

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

SECONDARY EDUCATION CERTIFICATE LEVEL

MAY 2016

SUBJECT:	Engineering Technology
PAPER NUMBER:	Controlled – Unit 1
DATE:	3 rd June 2016
TIME:	10:00 a.m. to 11:35 a.m.

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

Name of candidate _____

I.D. number _____

School _____

Class _____

Answer all questions:**Introduction:**

A beverage company is preparing to start production. Part of this task is to recruit workers to fulfil its staff complement. The company needs to employ personnel at different levels and to perform different duties. The employees are expected to move around the premises due to different tasks they may encounter during their work. For such reason all employed personnel are requested to be aware of hazards and take necessary actions to avoid injuries at work. To ensure the readiness of the employees, the company is organising a course in Health and Safety. At the end of the course the employees are expected to undergo a test to demonstrate their knowledge.

Question 1**K1 (4 marks)**

In Table 1 (b) there is a list of hazards. Match each hazard with the appropriate personal protective equipment (PPE) in Table 1 (a). There is only one correct answer. The first one is done for you.

1.		2.		3.	
4.		5.		6.	
7.		8.		9.	

Table 1 (a)

Type of Hazard	Type of Personal protective Equipment
a. Retrieving material from stores.	4
b. Grinding of metal.	
c. Handling of corrosive chemicals.	
d. Spilled chemicals on the floor.	
e. Inhalation of chemical fumes.	
f. Arc welding.	
g. Working at dangerous heights.	
h. Handling of iron bars.	
i. Involved in a lifting procedure using a crane.	

Table 1 (b)

(½ mark each)

Question 2**K3 (4 marks)**

At the stores area of the beverage company, workers need to handle a number of substances that may be dangerous. Thus it is of the utmost importance that workers are aware of the international hazard symbols. Help the store workers identify the symbols by identifying the hazard and give an example for each. The first one is made for you.



a.

Type of hazard: ExplosiveExample: Fireworks material

b.

Type of hazard:

Example:



c.

Type of hazard:

Example:



d.

Type of hazard:

Example:



e.

Type of hazard:

Example:

(½ mark each)

Question 3**K5 (4 marks)**

Work is underway at the company's workshop. There is a lot to do and all workers are doing their best to complete the job in the shortest time possible. The workers are carrying out their jobs with little concern about safety. The picture in figure 1 below shows the activity at the company workshop.

Your task is to identify and briefly describe **four** unsafe practices shown in Figure 1, taking place at the workshop. One is already made for you.

a. A man is carrying a long load without looking where he is going. He can easily hit other workers and injure them.

b. _____

c. _____

d. _____

e. _____

(1 mark each)

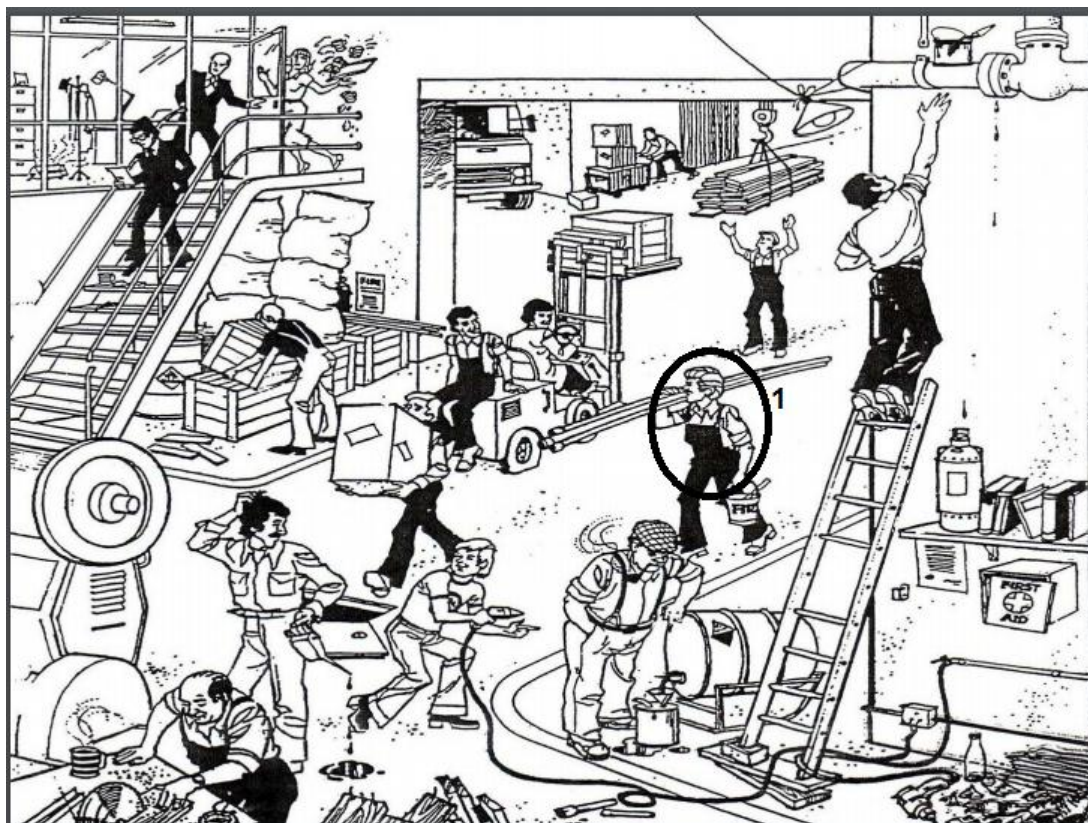


Figure 1

Please turn the page.

Question 4**K7 (4 marks)**

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

- a. Describe first aid procedures in case of an electric shock.

(2 marks)

- b. A stack of wooden pallets catches fire. Describe the type of fire extinguisher used and the reasons for your choice.

(2 marks)

Question 5**K9 (4 marks)**

Due to the company's different activities, a number of pipes carrying different fluids are used. There are also a number of cylinders used to store different gases used for the process and maintenance purposes. The complexity of the systems requires that proper documentation according to standards is kept for future and correct reference.

- a. The following pipes are carrying fluids as indicated. Near each example write the colour of the pipe's label. The first one is given.

- | | |
|--|---------------|
| i. A pipe is carrying acids and alkalis; the pipe label is coloured: | <u>purple</u> |
| ii. A pipe is carrying fresh water; the pipe label is coloured: | _____ |
| iii. A pipe is carrying water for fire-fighting; the pipe label is coloured: | _____ |
| iv. A pipe is carrying compressed air; the pipe label is coloured: | _____ |
| v. A pipe is carrying steam; the pipe label is coloured: | _____ |

(¼ mark each)

- b. At the company's workshop, a number of industrial gas cylinders are present. Some of the persons working there are confused when it comes to understand the different gases stored. Help these people recognise the correct gas in the correct cylinder. The first one is made for you.



- i. A cylinder with a brown marking is filled with: Helium
- ii. A cylinder with grey marking is filled with: _____
- iii. A cylinder with black marking is filled with: _____
- iv. A cylinder with green marking is filled with: _____
- v. A cylinder with maroon marking is filled with: _____

(¼ mark each)

- c. Engineering drawings are used to facilitate communication between technical people. Many symbols and abbreviations are used on these drawings.

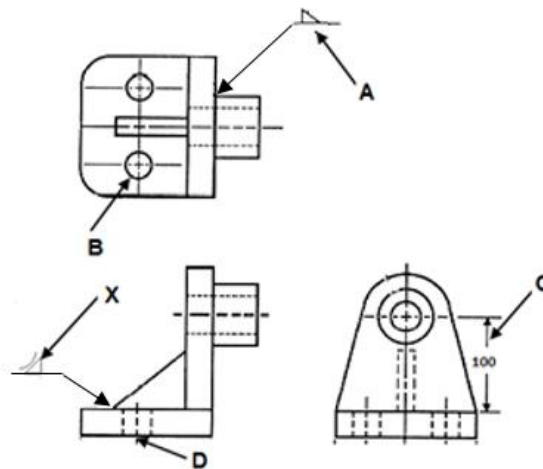


Figure 2

Figure 2 shows the engineering drawing of a bracket. Answer the following questions. The first one is done for you.

- i. What does the symbol shown as “X” indicate? Concave fillet weld.
- ii. What does the symbol shown as “A” indicate? _____
- iii. What does the symbol shown as “B” indicate? _____
- iv. What is the information shown by “C”? _____
- v. What is the information shown by “D”? _____

(¼ mark each)

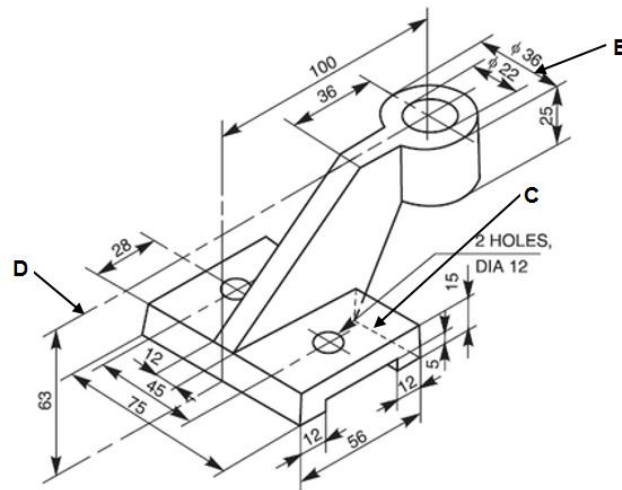


Figure 3

d. Answer the following questions referring to Figure 3.

i. What is the information provided by “B” showing?

ii. What is the line indicated by “C” showing?

iii. What is the line indicated by “D” showing?

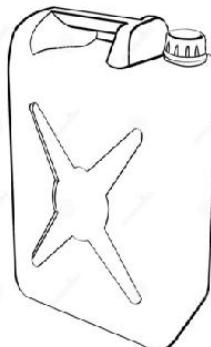
iv. In what type of view is the bracket in Figure 3 drawn?

(¼ mark each)

Question 6**C1 (6 marks)**

The beverage company makes use of different substances, some of which are more dangerous than others. All substances must be stored in an orderly manner. The store keepers are new to the job. Spend some time with the store keepers and brief them about the importance of using good packaging practices including labelling of material.

- a. In Table 2, match the correct substance with the correct packaging/storage method. (2 marks)

**A****B****C****D**

Substance	Container
Oxygen	
Oils and lubricants	
Acids	
Fuels	

Table 2

- b. Explain why it is important to use the correct container for different substances.

(2 marks)

- c. Describe the importance of using a label on the container.

(2 marks)

Question 7

C2 (6 marks)



Figure 4

Due to work pressures caused by tight deadlines, construction work started immediately, however there were numerous accidents that caused workers to leave the place of work due to injuries.

The picture in Figure 4 shows the work environment. Carry out a risk assessment on **two** situations. In each situation explain the type of risk and indicate measures that need to be taken to remove the risk.

[illegible]

(6 marks)

Question 8**C5 (6 marks)**

Documents at the place of work are very important. They provide important information about technical and administrative issues. Therefore, they must be well kept and available when needed. Answer the questions below to explain this importance.

a. List **four** documents found at the place of work.

i. _____

ii. _____

iii. _____

iv. _____

(½ mark each)

b. Explain the reasons considered when selecting the place of storing documents.

(2 marks)

c. Explain **two** procedures how documents are handled safely to be reused.

(2 marks)

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