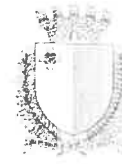


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GOVERNMENT OF MALTA
MINISTRY FOR EDUCATION, SPORT, YOUTH
RESEARCH AND INNOVATION
DEPARTMENT OF EXAMINATIONS

EXAMINATION: AUTHORISATION B

March 2023

Practical Test

Time Allowed – 1½ Hr

Name & Surname _____
(In Block letters)

Index No. _____

1. The figures attached show the lighting layouts for a Main Street bakery shop. There may be specialized lighting and a mix of single and three-phase machinery. The fact that food is processed on the premises implies **strict hygiene rules** which may affect surface runs of conduit. The public have access to the shop, therefore equipment must be suitably located away from unauthorized interference.

The biggest load on this installation is the oven in the kitchen and it is extremely unlikely that the fully loaded 10 kW condition will coincide with full loading on other appliances. The installation is supplied from a 400/230 Volts, 50Hz 4-wire system.

(a) Using Figure 1, Figure 2 and Table 1:

consider the information given to answer the following:

- (i) Draw the proposed conduit/trunking for the lighting layout and the power outlets in the shop. **(10 marks)**
 - (ii) List the arrangement of loads taking diversity into account. **(8 marks)**
 - (iii) Calculate diversity where applicable. **(7 marks)**
- (b) On the blank sheet provided in this paper draw a schematic diagram of the installation, showing the number of circuits required, the estimated rating of the protective devices and the size of wires to be used. **(10 marks)**
- (c) Calculate the maximum current per phase taking into consideration the diversity figures obtained to finally come up with the right selection of the mains supply. **(5 Marks)**

(TOTAL: 40 MARKS)

Table 1: Provisional electrical schedule

Shop		Bakery	
Lighting			
10 x 58 W		8 x 58 W 4 x 60 W	
Twin 13 amp Sockets			
Display Units	2	Freezer	1
Microwave Oven	1	Refrigerator	1
Freezers	2	Small mixers	2
General Purpose.	6	General purpose	4
Other loads			
		Three-phase mixer, 750 kW Oven, 10 kW Hob unit, 4 x 1.5 kW	

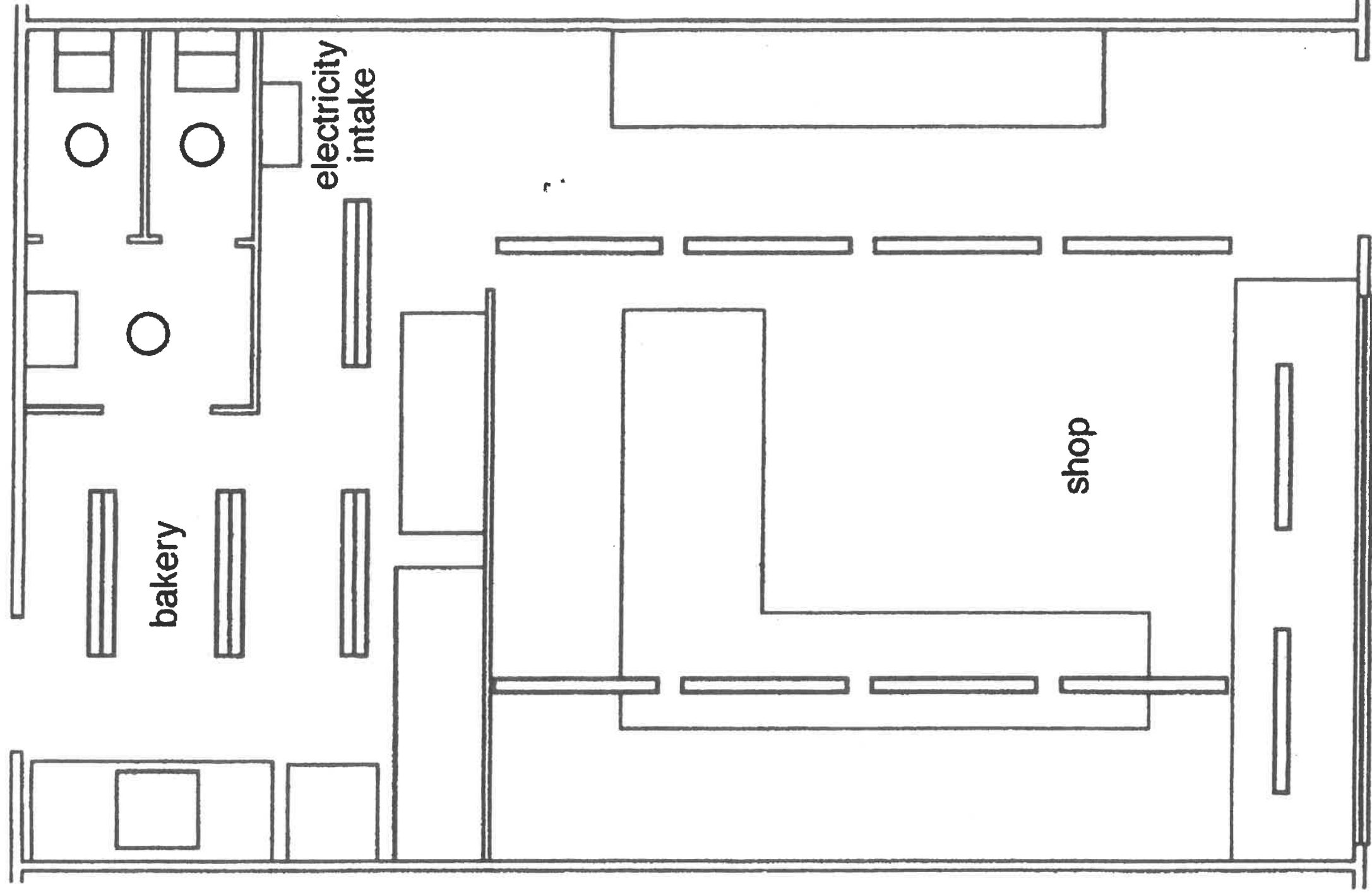
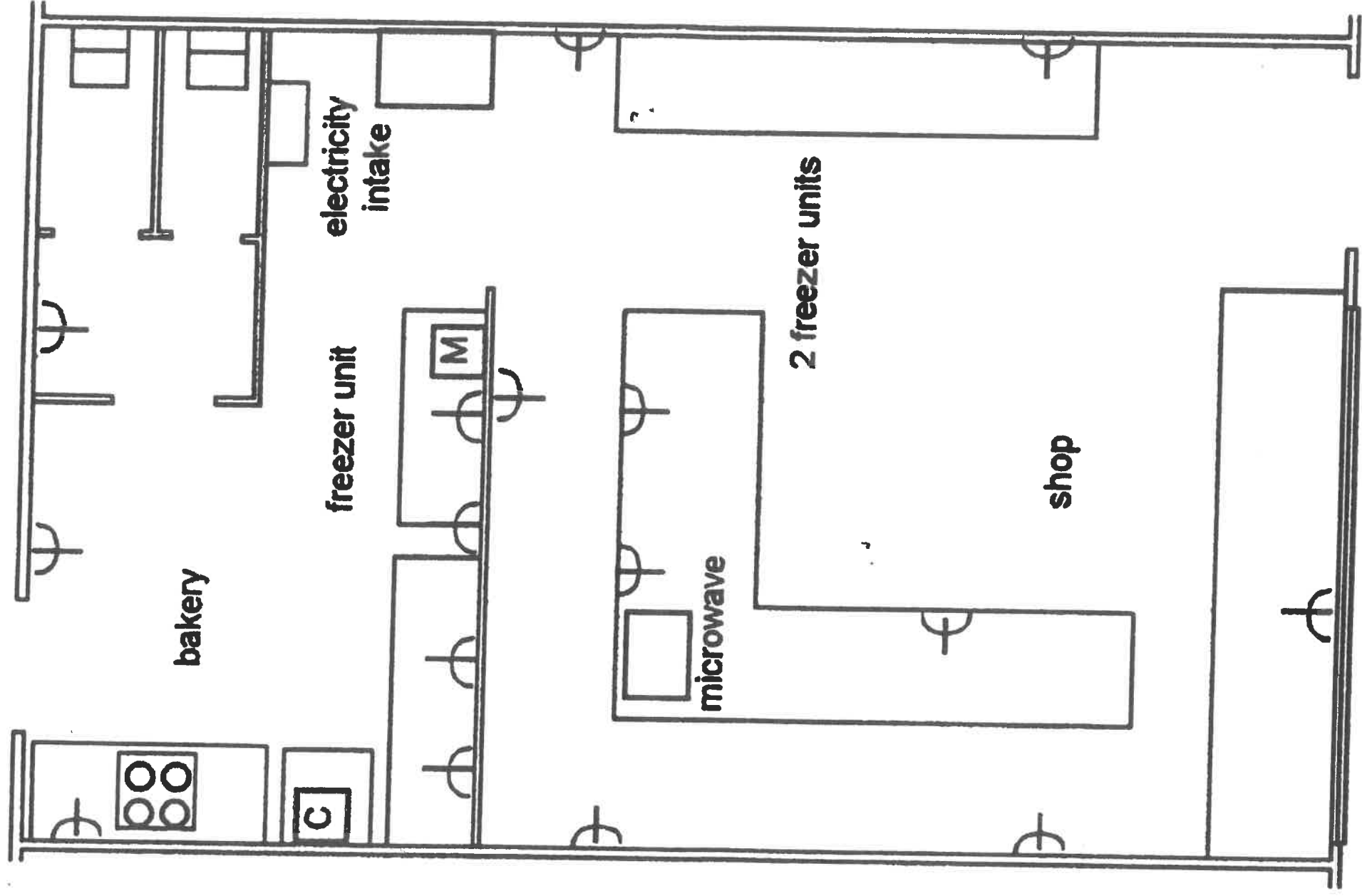


Figure 1 Lighting layout for wiring purposes only.







-  twin 13 A socket
-  cooker control
-  three phase mixer supply
-  hob unit

Figure 2 Power outlets in shop.