

# NATIONAL GENERAL CERTIFICATE (GC2) WORKPLACE HAZARDS

## ELEMENT 1 – WORKPLACE HAZARDS AND RISK CONTROL

Workplace (Health, Safety and Welfare) Regulations – Overview of main requirements for workplaces - Note there will be no questions which ask about the regulations themselves but the focus will be on the issues they cover listed below.

### General issues

- Maintenance of equipment and workplace
- Ventilation
- Space in the workplace
- Workstations and seating
- Floors and traffic routes
- Measures to prevent falls and falling objects
- Windows
- Door and gates

### Welfare issues

- Toilets – numbers for male and female, clean etc.
- Washing facilities - Hand drying facilities in toilets
- Temperature
- Lighting/ Drinking water
- Facilities for changing clothing
- Accommodation for clothing
- Facilities to rest and eat meals

### Violence

- Risk factors and controls relating to violence at work

### Substance Misuse

- Risk factors and controls of alcohol and drugs at work

### Safe Movement of people

- Hazards and Controls

### Working at Height

- Hazards and risks of working at height e.g. fragile roofs
- Main precautions and avoidance methods
- Emergency Rescue & Inspection requirements
- Equipment & PPE e.g. head protection
- Safe use of a ladder/step ladders
- Main components of scaffold
- Measures to follow to ensure the safe use of scaffold
- Roof work – precautions

### Excavations

- Main hazards
- Safety during excavations

### Example Questions

1. **Outline** measures that an employer could take in order to reduce the risks at work from the misuse of alcohol and drugs. **(8)**
2. **Outline** the particular hazards that may be present during the demolition of a building. **(8)**
3. **Outline** the factors that may increase the risk of injury to pedestrians who need to walk through a warehouse. **(8)**
4. (a) **Identify** possible adverse health effects of working in a cold environment. **(4)**  
(b) **Outline control** measures that could reduce the risk of adverse health effects when working in cold conditions. **(4)**
5. **Outline** the factors to consider when assessing the adequacy of lighting within an open plan office. **(8)**

## ELEMENT 2 TRANSPORT AND DRIVING

### Transport Safety

- Hazards
- Risks
- Control Measures (Organisational, workplace, procedural, individual)

### Driving at work

- Legal Responsibilities when using public roads
- Factors associated with driving at work e.g. driving hours
- Requirements for risk assessment
- Hazards
- Risks
- Controls (Vehicle/People/ Environment/Other)

### Example Question

1. **Outline** the factors to consider when assessing the risks to a long distance delivery driver. (8)
2. **Outline** measures to be taken to avoid accidents involving reversing vehicles in the workplace (8)
3. **Outline** factors that should be considered when assessing the risk of a road traffic incident while driving at work. (8)

## ELEMENT 3 MUSCULO-SKELETAL HAZARDS AND RISK CONTROL

### DISPLAY SCREEN EQUIPMENT

- Define "USER"
  - DSE related injuries
  - Change of work activity – break up keyboard work
  - Document holder/foot rest if required to reduce the risks
  - Eye sight tests
  - Training & Information
- DSE Regulations Overview*
- Identify the user
  - Analysis of work station – does it meet minimum standards

### Ergonomics

- Define ergonomics.
- Factors which can lead to Work Related Upper Limb Disorders (WRULDs)
- Main upper limb disorders
- Controlling the risks

### Manual Handling

- Definition
- Typical injuries
- Assessment criteria - TILE
- Measures for reducing the risk
- Contents of a programme designed to reduce MH injuries
- Overview of Manual Handling Regulations

### Fork Lift Trucks

- Operator Health Requirements
- Importance of the load centre
- Information on the rated capacity plate
- FLT Hazards – for each type of truck
- Pre operational checks
- Safe use and storage when not in use

### Other Mechanical Lifting Equipment (MEWPs, cranes, people handling hoists etc.)

- Main hazards
- Controlling the risks
- Requirements for statutory inspections

### Cranes and Slings

- Factors which would need to be taken into account when using a sling

- Safe working methods for use of cranes

### Example Questions

1. **Identify** the ergonomic factors that could increase the risk of musculoskeletal disorders at work. **(8)**
2. **Outline** factors to be considered when undertaking a manual handling assessment of the work undertaken by baggage handlers at a large, busy airport. **(8)**
3. (a) **Define** the term “ergonomics” (2)  
(b) **Identify SIX** observations made during an inspection of a machine operation which may suggest that the machine has **not** been ergonomically designed. **(6)**
4. A computer user has complained of neck and back pain. Outline the features associated with the workstation that might have contributed towards the condition. (8)
5. **Outline** the health and safety considerations when a fork-lift truck is to be used to unload palletised goods from a vehicle parked in a factory car park. **(8)**
6. **Outline** the procedure for the safe lifting of a load by a crane, having ensured the crane has been correctly selected and positioned for the job **(8)**
7. Explain how a person may be injured when using a mobile elevating work platform (MEWP) to undertake maintenance work at height. (8)

## ELEMENT 4 WORK EQUIPMENT HAZARDS AND RISK CONTROLS

**Machinery and Equipment** - Covered by Provision & Use of Work Equipment Regulations 1998 – overview

- Definition of work equipment
- Identifying suitable work equipment
- Requirement for training & information
- Maintenance issues
- Hand tool use
- Inspections
- Information, Instruction and Training for users
- CE Marking
- Dangerous parts – adequately guarded
- Controls – assessable, clearly marked
- Isolation – for electrical plant
- Stable for use
- Adequate Lighting – for safe use
- Controls for mobile equipment

### Machinery Guarding

- Typical Machinery Mechanical Hazards e.g. impact, cutting, entanglement
- Non mechanical hazards associated with machinery – e.g. electricity, hot surfaces etc.
- Machinery Hierarchy of Control
  - Fixed guard
  - Other guards: -Interlocking/Automatic/Adjustable Guarding
  - Trip devices
  - Other safety devices – two handed controls, dead mans handle (hold to run controls) etc.
  - Jig stick, push rods
  - Management Controls : - training, signs, supervision, PPE etc.

### Maintenance Work

- Typical hazards and controls

### Example Questions

1. **A) Give THREE** types of non-mechanical hazards that could lead to injury and/or ill-health when undertaking maintenance work on an item of machinery in the workplace. **(3)**  
(b) **Outline** control measures to be taken to reduce the risk of injury during the maintenance of machinery. **(5)**
2. **Outline** the precautions that should be taken in order to ensure the safety of employees undertaking maintenance work in an underground storage vessel. **(8)**
3. **Identify** the factors to consider when assessing the suitability of controls (including emergency controls) of an item of work equipment. **(8)**
4. In relation to the use of the circular saw, **identify FOUR** risks to the health and **FOUR** risks to the safety of the saw operators. **(8)**
5. 5, (a) **Outline the principles of operation of a pressure sensitive mat system in the context of machinery safety.** **(2)**  
(b) **Identify the factors that should be taken into account when considering the use of a pressure sensitive mat system** **(6)**
6. Employers are required to have arrangements in place to prevent access to dangerous parts of machinery or to stop dangerous parts if a person enters a danger zone.
7. **Describe** the principles of operation of:  
(a) Sensitive protective equipment (trip device); **(2)**  
(b) A two-handed control; **(2)**  
(c) An interlocked guard; **(2)**  
(d) A protective appliance (push stick) **(2)**

## ELEMENT 5 – ELECTRICAL SAFETY

### ELECTRICITY

- Effects on the body and workplace
- Emergency first aid for dealing with electric shock
- Electrical hazards
- Measures to control the risk of danger from electricity
- Pre use inspection check list for an item of electrical equipment
- The ways in which fuses, earthing, reduced voltage, centre tapped earthing and RCD's give protection to the system or the person
- Safe working near overhead cables
- Safe working near underground services

### Example questions

1. A joiner has received an electric shock from a hand-held, 230v drill while fitting floorboards to an upstairs room of a new property. The drill is five years old, but has not been tested during this time. The injury to the joiner was fortunately not serious.

(a) **Identify** the factors that may have limited the severity of injury on this occasion. (4)

(b) **Outline** the physical effects on the body that such contact with electricity could have caused under different circumstances. (4)

2. a. Describe how electricity may prove hazardous in the work situation (4)  
b. What three methods may be used to minimise the risks (4)

3. **Outline** measures that should be taken to minimise the risk of fire from electrical equipment. (8)

4. Outline the precautions to be taken to protect against electrical contact when:-

1. Excavating near underground cables. (4)
2. Working in the vicinity of overhead power lines(4)

5. In relation to using 210 - 240v hand-held electrical tools:

- a. Outline the possible dangers. (8)
- b. Describe suitable precautions to control such dangers. (12)

## ELEMENT 6 - FIRE

### Fire

- Fire triangle
- Main causes of fires in the workplace
- Fire related hazards and risks
- Classes of fire
- Types of extinguishers and typical use.
- Issues considered when siting extinguishers
- The four methods of heat/fire spread
- Fire Risk assessment - factors to take into account
- Fire prevention measures
- Fire protection measures
- Means of escape
- Evacuation requirements
- Contents of a fire safety induction

### Overview of Regulatory Fire Reform Order – for us in GC3 practical inspection and report

#### HIGHLY FLAMMABLE LIQUIDS

- Measures to ensure safe use
- Measures to prevent fires when using highly flammables
- Safe storage arrangements

#### Example Questions

1. **Outline** the requirements to help ensure the safe evacuation of persons from a building in the event of a fire. **(8)**
2. (a) **Explain** the significance of the 'fire triangle'. **(4)**  
(b) **Identify FOUR** types of ignition source that may cause a fire to occur, giving a typical workplace example of **EACH** type. **(4)**
3. a **Explain** why water should not be used on fires involving electrical equipment and **identify TWO** suitable extinguishing agents that could be used in such circumstances. **(4)**  
3.b **Explain** the significance of the various forms of heat transfer in the spread of fire. (4)
- 4.a **Outline** the main factors to be considered in the siting of fire extinguishers (4)  
4.b. **Outline** the inspection and maintenance requirements for extinguishers in the workplace (4)
- 5 a. With reference to the fire triangle, **outline two** methods of extinguishing fires (4)  
b. **Identify** the ways in which people could be harmed by fire in a work premises (4)
6. **Outline** the factors to consider when carrying out a fire risk assessment in the workplace (8)

## ELEMENT 7- CHEMICAL AND BIOLOGICAL HEALTH HAZARDS AND RISK CONTROL

### Control of Substances Hazardous To Health 2002 - Overview

- Main routes of entry into the body for a hazardous substance
- Difference of an acute and chronic effect – example substances for each
- Causes, symptoms and controls for dermatitis and lung disease
- Suitable and sufficient assessments of the risks
- Take measures to control or prevent exposure
- Ensure engineering controls such as LEV are maintained and used
- Training, Information and instruction for those at risk
- Health Surveillance – where appropriate
- Sampling of substances
- Examples of Workplace Exposure Limits (WEL)
- Principles of control for those substances with WELs.

LEV – Main components and maintenance issues

Sampling – main techniques used, advantages and disadvantages

### EU Global harmonisation of chemicals

Requirements for product data sheets and links to EU standards  
Chemical classifications and labels

### Environmental Waste Issues

- Main impacts of pollution
- Duty to dispose of waste safely
- Requirement for records
- Links between safety and the environment

### Asbestos

- The 3 most common types of asbestos
- Related ill health conditions
- Areas in a building where asbestos may be found.
- Typical control measures to protect workers and others

### Personal Protective Equipment Regulations – Overview of the regulations

- Suitable for person, hazard, risk and task
- Compatible with other PPE use
- Suitable storage facility
- Information, Instruction and Training
- PPE to be used and supervised to enforce
- Employees to report loss or defect
- Free of charge
- Personal – unless cleaned between uses
- AS A LAST RESORT
- Now covers hard hats for the construction industry

Items to consider when selecting PPE for employees.

### Respiratory Protective Equipment (RPE)

Respirators – types, advantages, disadvantages, typical use.  
Breathing Apparatus – types, use, advantages, disadvantages

### Example Questions

1. Prior to clearance, an inspection of a disused building has identified that drug users have discarded a large number of used hypodermic needles that could expose clearance workers to biological health risks.
  - (a) **Identify TWO** blood-borne viruses that clearance workers could be exposed to from contact with these hypodermic needles. **(2)**

- (b) **Outline** control measures that would reduce the biological health risks to workers when clearing the hypodermic needles. **(6)**
2. **Outline** the factors that may reduce the effectiveness of a local exhaust ventilation (LEV) system. **(8)**
3. **Describe** the differences between acute and chronic health effects and give one example in each case. **(6)**
4. (a) **Identify two** respiratory diseases which may be caused by exposure to asbestos **(2)**  
(b) Identify where asbestos is likely to be encountered in a building during renovation work. **(6)**
- 5.(a) **Explain** the term 'respirable dust'. **(2)**  
(b) **Outline** the ways in which the levels of dust in a workplace can be assessed. **(6)**
6. a. **Define** the term target organ within the context of occupational health. **(2)**  
b. **Outline** the personal hygiene practices that should be followed to reduce the risk of ingestion of a hazardous substance **(6)**
7. **Outline** a hierarchy of measures for controlling the exposures to hazardous substances. **(8)**



## ELEMENT 8 – PHYSICAL AND PSYCHOLOGICAL HEALTH HAZARDS AND RISK CONTROL

### Noise

- The effects of noise on the hearing mechanism – acute and chronic
- 3 pathways noise is transmitted by
- Intensity, pitch, loudness, decibels in relation to noise

Control of Noise at Work Regulations 2005 Overview (commenced April 2006)

- Lower Exposure Limit Values & Upper Exposure Limit Values
- Exposure Limit Values
- Action to be taken if any of the above levels are reached
- Noise control methods
- Types of hearing defenders – advantages and disadvantages of each

### Vibration

Hand Arm Vibration

- Legal Limits
- Causes/ Injuries / Prevention

Whole Body Vibration

- Causes/ Injuries / Prevention

### Radiation

- The difference between ionising and non ionising radiation
- Radon gas - sources, ill health effects & controls
- The main types of radiation, an industrial source, typical ill health and how this can be prevented.
- Who is a classified person?
- Who is a radiation protection adviser?
- Overview of Ionising Radiations Regulations

**Stress** – Causes, effects, HSE standards and measures to reduce the risk

### Example Questions

1. **Explain** the following term in relation to noise exposure at work:
  - a) noise induced hearing loss (2)
  - b) tinnitus (2)
  - c) **Identify FOUR** limitations of personal hearing protection as a means of protecting against the effects of noise. (4)
2. A dental surgery has installed an X-ray facility.
  - a) **Identify** the principal health effects associated with exposure to X-ray radiation. (4)
  - b) **Outline** the precautions that could be taken to reduce the risks to the operator from exposure to X Rays radiation. (4)
3.
  - a) **Identify two** types of non ionising radiation, giving an occupational source of each. (4)
  - b) **Outline** the health effects associated with exposure to non ionising radiation. (4)
4. Other than those associated with the physical environment, **outline EIGHT** possible causes of increased stress levels amongst employees. (8)
8. A number of employees who are required to work with vibrating hand-held tools for lengthy periods during a work shift have reported symptoms of tingling and numbness in their fingers. Further analysis indicates that the employees concerned could be showing early symptoms of hand-arm vibration syndrome (HAVs).
  - (a) **Describe** further symptoms that might develop should the work continue. (4)
  - (b) **Outline** factors to consider when assessing the risk of HAVs developing amongst the employees. (8)
  - (c) **Outline** precautions that could be taken to minimise the risk of the employees developing the condition. (8)
6. Drivers of vehicles can be exposed to whole body vibration (WBV).
  - a) **Explain** the meaning of WBV. (2) **Describe** the physical effects of WBV. (2)