



L-Università
ta' Malta

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE
EXAMINATIONS BOARD

**SECONDARY EDUCATION CERTIFICATE LEVEL
2022 MAIN SESSION**

SUBJECT:	Engineering Technology
PAPER NUMBER:	Controlled – Unit 3
DATE:	27 th April 2022
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 in the space provided.

Scenario

- Kevin is a technician working in an electrical power plant.
- He is asked to prepare a report.
- Help Kevin by answering these questions.

Question 1

K-1 (4 marks)

a. Name **FOUR** different types of electrical power generation plants.

Type 1: _____ (0.25)

Type 2: _____ (0.25)

Type 3: _____ (0.25)

Type 4: _____ (0.25)

b. Define the terms 'generation of electrical power' and 'distribution of electrical power'.

Generation of electrical power: _____

_____ (0.5)

Distribution of electrical power: _____

_____ (0.5)

c. Describe **FIVE** phases how electrical power reaches the consumer from a generation plant.

(2)

Question 2

K-2 (4 marks)

a. List the applications of the electromagnetic devices given in Table 1.

Table 1 – Electromagnetic devices

	Electromagnetic Devices	Application
i.	 Solenoid	
ii.	 Microphone	
iii.	 Loudspeaker	
iv.	 Motors and Generators	

(Source: <https://www.shutterstock.com>)

(1)

This question continues on next page.

b. Outline the working principle of an electromagnet.

(1)

c. Describe how the relay achieves its function through its individual parts by referring to Figure 2.

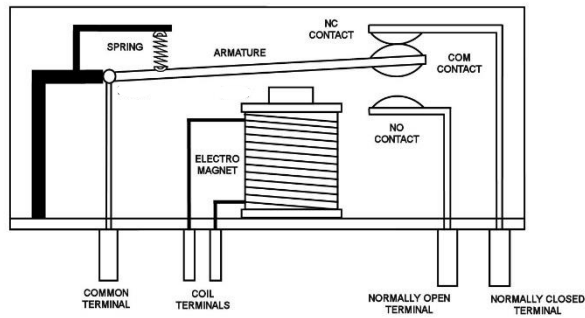


Figure 2: Relay
(Source: <http://www.gloab.com/relays/relays.html>)

(2)

Question 3

C-1 (6 marks)

a. Outline the importance of selecting a fuse with the appropriate current rating.

Importance in terms of Function: _____

_____ (1)

Importance in terms of Potential Hazards: _____

_____ (1)

b. 3A, 5A and 13A fuses are available. Calculate, by showing all workings, the appropriate rating of the fuse to be used with an electric kettle having the following specifications:

2000W; 230V

_____ (2)

c. Discuss the main differences between an MCB and a fuse in terms of the following characteristics:

Cost	Sensitivity to current overload
Sacrificial vs reset	Ease to resume supply

Question 4

K-6 (4 marks)

a. List **FOUR** different types of bearings.

Type 1: _____ (0.25)

Type 2: _____ (0.25)

Type 3: _____ (0.25)

Type 4: _____ (0.25)

b. Identify **TWO** different factors that may cause a bearing to fail prematurely.

inadequate lubrication	painted inappropriately	mismatching thread size
	ineffective bearing sealing	

Failing Factor 1: _____ (0.5)

Failing Factor 2: _____ (0.5)

c. Outline **TWO** methods by which a bearing can be replaced.

Question 5

K-9 (4 marks)





a. List the **FIVE** main classes of fire against their type.

Class of Fire	Type of Fire	
	Fires involving electrical equipment	(0.2)
	Fires involving gases	(0.2)
	Fires involving cooking oils	(0.2)
	Fires with flammable or combustible liquids as the fuel source	(0.2)
	Fires with trash, wood, paper, or other combustible materials as the fuel source	(0.2)

b. From the list of fire extinguishers given below, identify which fire extinguisher should be used in the circumstances shown in Table 2 below:

Water Dry and wet chemical extinguisher	Foam	Powder	CO2 Fire blanket
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Table 2 – Fire extinguisher for different classes of fire

	Fire	Fire Extinguisher
i.		
ii.		
iii.		
iv.		

(Source: <https://www.shutterstock.com>)

(1)

This question continues on next page.

