



**L-Università
ta' Malta**

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE
EXAMINATIONS BOARD

**SECONDARY EDUCATION CERTIFICATE LEVEL
2023 SUPPLEMENTARY SESSION**

SUBJECT: **Information Technology**
 PAPER NUMBER: Synoptic – Unit 3
 DATE: 1st November 2023
 TIME: 2:30 p.m. to 4:35 p.m.

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

For examiners' use only:

Question	1	2	3	4	5	6	7	8	Total
Score									
Maximum	6	8	8	12	8	8	8	12	70

Answer **ALL** questions in the space provided.

Scenario

- Andrew is the owner of two cafeterias.
- He is preparing to open another cafeteria in Dingli this year.
- Andrew now needs to start planning the network for this shop.
- He would like to obtain more knowledge about networks to ensure that the best network is set up.

Question 1

K-1 (6 marks)

a. Define the term network.

_____ (2)

b. State **TWO** purposes of a network, apart from communication.

Purpose 1: _____ (1)

Purpose 2: _____ (1)

c. Outline **ONE** use of networks in banks and **ONE** use of networks in schools. The uses outlined need to be different.

Use of networks in banks: _____

_____ (1)

Use of networks in schools: _____

_____ (1)

6

Question 2

K-3 (8 marks)

- Andrew is aware that different data transmission media exist.
- He would like to know more about them before deciding which ones to use.

a. State **TWO** types of data transmission signals, apart from electromagnetic.

Data transmission signal 1: _____ (1)

Data transmission signal 2: _____ (1)

b. Categorise the following data transmission media as 'wired' or 'wireless'. (2)

microwave frequency, optical fibre cable, twisted pair cable, radio frequency

Wired	Wireless

c. Outline **ONE** limitation, based on interference, for twisted pair cable and microwave frequency data transmission media.

i. Limitation of twisted pair cable: _____

_____ (2)

ii. Limitation of microwave frequency: _____

_____ (2)



8

Question 3

K-6 (8 marks)

- Different network devices are needed for the cafeteria.
 - The required devices will be included in the network plan using CISCO symbols.
- a. Identify the network device represented by each CISCO symbol presented in the table below.

Table 1: CISCO Devices Symbols

	Symbol	Device Name
Device 1	 (Source: https://conceptdraw.com)	_____
Device 2	 (Source: https://vecta.io)	_____

(2)

- b. State the use of each network device identified in Question 3a.

Use of Device 1: _____
 _____ (1)

Use of Device 2: _____
 _____ (1)

- c. Some of the specifications of the modem which will be installed by the Internet Service Provider (ISP) in the cafeteria are shown in the below screenshot:

Interface	1 10/100Mbps RJ45 Port 1 RJ11 Port
Button	1 Power On/Off Switch
External Power Supply	5VDC/1A
IEEE Standards	IEEE 802.3, 802.3u
ADSL Standards	Full-rate ANSI T1.413 Issue 2, ITU-T G.992.1(G.DMT), ITU-T G.992.2(G.Lite) ITU-T G.994.1 (G.hs), ITU-T G.995.1 , ITU-T G.996.1, ITU-T G.997.1, ITU-T K.2.1
ADSL2 Standards	ITU-T G.992.3 (G.dmt.bis), ITU-T G.992.4 (G.lite.bis)
ADSL2+ Standards	ITU-T G.992.5
Dimensions (W x D x H)	5.5*3.6*1.1 in.(140*92*29mm)

Figure 1: Features of the ADSL modem
 (Source: <https://www.tp-link.com/>)

Outline the following specifications based on the specifications provided in Figure 1.

i. Power Source: _____

_____ (2)

ii. Connectivity Medium: _____

_____ (2)

8

Question 4

C-3 (12 marks)

- It is now time to plan the network setup for the cafeteria.
- The Internet Service Provider (ISP) already provided and connected the modem which will be providing internet to the shop.
- The modem was placed on the bar next to the Point of Sales (POS).
- The modem provided by the ISP does not have additional functionality.
- Andrew needs to provide internet to the Point of Sales which uses a wired network connection.
- He also wants to allow clients to access the Internet using their portable devices.
- The architectural design of the cafeteria, including the necessary dimensions, is provided in Figure 2 on the next page.

This question continues on next page.

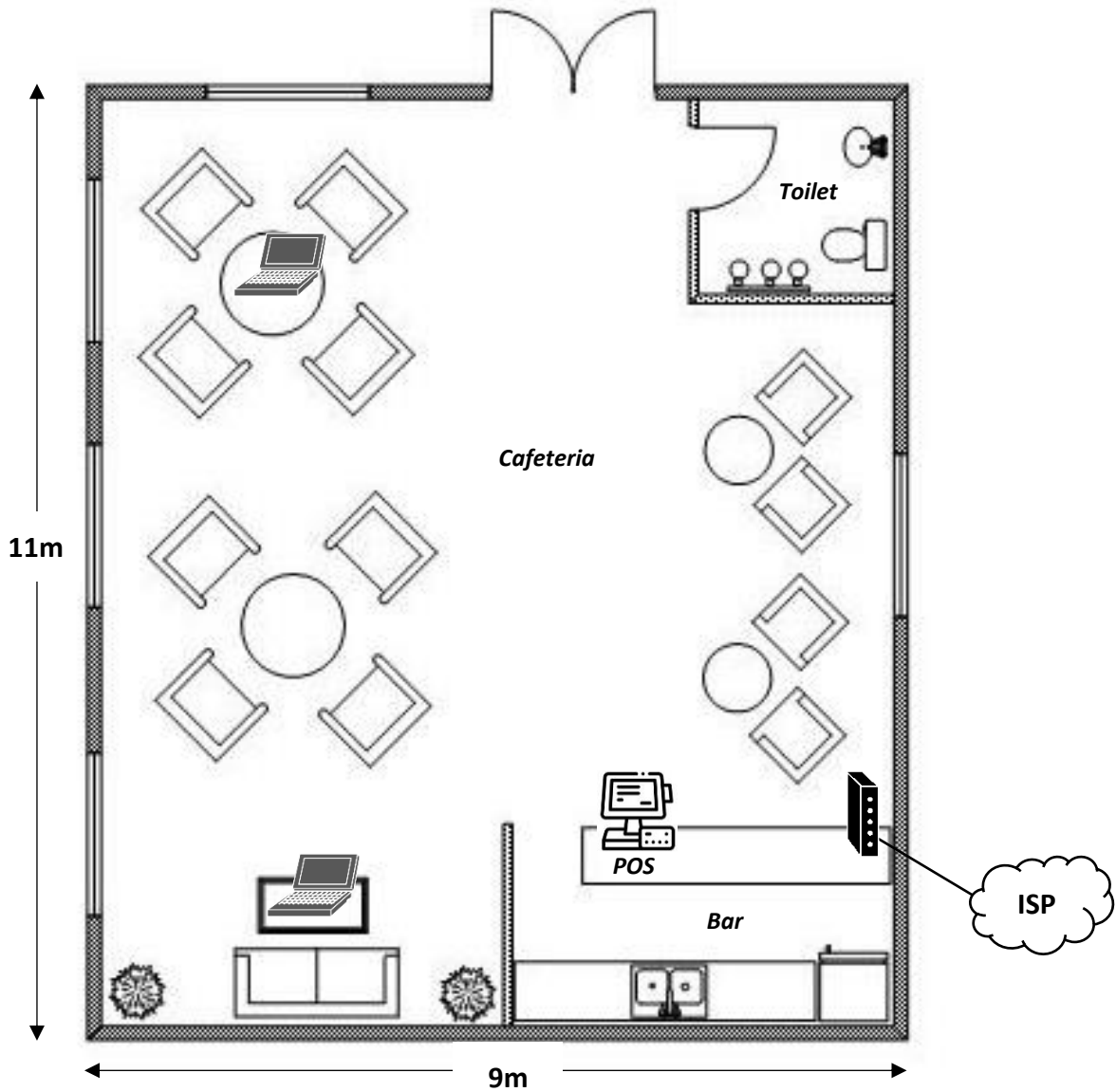


Figure 2: Cafeteria architectural design
 (Source: <https://www.pinterest.com>)

a. From the following network devices, choose the **TWO** devices necessary to complete the network setup for the cafeteria:

Host	Access point	Modem	Router
(Source: https://vecta.io)	(Source: https://conceptdraw.com)	(Source: https://vecta.io)	(Source: https://vecta.io)

Network device 1: _____ (2)

Network device 2: _____ (2)

- b. On the architectural design presented in Figure 2, illustrate the network plan by:
 - i. placing the network devices chosen in Question 4a in their proper place. You can either draw the symbol of the device or write down its name. (2)
 - ii. drawing and properly labelling all the data transmission media to be used in this network setup. (2)
- c. i. Justify your choice of the **TWO** network devices in Question 4a and the data transmission media included in Question 4b:

Justification of chosen network devices: _____

Justification of data transmission media: _____

_____ (2)

- ii. Justify why the **TWO** network devices you chose in Question 4a were placed in the specific location on the architectural design in Question 4b:

_____ (2)

Question 5

K-8 (8 marks)

- The Point of Sales (POS) consists of a computer which will be used by different employees.
- Employees are given different user accounts so that they have different access rights.

a. List **TWO** different local user accounts.

Local User Account 1: _____ (1)

Local User Account 2: _____ (1)

b. Describe the purpose of the **TWO** local user accounts listed in Question 5a.

Purpose of Local User Account 1: _____

_____ (1)

Purpose of Local User Account 2: _____

_____ (1)

c. Outline **TWO** advantages and **TWO** disadvantages of online user accounts.

Advantage 1: _____

_____ (1)

Advantage 2: _____

_____ (1)

Disadvantage 1: _____

_____ (1)

Disadvantage 2: _____

_____ (1)

8

Question 6

K-9 (8 marks)

Sometimes Andrew will need to share files and folders between different user accounts.

- a. List **ONE** type of file sharing permission and **ONE** different type of folder sharing permission, apart from full control.

File Sharing Permission: _____ (1)

Folder Sharing Permission: _____ (1)

- b. Outline the file and folder sharing permissions listed in Question 6a.

File Sharing Permission: _____

_____ (1)

Folder Sharing Permission: _____

_____ (1)

- c. Differentiate between centralised and distributed modes of sharing.

_____ (4)

8

Question 7

K-10 (8 marks)

Andrew is aware that the cafeteria’s network will be vulnerable to threats unless the necessary protection measures are in place.

a. List **FOUR** network security threats, apart from botnets.

Network Security Threat 1: _____ (0.5)

Network Security Threat 2: _____ (0.5)

Network Security Threat 3: _____ (0.5)

Network Security Threat 4: _____ (0.5)

b. State **FOUR** possible protection measures which can be used to protect networked devices, apart from firewall.

Protection Measure 1: _____
_____ (0.5)

Protection Measure 2: _____
_____ (0.5)

Protection Measure 3: _____
_____ (0.5)

Protection Measure 4: _____
_____ (0.5)

c. Outline **FOUR** protection measures which can be used in a wireless network setup, apart from setting 'WEP' and 'access point username and password'.

Wireless Protection Measure 1: _____

_____ (1)

Wireless Protection Measure 2: _____

_____ (1)

Wireless Protection Measure 3: _____

_____ (1)

Wireless Protection Measure 4: _____

_____ (1)

8

Question 8

C-5 (12 marks)

- Currently, Andrew is spending a lot of money to furnish the cafeteria.
 - He is thinking of setting network protection measures later on, once he starts making profit.
- a. State **FOUR** repercussions of having an unsecured network in the scenario, apart from stealing of data.

Repercussion 1: _____ (1)
Repercussion 2: _____ (1)
Repercussion 3: _____ (1)
Repercussion 4: _____ (1)

- b. Explain each repercussion you stated in Question 8a, in relation to this scenario.

Explanation of Repercussion 1: _____

_____ (1)

Explanation of Repercussion 2: _____

_____ (1)

Explanation of Repercussion 3: _____

_____ (1)

This question continues on next page.

Explanation of Repercussion 4: _____

_____ (1)

c. 'Access point username and password' and 'firewall' are two possible protection measures used to secure the cafeteria's network. Justify each protection measure, using a different justification for each.

Justification of 'access point username and password':

_____ (2)

Justification of 'firewall':

_____ (2)