinguish them from facts supplied in the scenario.
- 09 Save your work regularly. In a live assessment, follow the examination system's saving and submission instructions and be prepared to explain your reasoning during a closing interview.
- 10 All organisations, incidents and figures in these sample scenarios are fictional. No model answers are included. This paper illustrates the assessment style and does not predict live examination questions.

Questions about the programme? (+44) 1184050421 | www.plicert.com

SECTION A / WORKPLACE SITUATION - 50 MARKS

Engineering safer construction work

Read this scenario and answer Questions 1-5. Apply your reasoning to the facts provided.

Aster Build is constructing a six-storey teaching block while an adjacent college remains occupied. It employs 75 workers and several specialist subcontractors. Floor-edge protection is moved temporarily to receive materials. Mechanical and electrical installers use mobile access equipment in corridors where other trades store materials. Open service penetrations remain while installation teams wait for deliveries. New starters join each week and some have limited experience of the equipment in use.

Telehandlers deliver palletised materials through a narrow entrance shared with pedestrian access. Delivery vehicles occasionally reverse into the compound when the turning area is occupied. Temporary cabins restrict the view at a crossing, and deliveries arrive around shift changes. The traffic arrangement was designed before the cabins were relocated. A near miss occurred when a worker stepped from behind a stack of boards into the path of a telehandler.

A tower crane handles prefabricated panels, but moving-object incidents also arise from other activities. Workers cut steel channels, use powered fastening tools, move wheeled material racks over uneven floors, unload strapped packs and transfer small fittings at upper-floor edges. An unsecured rack rolled into a doorway and a loose fitting recently fell to a lower level. The site team recorded both events as minor because no one was hurt.

The director has asked for a practical improvement plan addressing falls from height, vehicle strikes and moving or falling objects. Some façade components are still being designed, so future access and assembly arrangements can be changed. There is limited space, and controls must accommodate sequential trades and deliveries. Funds are available for engineered improvements where their reliability and whole-project value can be justified. You must distinguish prevention at source from measures that depend on workers remembering instructions.

Question 01

10 marks

Propose three engineering changes to prevent falls during the activities described at Aster Build. Explain how each changes the physical work arrangement and evaluate its practical and financial viability over the project. Restrict your proposals to engineering measures.

MARKING GUIDANCE

- | | |
|----------------|--|
| 6 marks | Three relevant engineering measures with an explanation of their protective mechanism. |
| 4 marks | Reasoned evaluation of feasibility, reliability and whole-project cost. |

Question 02

10 marks

Identify five specific conditions or interactions that could lead to a worker being struck by a moving vehicle at this site. For each, explain the sequence by which exposure could arise; do not simply name a vehicle type.

MARKING GUIDANCE

- | | |
|-----------------|--|
| 10 marks | Five scenario-based hazard explanations at 2 marks each. |
|-----------------|--|

Question 03**10 marks**

Identify five operations other than crane lifting that could expose people to moving or falling objects. For each, explain the source of movement or released energy and how a worker could be exposed.

MARKING GUIDANCE**10 marks**

Five distinct operations with a credible exposure mechanism at 2 marks each.

Question 04**10 marks**

Recommend ten specific controls for the moving-object exposures you identified in Question 3. Label each as an engineering measure, an administrative measure or PPE, and ensure the set addresses the range of activities in the scenario.

MARKING GUIDANCE**10 marks**

Ten relevant controls at 1 mark each, correctly classified and linked to an exposure.

Question 05**10 marks**

Explain how the remaining design and construction-planning decisions could reduce each of the three priority risks. Use specific design proposals and describe how their benefits would be verified before work begins.

MARKING GUIDANCE**6 marks**

Applied design proposals addressing falls, vehicle strikes and moving objects.

4 marks

Reasoned explanation of effectiveness, coordination and verification.

SECTION B / APPLIED SCENARIO 1 OF 5 - 20 MARKS

Investigating a pressure-system failure

Read this scenario and answer Questions 6-7. Apply your reasoning to the facts provided.

Dunwell Engineering uses an electrically driven compressor with a 500-litre air receiver. Its control system normally stops compression at 10 bar; the receiver nameplate states a maximum allowable pressure of 12 bar. A separate relief device is fitted. After eight years of service, the receiver ruptured during a night shift. No one was in the enclosed compressor room. The gauge was found damaged and its last indicated pressure is unknown. Maintenance records list control-switch replacement six weeks earlier, but no commissioning results are attached. Condensate-drain records are incomplete. Fragments show uneven wall appearance near the lower shell, although no laboratory examination has been completed. The scene has been isolated and evidence preserved for a competent investigation team. None of these observations has yet established the cause.

Question 06

10 marks

Develop five distinct, technically plausible failure hypotheses for the receiver rupture. For each, specify an investigation trail that could support or rule out the hypothesis. Distinguish a possible cause from an established finding and avoid generic statements such as 'poor maintenance'.

Use these table headings: Possible failure mechanism | Evidence / examination and how it would test the hypothesis

MARKING GUIDANCE

- | | |
|----------------|--|
| 5 marks | Five specific and plausible hypotheses at 1 mark each. |
| 5 marks | Five corresponding evidence-based investigation trails at 1 mark each. |

Question 07

10 marks

Select and justify suitable inspection or examination methods for this investigation, including at least one non-destructive method. Explain what each could establish, its limitations and how results would be combined with operating records to reach a defensible conclusion. Do not propose re-energising the damaged system.

MARKING GUIDANCE

- | | |
|----------------|---|
| 3 marks | Appropriate selection of examination methods. |
| 7 marks | Detailed interpretation, limitations and integration of evidence. |

SECTION B / APPLIED SCENARIO 2 OF 5 - 20 MARKS

Basic machines and mechanical advantage

Read this scenario and answer Questions 8-9. Apply your reasoning to the facts provided.

Fernbank Vehicle Services uses a manually operated hydraulic trolley jack to raise a vehicle during workshop preparation. A new assistant is surprised that a modest force on the handle can lift such a heavy load. A loaded delivery van arrives with an uncertain axle weight and an unfamiliar lifting-point arrangement. The workshop floor slopes slightly near the entrance, a jack has an unreadable capacity label, and the team is under pressure to release the bay quickly. You are asked to explain the machine's operating principle and assess the hazards associated with this planned lifting activity.

Question 08

10 marks

Explain to the new assistant, in plain language and without calculations, how the handle mechanism and hydraulic system provide mechanical advantage. Include why the lifting movement is smaller than the handle movement and why the device does not create energy.

MARKING GUIDANCE

- | | |
|---------|---|
| 4 marks | Clear explanation of pressure transmission and force multiplication. |
| 3 marks | Correct explanation of movement, work and the role of the handle. |
| 3 marks | Accessible explanation linked to the workshop equipment, without misleading claims. |

Question 09

10 marks

Identify ten distinct hazards or hazardous conditions associated with the proposed lifting activity. Use the scenario and clearly stated, reasonable workshop assumptions. List sources or conditions with the potential to cause harm, rather than injuries or control measures.

MARKING GUIDANCE

- | | |
|----------|--|
| 10 marks | Ten relevant, distinct hazards at 1 mark each. |
|----------|--|

SECTION B / APPLIED SCENARIO 3 OF 5 - 20 MARKS

Hand tools and practical instruction

Read this scenario and answer Questions 10-11. Apply your reasoning to the facts provided.

Orchard Maintenance repairs conveyor assemblies using spanners, chisels, hammers, pliers and utility knives. Recent reports include a chisel head shedding a fragment, a knife slipping while packaging was opened and a worker losing balance when a spanner slipped from a fastener. Tools are shared between shifts; damaged items are sometimes returned to drawers because replacements are stored in a locked room. Temporary staff receive a brief verbal induction and several workers use different first languages. The manager can release each worker for a two-hour practical session and short activities during one working week.

Question 10

10 marks

Write ten concise safe-use instructions for the non-powered hand tools at Orchard Maintenance. Cover the relevant stages from selection and checking to use, storage and dealing with defects. Each instruction must be specific enough for a worker to act on.

MARKING GUIDANCE**10 marks**

Ten useful, distinct and scenario-relevant safety instructions at 1 mark each.

Question 11

10 marks

Design a one-week awareness programme that includes a two-hour practical training session. Set out the daily activities, allocate the 120 training minutes to meaningful topics and exercises, and explain how understanding and practical ability will be checked.

MARKING GUIDANCE**5 marks**

Feasible and varied week-long activities suited to the workforce.

5 marks

A coherent 120-minute practical syllabus with assessment of understanding and ability.

SECTION B / APPLIED SCENARIO 4 OF 5 - 20 MARKS

Electrical work and reliable communication

Read this scenario and answer Questions 12-13. Apply your reasoning to the facts provided.

Meridian Utilities maintains distribution equipment at several locations. Work instructions are relayed by phone from a control room. Two nearby cabinets have similar names, and a crew recently attended the wrong cabinet after a verbal instruction was misunderstood. The planned job required equipment to be made safe before work; the crew stopped when the local identification did not match the paperwork. Mobile coverage is intermittent and several contractors use different permit formats. Some jobs require access to elevated equipment. The company wants an affordable digital work-authorisation system, but recognises that software alone cannot establish that electrical equipment is safe.

Question 12

10 marks

Design the key features and workflow of a digital authorisation system that reduces Meridian's equipment-identification and communication errors. Address users, equipment identity, approvals, changes, unreliable connectivity and the relationship with physical safety checks. Explain how the proposal remains usable and affordable.

MARKING GUIDANCE

- | | |
|----------------|---|
| 4 marks | Specific workflow and features that address the communication failures. |
| 3 marks | Reliable handling of authorisation, changes and loss of connectivity. |
| 3 marks | Practical integration with physical checks, user capability and cost constraints. |

Question 13

10 marks

Outline an emergency-response procedure for a suspected electrical injury involving a worker at an elevated position. Address scene safety, escalation, competent rescue arrangements and first-aid support. Clearly distinguish actions for ordinary coworkers from tasks requiring trained and authorised responders; do not assume that approaching the casualty is safe.

MARKING GUIDANCE

- | | |
|----------------|--|
| 5 marks | A coherent response and rescue arrangement that prevents additional casualties and identifies competence limits. |
| 5 marks | Clear arrangements for emergency assistance and appropriate first-aid support after safe access is established. |

SECTION B / APPLIED SCENARIO 5 OF 5 - 20 MARKS

Work organisation and mental health

Read this scenario and answer Questions 14-15. Apply your reasoning to the facts provided.

Westhaven Support provides round-the-clock technical assistance to industrial clients. A new contract increased workloads without additional staffing. Shift patterns change with little notice, staff receive work messages during rest time, and team leaders publish individual call-handling rankings without considering case complexity. Workers report conflicting priorities and limited control over breaks. Some avoid raising concerns because a supervisor has described stress as a sign of weakness. Absence and staff turnover have risen, but these measures alone do not establish individual diagnoses. The director has asked the safety professional to recommend preventive changes to work organisation with confidential routes for support.

Question 14

10 marks

Explain why Westhaven should give work-related mental-health risks management attention. Analyse the relevant organisational and interpersonal factors in the scenario and describe what further evidence would help assess them without making medical diagnoses.

MARKING GUIDANCE

- | | |
|----------------|--|
| 3 marks | Clear understanding of occupational mental-health risk and the need for management action. |
| 7 marks | Specific analysis of work-related factors and appropriate supporting evidence. |

Question 15

10 marks

Recommend five preventive strategies that address the factors identified in Question 14. For each, identify a practical management action and explain how its impact could be assessed while respecting workers' privacy.

MARKING GUIDANCE

- | | |
|-----------------|--|
| 10 marks | Five targeted strategies at 2 marks each, including a credible implementation or evaluation element. |
|-----------------|--|

END OF SAMPLE PAPER

Check that you have answered all 15 questions and clearly numbered each response.