



Unit B: Hazardous agents in the workplace

WEDNESDAY 19 JANUARY 2011
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 A small engineering company operates a number of noisy machines which are located in an open plan workshop.

Following a noise survey the company discovers that their employees are being exposed to noise levels above the Upper Exposure Action Value of 85dB(A) $L_{EP,d}$.

Describe the range of *technical* control measures that could be introduced to reduce the employees exposure to noise.

(10)

- 2 (a) **Identify** the hazard classification system for lasers.

(2)

- (b) Low power lasers are widely used to read bar-code labelled products at checkouts in retail premises.

Outline:

- (i) the design features;

(4)

- (ii) the procedural controls

(4)

that should be in place for the safe operation and maintenance of this equipment.

- 3 (a) **Outline** the specific criteria that should be applied when provisionally classifying a biological agent in accordance with the Control of Substances Hazardous to Health Regulations 2002. (4)
- (b) **Outline** the *design* requirements for a research laboratory that undertakes activities involving a Group 4 biological agent. (6)
- 4 An airborne contaminant has a Workplace Exposure Limit (WEL) of 10ppm, 8-hour time-weighted average (TWA). Engineering controls have been introduced but the airborne concentration of the contaminant in a workshop has been measured at 180ppm, 8-hour TWA.
- The occupational hygienist has selected a piece of respiratory protective equipment (RPE) with an assigned protection factor (APF) of 20, which is to be worn temporarily by all employees in the contaminated area.
- (a) Using the data above **outline** how the hygienist could have calculated the APF **AND outline** whether the hygienist has made an appropriate selection. (4)
- (b) **Outline** other factors that should be taken into account when selecting appropriate RPE. (6)
- 5 Employees working in a warehouse handle a large number of boxes and packages every day. In order to assist with this activity the employer has decided to invest in a range of non-powered handling equipment such as trolleys and trucks.
- Outline** what factors the employer should consider when *selecting* suitable equipment. (10)
- 6 A company is considering substituting a solvent it currently uses for one that is thought to be more effective.
- Outline** the factors affecting health that should be considered before a decision is taken to make the change. (10)

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) **Identify** the circumstances when health surveillance would be considered appropriate according to Regulation 11 of the Control of Substances Hazardous to Health Regulations 2002 (COSHH). (2)
- (b) **Outline** the arrangements and facilities that an organisation should put in place if they are to carry out health surveillance in accordance with the COSHH Regulations. (10)
- (c) A small engineering company uses metal working fluids which can cause dermatitis and occupational asthma.
- Assuming the engineering company has the necessary arrangements and facilities referred to in part (b); **outline** the practical steps this company could take to meet its responsibilities under Regulation 11 of COSHH. (8)
- 8
- (a) Outline the properties of:
- (i) alpha particles; (4)
- (ii) x-rays. (4)
- (b) Staff working in a dental practice are exposed to x-rays.
- (i) **Outline** the legal requirements for monitoring staff exposure to x-rays. (6)
- (ii) **Outline** how the dental practice can monitor the staff exposure. (6)
- 9
- Five employees work an 8 hour shift during which they are exposed to a hazardous dust. The employer has asked an occupational hygienist to undertake monitoring of the employees' personal exposure to the hazardous dust.
- (a) **Describe** how the hygienist should determine the employees' long term personal exposure to the *total inhalable* hazardous dust. (10)
- (b) The five employees were each monitored for exposure to total inhalable dust during the same 8 hour shift. Four of the results are roughly equivalent but the fifth is significantly higher.
- Outline** the possible reasons for this discrepancy. (10)

- 10 (a) In 2002 the Court of Appeal (COA) made landmark judgments relating to work-related stress. **Identify ONE** of the cases heard at the appeal hearing **AND outline** the practical guidance which the COA established at this hearing in connection with harm that is reasonably foreseeable. (5)
- (c) **Describe** a range of organisational and personal factors that can contribute to the incidence of work-related stress. (15)
- 11 A facilities manager of a multi-occupancy office block built in the 1970s is concerned about the risks associated with asbestos in the building.
- (a) **Outline** the steps the facilities manager should take to minimise risks associated with any asbestos that may be present in the building. (12)
- (b) An occupant of one of the offices engages a contractor to fit a hand dryer in a toilet which involves drilling through some asbestos insulating board.
- Outline** the required steps to be taken by the contractor to carry out this work, in accordance with the Control of Asbestos Regulations 2006. (8)