



Unit C: Workplace and work equipment

THURSDAY 4 JULY 2013
3 hours, 0930 to 1230

10 minutes reading time is allowed before the start of this examination. You may not write anything during this period.

Answer both Section A and Section B

SECTION A

This section contains six questions. Answer **ALL SIX** questions.

All questions carry equal marks.

The maximum marks for each question, or part of a question, are shown in brackets.

You are advised to spend about **15 minutes** on each question.

Start each answer on a new page.

- 1 Under the Confined Spaces Regulations 1997, an enclosed space where work is undertaken is designated a confined space '*by virtue of its enclosed nature*', in addition to where '*there arises a reasonably foreseeable specified risk*'.

Outline the range of reasonably foreseeable specified risks that, if present, would cause the enclosed space to be designated a 'confined space' **AND**, in **EACH** case, **outline** a practical example of the specified risk.

(10)

- 2 Senior management in a large food processing plant are concerned at the increasing cost of the planned preventive maintenance programme that is currently used to maintain the equipment in the plant.

Outline the following two types of maintenance that could be considered as a replacement to the planned preventive maintenance programme, justifying reasons for the replacement:

(a) breakdown maintenance;

(5)

(b) condition-based maintenance.

(5)

- 3 **Describe** the principles of safety integration that must be followed by manufacturers who supply new machinery into the European Economic Area. (10)
- 4 The owners of a large distribution warehouse business have secured a contract from a stationery manufacturer. Their insurers have recommended that the proposed storage facility is sprinkler protected.
- Outline** the factors to be considered in providing an adequate sprinkler system for the storage facility. (10)
- 5 An organisation uses a number of non-compatible reactive chemicals as part of its manufacturing process. Chemicals from a supplier are delivered in bulk by road tankers, operated by a haulier, and are transferred to storage tanks on the customer's site.
- Outline** procedures that should be in place, at **EACH** stage of the supply process, to help ensure that the chemicals are transferred to the correct storage tanks to reduce the risk of a fire similar to the one that occurred at Albright and Wilson in 1996. (10)
- 6 (a) **Outline** the range of information that should be included on an organisation's standard form for the internal reporting of work-related road traffic incidents. (7)
- (b) **Outline** the likely content of an 'in-vehicle response kit' for use by a driver involved in a work-related road traffic incident. (3)

SECTION B

This section contains five questions. Answer **THREE** questions only.

All questions carry equal marks.

The maximum marks for each question, or part of a question, are shown in brackets.

You are advised to spend about **30 minutes** on each question.

Start each answer on a new page.

- 7 (a) By reference to the Pressure Systems Safety Regulations 2000, **explain** what is meant by a 'pressure system'. (6)
- (b) A compressed air system is to be installed in a motor vehicle repair workshop.
- Outline** the safety requirements that should be met before the system is commissioned. (14)

- 8
- (a) **Outline** examples of protection on electrical equipment that can reduce the risks of a direct electric shock under no fault conditions. (3)
 - (b) **Outline** examples of protection on electrical equipment that can reduce the risk of indirect electric shock under single fault conditions. (6)
 - (c) **Outline** the precautions that should be considered to prevent injury when working live on a UK 230v electric circuit. (11)
- 9
- As part of its water treatment system, a manufacturer is to install a plant suitable for the reception and storage of sulphuric acid and caustic soda, both of which will be delivered in bulk tankers. Both of these substances are highly corrosive and can react together violently.
- Outline** the provisions required for the proposed storage facility to give:
- (a) inherent plant safety by design; (10)
 - (b) employee safety in routine operation; (6)
 - (c) safety during maintenance activities. (4)
- 10
- In relation to dust explosions:
- (a) **explain** the conditions that must be present for a primary dust explosion to occur; (4)
 - (b) **explain** the additional conditions necessary for secondary explosions to occur; (4)
 - (c) **identify** the causes and effects of the General Foods dust explosion, Banbury 1981; (4)
 - (d) **identify** the design features that would minimise the likelihood and effect of a dust explosion. (8)
- 11
- A two-year construction project to build an inner city major train station is to be undertaken. The 30,000 square metre, rectangular site on which it is to be built will be bounded by public roads on all four sides. Construction planners have decided that in order to efficiently organise load handling throughout the project, three conventional tower cranes will be required at all times during construction.
- (a) **Outline** the factors that should be specifically considered in the safe selection and placement of tower cranes on the construction site. (10)
 - (b) **Outline** the health and safety considerations that the construction phase health and safety plan should address when excavating and preparing the foundation pads on which the tower cranes will stand. (6)
 - (c) **Outline** the circumstances that would require a tower crane to be subject to a thorough examination and inspection. (4)