

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD  
UNIVERSITY OF MALTA, MSIDA

**SECONDARY EDUCATION CERTIFICATE LEVEL**

**MAY 2017**

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<b>SUBJECT:</b>	<b>Engineering Technology</b>
<b>PAPER NUMBER:</b>	Controlled – Unit 1
<b>DATE:</b>	29 <sup>th</sup> May 2017
<b>TIME:</b>	10:00 a.m. to 11:35 a.m.

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**THIS PAPER SHOULD BE RETURNED TO THE INVIGILATOR  
AFTER THE EXAMINATION.**

**Name of candidate** \_\_\_\_\_

**I.D. number** \_\_\_\_\_

**School** \_\_\_\_\_

**Class** \_\_\_\_\_

Answer **ALL** questions.

**Scenario:**

As a Health and Safety Officer in an engineering company you are given different tasks from your superior. Answer questions 1 to 8 to demonstrate that you are providing the safest environment possible for the workers and those visiting the premises of the engineering company you work for.

**Question 1**

**K1 (4 marks)**

In a science laboratory you need to pour some concentrated hydrochloric acid from a large and heavy flask into a smaller one. Concentrated hydrochloric acid is highly corrosive and can burn your skin or eyes if it comes into contact.

List **FOUR** items of personal and protective equipment that you should wear while conducting this task.

Item 1 \_\_\_\_\_

Item 2 \_\_\_\_\_

Item 3 \_\_\_\_\_

Item 4 \_\_\_\_\_










(4)

**Question 2**

**K3 (4 marks)**

Each of the warning sign in Table 1 has a letter associated with it. Identify which of these warning signs is applicable for each of the groups of hazardous substances listed in Table 2, and write the associated letter in the empty space provided in the column “Warning Sign Letter” of Table 2. The first one has been done for you.

Table 1 – Warning signs and associated letters.

Warning Sign - Letter		
 a.	 b.	 c.
 d.	 e.	 f.
 g.	 h.	 i.

Insert warning sign letters from Table 1.

Table 2 – Group of hazardous substances and associated warning signs

Group of Hazardous Substances	Warning Sign Letter (select from table above)
Gas under pressure	h
Explosives	
Oxidizing	
Flammable	
Corrosive	
Health hazard	
Acute toxicity	
Serious health hazards	
Hazardous to the environment	

(4)

*Please turn the page.*

**Question 3**

**C1 (6 marks)**

Different chemical substances are used extensively in engineering. These can be dangerous and present various challenges to being effectively stored and used. Some chemicals are toxic, others are flammable and others are harmful to health or corrosive. Hence, chemicals must be handled with care, stored securely and used with caution.

a. Explain **THREE** different points that are important to storage of toxic chemicals in cabinets.

(i)

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(ii)

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(iii)

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(3)

b. Explain **TWO** reasons why toxic chemicals should be stored in appropriate containers which are correctly labelled.

(i)

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(ii)

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(2)

c. Explain **ONE** reason why correct temperature conditions need to be maintained when storing flammable chemicals.

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(1)



d. \_\_\_\_\_  
\_\_\_\_\_

e. \_\_\_\_\_  
\_\_\_\_\_

(4)

**Question 5**

**C2 (6 marks)**

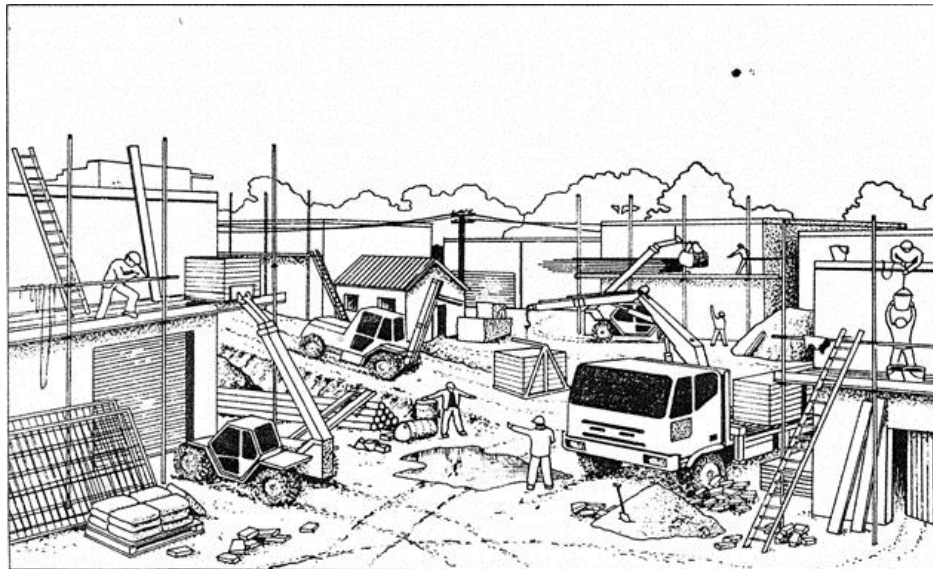


Figure 2 – Risks at the workplace

Source: <http://newlandstraining.co.uk/>

Figure 2 depicts ongoing construction works to build new warehouses and hence enlarge the premises of the engineering company. Circle **THREE** hazards you can note in Figure 2. Label each hazard using a, b or c and fill in the rest of Table 3. For each hazard describe a risk and provide an explanation on how this risk can be minimized or avoided.

Table 3: Hazards and Risks

Hazard	Risk	Explain how the risk can be minimized/avoided
a.		
b.		
c.		

(6)

**Question 6**

**K7 (4 marks)**

As part of the training, engineering staff members must follow a course in basic first aid and fire awareness.

- a. Mention **FOUR** points to describe first aid procedures in case an employee suffers a deep cut in his/her hand with a knife.

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(2)

- b. Oil in an industrial fryer catches fire. Describe the type of fire extinguisher used to put out this fire and the reasons for your choice.

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(2)

**Question 7**

**K9 (4 marks)**

- a. Industrial companies use different industrial gases for different tasks. Gases are to be identified through different markings in the company’s premises to eliminate mistakes on the shop floor. Identify the gas types for each particular colour and cylinder shoulder in Table 4.



Table 4 – Cylinder colours for the various gas types.

Colour	Cylinder Shoulder	Gas type
Maroon colour /Brick Red		
White		
Grey		
Black		

(2)

- b. Fill in the blanks with the correct colour in the space provided.  
 Pipes used for fire extinguishing fluids are painted in a \_\_\_\_\_ colour and the labelling text has a \_\_\_\_\_ colour. (½)
- c. Symbols are highly important to convey information in engineering drawings. Complete Table 5 by determining the name of each of the welding symbols.

Table 5 – Welding symbols

Symbol	Name of Symbol
	
	

(1 ½)



**Question 8**

**C5 (6 marks)**

The upkeep and proper use of documentation is extremely important for the engineering company you work for.

a. Mention **THREE** types of documentation used in a typical engineering company.

(i)

(ii)

(iii)

(1 ½)

b. Identify **THREE** important measures to physically handle documentation appropriately and explain the importance of these measures.

(1 ½)

*This question continues on the next page.*



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