



L-Università
ta' Malta

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE
EXAMINATIONS BOARD

**SECONDARY EDUCATION CERTIFICATE LEVEL
2021 SUPPLEMENTARY SESSION**

SUBJECT:	Engineering Technology
PAPER NUMBER:	Synoptic – Unit 1
DATE:	1 st November 2019
TIME:	10:00 a.m. to 12:05 p.m.

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

Answer ALL questions**Scenario:**

You have been commissioned by a local company to carry out an investigation of all the hazards and good practices that are adopted by the employees of this company. At the end of your investigation, you are required to prepare a report. As part of your investigation, you need to answer **ALL** the questions in this paper.

Question 1**(6 marks)**

In one of the workshops owned by this local company, the labourers are required to cut, weld, drill and grind metal parts according to provided templates.

List **FOUR** different items of personal and protective equipment (PPE) that should be used when conducting an inspection in this workshop and describe their function.

Task	Name of PPE	Function of PPE
a. Cutting a metal rod	_____ _____ _____	_____ _____ _____
b. Welding a metal T-section	_____ _____ _____	_____ _____ _____
c. Drilling holes in a metal flat bar	_____ _____ _____	_____ _____ _____
d. Grinding the welding on the metal T-bar	_____ _____ _____	_____ _____ _____

(2)

(4)

Question 2**(15 marks)**

Labourers in the store department are required to handle various hazardous substances like acetylene, fuels, sulphuric acid, hydrochloric acid, cleaning agents and mercury. Make a list of **FIVE** PPEs that the employer should provide to his employees according to Legal Notice 121 of 2003. Then explain the importance of each PPE for this work.

PPE	Importance of PPE for this work

(5)

(10)






Please turn the page.

Question 3

(2 marks)

During one of your inspections, you noticed the various warning signs set up by the Health and Safety officer around the company's premises. Some of these warning signs are shown in Table 1 below. Identify the correct warning sign for each group of hazardous substances. The first one has been done as an example.

Table 1

Warning Sign	Group of Hazardous Substances
	<p>Gas under pressure</p>
	<p>Explosives</p>
	<p>Hazardous to the Environment</p>
	<p>Health hazard</p>
	<p>Acute toxicity</p>

Question 4

(4 marks)

During your observation in this company, you also inspected the office of the accounts department, shown below in Figure 1. Outline **FOUR** hazards shown in the figure.

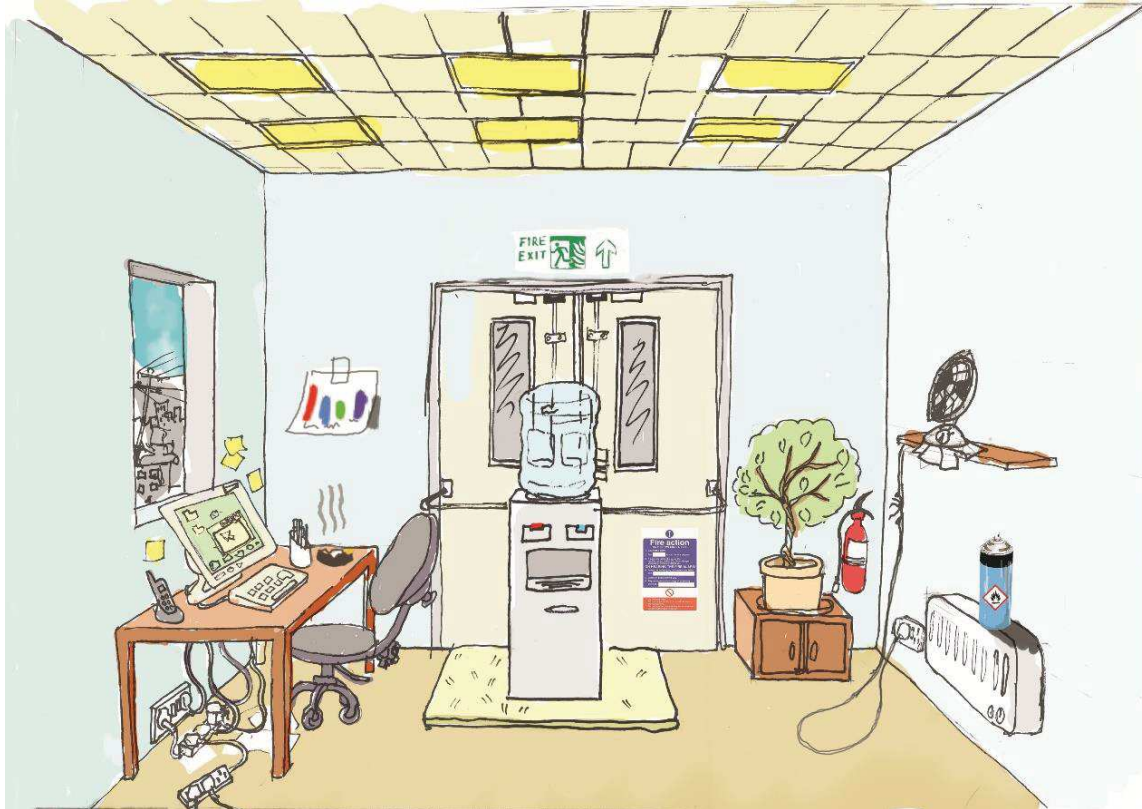


Figure 1

Source: <https://yanisdesignillustration.wordpress.com/2011/08/09/health-and-safety-in-workplace/>

a. Hazard 1

(1)

b. Hazard 2

(1)

This question continues on next page.

c. Hazard 3

(1)

d. Hazard 4

(1)

Question 5

(2 marks)

One of the new employees needs to know about the key areas of Risk Assessment. Some of these have been listed in Table 2.

a. Fill in the missing **THREE** key areas.

Table 2 – Key Areas of Risk Assessment

Key Area 1: _____	Key Area 2: Who is at risk?	Key Area 3: _____	Key Area 4: _____	Key Area 5: Preventive Measures
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(1.5)

b. To whom should risk assessment report be given?

(0.5)

Question 6

(15 marks)

During the inspection visit, a labourer was using unsafe practices as shown in Figure 2 below.



Figure 2

Source: <https://hiveminer.com/Tags/grinder%2Cgrinding>

Carry out a basic risk assessment by identifying **THREE** potential hazards and completing Table 3 below. In the first row use the key areas identified in Question 5.

Table 3 – Risk Assessment

Key Area 1: _____	Key Area 2: Who is at risk?	Key Area 3: _____	Key Area 4: _____	Key Area 5: Preventive measures
(1)	(1)	(½)	(½)	(2)
(1)	(1)	(½)	(½)	(2)
(1)	(1)	(½)	(½)	(2)

Please turn the page.

Question 7

(4 marks)

a. One of the workers fell and lost consciousness. Describe **FOUR** steps that are to be taken by a trained First Aider at the workshop to treat this injury.

(2)

b. During your visit at the factory, a wooden bench in the workshop caught fire.

i. What is the class of fire in this case?

(0.5)

ii. Which is the most suitable extinguishing agent to put out this fire?

(0.5)

iii. Describe the procedure to be followed in order to extinguish this fire.

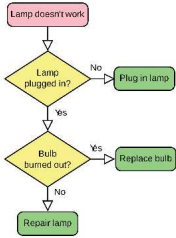
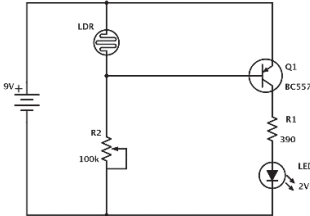
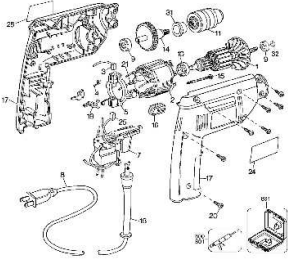
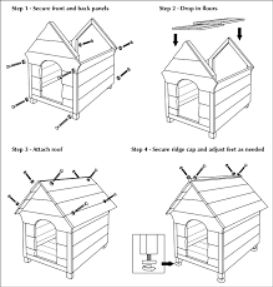
(1)

Question 8

(4 marks)

Manufacturing companies like the one you are inspecting are constantly communicating different types of technical information. In Table 4 below, name each diagram which is providing different technical information.

Table 4

Diagrams	Technical Information
 <p>https://www.mughals.info</p>	
 <p>http://www.farhek.com/</p>	
 <p>https://datavizproject.com/</p>	
 <p>https://intl.siyavula.com</p>	

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Question 9**(4 marks)**

a. Identify the abbreviations for each given material.

Material	Abbreviation
Cast Iron	
Copper	

(2)


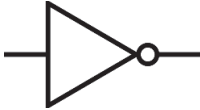


b. Identify colour codes for the given gas names.

Gas	Colour Code
Argon	
Carbon Dioxide	

(2)

Question 10**(4 marks)**

Identify symbols of each electronic components found in the table below.

Symbol	Component
	
	
	
	

Question 11

(15 marks)

During your inspection you notice that documents are appropriately stored and properly secured. As part of your report you are requested to address the following questions:

a. Mention **FIVE** types of documents used in an engineering company.

i. _____ (1)

ii. _____ (1)

iii. _____ (1)

iv. _____ (1)

v. _____ (1)

b. Explain **THREE** important measures related to location and security.

i. _____

_____ (1)

ii. _____

_____ (1)

iii. _____

_____ (1)

c. Explain **THREE** important measures related to physical handling.

i. _____

_____ (1)

ii. _____

_____ (1)

This question continues on next page.

iii. _____

_____ (1)

d. Explain **TWO** important measures required for the correct functioning of a documentation control system.

i. _____

_____ (2)

ii. _____

_____ (2)

Question 12

(15 marks)

Discuss the need for company employees to read and interpret technical information correctly. Use any **THREE** points from the following list:

- **Work to laid down procedures**
- **Produce accurately the required task**
- **Health and safety reasons**
- **Safeguard the equipment being used**
- **Communicate ideas to others**

a. Point 1

_____ (5)

b. Point 2

(5)

c. Point 3

(5)

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