



L-Università
ta' Malta

MATSEC
Examinations Board



Specimen Paper
IM19 Information Technology

Section A: Information Systems

Answer question 1 and any TWO questions from this section.

This question is compulsory.

1. A well-established yacht chartering organisation in Europe is expanding its business operations internationally to include eight further offices in specific well-known Mediterranean marinas. The main aim is to target further potential customers and increase operational efficacy. Each office will be operated and managed by the respective branch manager. As part of the restructuring process, the organisation requires upgrading its information systems (IS).
 - a. Outline **ONE** data item that you expect the IS to extract from the yacht chartering organisation. (2)
 - b. Distinguish between the internal and external information handled by the IS of the same organisation. (4)
 - c. Two major restructuring exercises require the upgrading of the Management Information Systems (MIS) and the Decision Support Systems (DSS).
 - i. In the above scenario describe **ONE** way of how a branch manager will be supported by the MIS. (2)
 - ii. Define the role of a Decision Support System within the yacht chartering organisation. (2)
 - d. Another major issue faced by the restructuring process is the handling of the large volumes of data these new offices might generate. A data warehouse has been suggested to mitigate this issue. Define the use of a data warehouse within the yacht chartering organisation. (2)
 - e. Define negligence in an IS environment. (1)
 - f. Outline **TWO** effects of negligence that may be suffered by this organisation. (2)
 - g. When the restructuring process is complete, the owners and the directors of the organisation will train all users to master the new functionalities of the upgraded systems.
 - i. Mention **TWO** major benefits of ICT related training in this organisation. (2)
 - ii. Outline **ONE** unique form of training, specific to **each** of the following roles: managers, technical, and administrative staff, to be able to master the newly upgraded systems. (3)

(Total: 20 Marks)

Answer any TWO questions from the following.

2. Medi-Health is a private organistaion that manages several private health clinics across the island. Patients can book for a health appoinment online by choosing their preferred clinic location and an available physician. Patients can also view their bookings, access their medical history and view appointment history.
 - a. Distinguish between the value of data, information, and knowledge within Medi-Health private organisation. (3)
 - b. Explain why Medi-Health should keep the information about its patients, bookings and medical history up-to-date. (2)
 - c. Describe how the Garbage-In Garbage-out concept within each health clinic centre may hinder Medi-Health organisation. (2)
 - d. List **TWO** differences between centralised and decentralised information with respect to managing information across all health clinics by Medi-Health. (2)

- e. Information security has always been one of the most fundamental and important policies within Medi-Health organisation. With respect to user accounts handling, outline **ONE** policy of how such patients and other clinic information can be secured. (2)
- f. Mention **TWO** roles of the data controller within Medi-Health organisation. (2)
- g. Give **ONE** example of how patients can authenticate themselves within the above-mentioned application. (2)

(Total: 15 Marks)

3. Smith and Co. is a local firm specialising in project management. Clients are both local and foreign and for every project, requirements vary from building a new system to improving the current one.

- a. Outline how resource management can have an impact on the quality of projects. (2)
- b. List **TWO** characteristics of an effective project manager. (2)
- c. Outline the aspects of project management in terms of:
 - i. estimation times; (2)
 - ii. resources required. (2)
- d. Give **ONE** example of a real-time system. (1)
- e. Outline the basics of a project review. (2)
- f. Define the following terms in relation to the scenario of this question:
 - i. testing; (1)
 - ii. retirement stage; (1)
 - iii. maintenance; (1)
 - iv. feasibility study. (1)

(Total: 15 Marks)

4. A middle school would like to have a new lab setup on their premises. This lab will facilitate learning throughout the school but can also be used to offer recreational services to the students during breaks. The school is drawing up a list of specifications for the new hardware.

- a. Provide **TWO** differences between solid state and magnetic storage technology. (2)
- b. Define the term ROM. (1)
- c. Describe primary and secondary storage. (2)
- d. Outline how the use of an AR/VR headset can enhance the student experience in modern day gaming. (2)
- e. State how the student experience can be improved through the use of haptic feedback devices as opposed to traditional devices. (2)
- f. For lessons, the lab uses a printer and a projector.
 - i. Outline the function of the projector. (2)
 - ii. Define the term aspect ratio. (1)
 - iii. Compare and contrast inkjet and laser printers. (2)
 - iv. How is resolution measured in printing devices? (1)

(Total: 15 Marks)

Section B: ICT in Organisations

Answer any question from this section.

1. DRIFT is an old organisation which has gone through a restructuring process to improve its operations and also provide online services to its customers.
 - a. This organisation was subdivided by function, product and project. Distinguish between the **THREE** subdivisions, giving **ONE** example for **each**. (6)
 - b. Communication within an organisation is very important.
 - i. List **TWO** types of communication; (2)
 - ii. For **each** type of communication mentioned in part (i), give **TWO** advantages and **TWO** disadvantages. (4)
 - c. The internet facilitates communication.
 - i. List **TWO** internet communication tools; (2)
 - ii. Describe **each** tool listed in part (i), giving **ONE** example to support your answer. (3)
 - d. Differentiate between e-Commerce and e-Business. (1)
 - e. List **ONE** advantage and **ONE** disadvantage of e-Commerce. (2)

(Total: 20 Marks)

2. SPX-AI is a company which offers consultancy services in the implementation of Internet of Things (IoT), data services and processing, health and safety at the place of work, customer retention and applied use of Artificial Intelligence (AI).
 - a. Define Big Data. Give an example to further illustrate your answer. (2)
 - b. List **TWO** ways of how the IoT can help in sustainability. (2)
 - c. Bad practices in the use of computers or related devices have proved to be a health and safety issue.
 - i. List **TWO** health issues which can affect users; (2)
 - ii. Suggest **TWO** practices which one could do in order to decrease health and safety issues at the place of work. (2)
 - d. Define a web portal. Give **ONE** example to support your answer. (2)
 - e. List **ONE** use of an electronic identity. (1)
 - f. A business makes use of a Customer Relationship Management (CRM) system to interact with its customers. Give **TWO** advantages of using such a system. (2)
 - g. Define AI. (1)
 - h. Give **TWO** examples of the use of AI in **two** areas of your choice. (2)
 - i. Describe **TWO** types of user support systems. (2)
 - j. List **ONE** advantage and **ONE** disadvantage of e-Learning. (2)

(Total: 20 Marks)

Section C: Software

Answer question 1 and any other question from this section.

This question is compulsory.

1. HubDraw is one of the largest web-design companies on the island.
- a. Fred, an employee at HubDraw has made **FIVE** mistakes in the HTML code below. Identify the errors and write the corrected code on the booklet provided. (5)

1	<html>
2	<head>
3	<style>
4	paragraph{
5	color:red;
6	text-decor:underline;
7	}
8	</style>
9	</head>
10	
11	<body>
12	<title>Gamers</title>
13	<a href="http://www.gamers.com" Click Here
14	</body>
15	<html>

- b. Write HTML code to add an image called "player.jpg", found in a folder at location C:\images. (2)
- c. Give an example of use of the CSS font-weight property. (2)
- d. Write HTML code to add a numbered list with the following **three** items: simulators, indie, survival. (2)
- e. Pam the project manager overseeing Fred's work, has asked Fred to make use of an external CSS file and apply it to the current website.
- Define CSS. (1)
 - Outline the main reason why Pam would like to use a CSS file over embedded CSS rules. (2)
- f. When designing websites, it is important that a proper sitemap is included. Outline the use of sitemaps. (2)
- g. Pam has also requested that Fred designs and codes a "contact us" page. In this page she has requested that Fred adds a form including fields for Name, Surname, E-mail and Comments.
- Choose adequate validation for **each** of the above **four** fields. (2)
 - Justify the selection of the validation in part (i). (2)

(Total: 20 Marks)

Answer any ONE question from the following.

2. Trevor is the new Chief Information Officer (CIO) for a large distribution company. His first task is to ensure the proper streamlining of all data and information at the company and as such he is evaluating the software being utilised at the company.
- a. Define software. (1)
 - b. List **ONE** criteria Trevor could use when selecting a software solution for his company. (1)
 - c. In one of his audits, Trevor noticed that the company was paying exorbitant licensing fees. List **TWO** alternative types of software licencing that Trevor may consider to reduce these fees. (2)
 - d. Another task that Trevor undertook was to check what "application software" and "system software" the company is currently using.
 - i. Define the words in quotes. (2)
 - ii. List **ONE** type of application software and **ONE** type of system software the company might be using. (2)
 - e. One final aspect which was analysed was software portability. Give **TWO** valid arguments for the need of software portability. (2)

(Total: 10 Marks)

3. EVmove plc. is a multinational company that has production and administration facilities located in different parts of the world. They specialise in the production of electric scooters. They are currently assessing the possibility of introducing a shared database system for their company.
- a. EVmore's general manager is unsure what database approach to pursue. Compare and contrast the use of centralised or distributed database systems in such a scenario. (4)
 - b. Draw a simple block diagram for **each** of the database systems mentioned in question 3(a). (2)
 - c. Outline the difference between a database and a DBMS in this scenario. (2)
 - d. Outline **TWO** roles of a DBA in this scenario. (2)

(Total: 10 Marks)

Question		Suggested Answer	Marks Distribution	Marks	
Section A					
1	a	Most chartered yachts, number of rentals in a specific period of time, number of rentals per client, longest period of a chartered yacht, which branch is generating the most bookings.		2	
	b	Internal information is information generated from within the business such as billing, accounts handling, sensitive client's information, finance, total sales per branch, personal information. External information is the information accessed by everyone such as marketing information about yachts, statistical information about chartering trends, customer feedback.	2	4	
			2		
	c	i	The branch manager will identify the most wanted type of yachts to charter, thus this knowledge will help the manager prepare/invest in these categories of yachts as clients are more likely to charter these yachts than others.		2
		ii	To assist branch managers to decide what type of yachts should be made available for chartering.		2
	d	A Data warehouse is a large store of data accumulated from a wide range of sources such as total bookings made to charter a specific yacht within this organisation. It is used to guide management decisions such that managers get prepared to meet the demand with the supply. A data warehouse is also designed to enable and support business intelligent activities.		2	
	e	Negligence is insufficient attention and neglect to the process of information security within an organisation.		1	
	f	Data theft because of insufficient attention to privacy and security enforcement. Data loss due to non-existent or inefficient back-up plans.	1 1	2	
	g	i	Staff will remain up-to-date with new organisational policies and new technologies. Staff will be in a better position to make use of the organisational technologies thus increasing operational efficacy.	1	2
				1	
ii		Managers – simulation-based training - This form of training would involve creating a simulated environment that closely resembles the upgraded system. The manager can practice using the system, testing different scenarios, and making decisions based on the data available in the simulation thus helping them gain confidence in the new system and be prepared for any issues that may arise. Technical – hands-on training - This training method would involve allowing technical staff to work with the upgraded system in a real-world environment. They could work on testing the system, configuring it, and resolving any technical issues that arise. Hands-on training can help technical staff become comfortable with the new system and identify any issues or errors that may need to be addressed. Administrative - role-playing training – This involves creating scenarios where administrative staff can practice using the upgraded system. The role-playing scenarios could involve situations where administrative staff are required to use the new system to complete various tasks, such as entering data or generating reports thus becoming familiar with the upgraded system and develop the skills necessary to complete their work effectively.	1 1 1	3	
			Total:	20	
2	a	Data refers to raw and unprocessed facts and figures. In the case of Medi-Health, data could include patient demographics, appointment details, and medical records. While data on its own may not be particularly useful, it provides the foundation upon which information and knowledge can be built.	1	3	
		Information is processed and sorted data. In the case of Medi-Health, information could include patient diagnoses, treatment plans, and test results. Information can be used to make decisions and inform actions, such as determining the best course of treatment for a patient or identifying trends in patient health.	1		

		Knowledge is particularly valuable as it empowers organizations to cultivate expertise and make well-informed decisions based on a comprehensive understanding of their data and information. For Medi-Health, knowledge may include the capacity to diagnose intricate health conditions, create personalized treatment plans, and identify optimal patient care practices.	1	
	b	Keeping patient information up to date is crucial for ensuring high-quality patient care, patient safety, legal and regulatory compliance, and operational efficiency within Medi-Health.		2
	c	The Garbage-In Garbage-Out (GIGO) concept refers to the fact that the output of a computer program is only as good as the quality of the input data. In the case of Medi-Health, the GIGO concept can be applied to the data that is entered into the health clinics' computer systems. If the data entered by the health clinic staff is inaccurate, incomplete, or inconsistent, this could result in inaccurate information being stored in the Medi-Health system and may have several negative impacts on the organization, including Impaired Patient Care and Inefficient Resource Allocation.		2
	d	Ownership and Control: In a centralized information management system, all data and information is owned and controlled by a central entity, such as Medi-Health's headquarters. This means that all data and information is managed and monitored by a single entity, which can ensure consistency and standardization across all health clinics. In contrast, in a decentralized information management system, each health clinic would have ownership and control over its own data and information. This can result in variations in the quality and accuracy of data across health clinics, making it more difficult to achieve consistency and standardization.		2
	e	In the case of Medi-Health, 2FA could be implemented by requiring users to enter their username and password, as well as a secondary form of authentication, such as a unique code sent to their mobile device or a biometric scan, like a fingerprint or facial recognition. By requiring users to provide two forms of identification, 2FA makes it much more difficult for attackers to gain unauthorized access to user accounts and patient information.		2
	f	Ensure Compliance: The data controller is responsible for ensuring that Medi-Health is compliant with all relevant data protection laws and regulations. This includes ensuring that all patient data is collected, processed, and stored in accordance with applicable laws and regulations, such as the General Data Protection Regulation (GDPR).	1	2
		Manage Data Quality: The data controller is also responsible for ensuring the accuracy and completeness of patient data. This involves implementing processes and procedures to ensure that patient data is properly validated, verified, and updated as needed.	1	
	g	One example of how patients can authenticate themselves within the Medi-Health application is by using a username and password. When patients create an account within the Medi-Health application, they will be asked to choose a username and password. They can then use these credentials to authenticate themselves and access their account each time they log in to the application.		2
			Total:	15
3	a	Resource management ensures managers have on-demand, real-time visibility into people, expenses and other resources so they can have greater control over delivery. If the resource (people, expenses etc) costs go beyond a permissible limit and/or fail to accommodate the expectations of the project, the profit margin will be reduced and quality hindered.		2
	b	Any two of <i>Monitoring, Scheduling, Organising, Directing, and Representing</i>		2

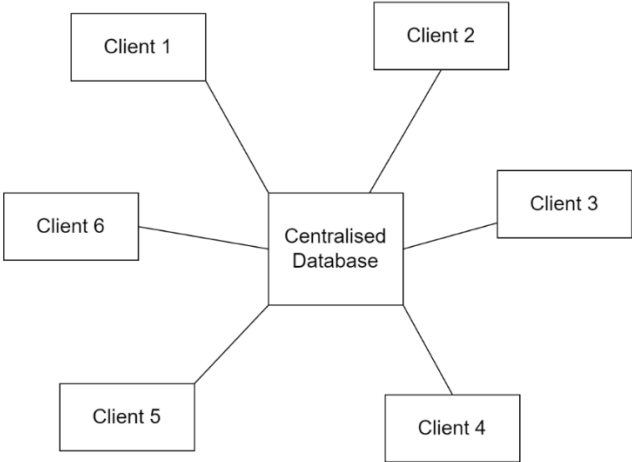
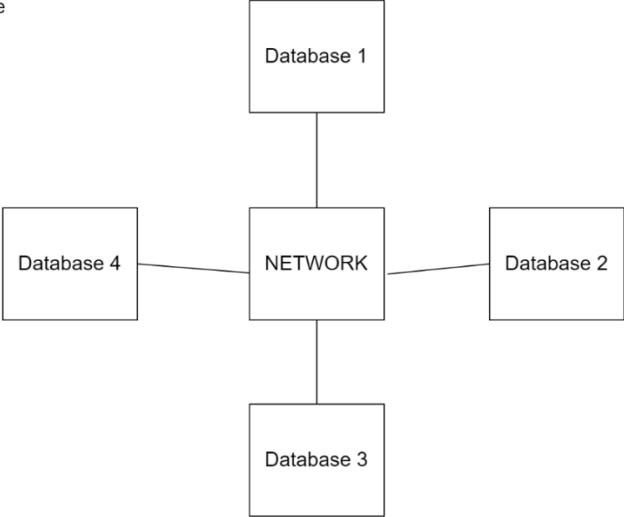
c	i	estimation times - The term “time estimation” refers to the assessment of the number of hours needed to complete a task, or a series of tasks. This process is very important to determine the current progress of the project and the overall duration, to calculate costs and resources needed.	2	4
	ii	resources required - Project resources are components that are necessary for successful project implementation. They include people, equipment, money, time, knowledge – basically, anything the project may require from the planning stage to its delivery.	2	
d		Air traffic control systems, process control systems, autonomous driving systems, etc... <i>Any other relevant answer is accepted.</i>		1
e		A project review is a process that a business uses to evaluate the success of a particular project. Task duration (actual vs projected) and task representation (using a Gantt Chart) are basic tools needed for a sound project review.		2
f	i	testing - The system will eventually be deployed in a live environment, and therefore, assurances must be made regarding the delivered functionality. Therefore, testing must be made to assure conformance with stakeholder requirements. These tests can use various techniques such as Black Box Testing etc...		1
	ii	retirement stage - At some point, any deployed system will become one of the following: uneconomical to maintain; obsolete; or unrepairable. Project management includes an anticipated information system phase-out.		1
	iii	maintenance - During its operating life, the system may have to be upgraded because of changing requirements such as an increase in the number of customers or employees, a change in the policies of the company or newer technology.		1
	iv	feasibility study - This study would determine whether it is worth proceeding from a number of aspects (e.g., technical and legal study).		1
			Total:	15
4	a	One of the differences is access time with solid state storage being inherently faster than magnetic since it doesn't include any mechanical parts. Another difference is size with solid state since it occupies less volume and weighs less.		2
	b	Read-only memory, or ROM, is a type of computer storage containing non-volatile, permanent data that, normally, can only be read, not written to.		1
	c	Primary memory is the computer's main memory and stores data temporarily as long as the computer system is connected to power. Random access memory (RAM), may include graphic card memory and cache memory amongst others. Secondary storage - Non-volatile media that could store data without always being connected to power. Secondary storage may include hard disk drives (HDDs), solid-state drives (SSDs), optical disks, USB flash drives, or other devices.		2
	d	VR enhances the gaming experience, including increased realism, enhanced interactivity, and improved social interaction. VR technology can also improve the sense of presence, allowing a more immersive experience for the students.		2
	e	Haptics devices change the way people experience content and interact with peripherals. Some examples of key benefits include enhanced accuracy, superior user-satisfaction, and faster response times. Because users get sensational feedback in real-time, they react quicker.		2

f	i	A projector is an output device that can take image data from any digital source and project them onto any surface in magnified form.		2	
	ii	Aspect ratio is the proportional relationship between the width of an image compared to its height. It is usually expressed as width:height (separated by a colon), such as 16:9 or 4:3.		1	
	iii	An inkjet printer prints documents or photos by spraying droplets of ink onto paper. A laser printer uses a laser to form a pattern of electrostatically charged dots on a light-sensitive drum, which attract toner (or dry ink powder).		2	
	iv	Print resolution measures the maximum number of dots a printer deposits in one square inch of your final printed image. This measurement is often referred to as dots per inch (DPI).		1	
Total:				15	
Section B					
1	a	Subdivided by function involves grouping employees to work on a specific function, e.g. HR, RND, etc. By product if producing a particular product, e.g. having a department producing a particular product and by project if working on specific projects, e.g. having teams working on different projects.	1 mark for each definition 1 mark for each example	6	
	b	i	Verbal Written Visual	1 mark each for any two	2
	ii	Verbal Advantages <ul style="list-style-type: none"> • Direct medium • Physical proximity (close to each other) • Instant interchange of opinions • Instant feedback • Easier to convince or persuade • Participation of all present Verbal Disadvantages <ul style="list-style-type: none"> • Difficult to hold ground in face of opposition • Groups of people are difficult to control • Quality of decision making maybe inferior • Often no written record • Disputes can arise Written Advantages <ul style="list-style-type: none"> • Provides written record • Hence, evidence of dispatch/receipt • Can relay complex ideas • Provides analysis, evaluation, summary • Can be duplicated • Can confirm, interpret or clarify verbal communication Written Disadvantages <ul style="list-style-type: none"> • Takes time • Can be expensive • More formal and impersonal • Can give rise to problems of interpretation • Difficult to modify once sent • Exchange of views not immediately possible 	1 mark for each advantage 1 mark for each disadvantage	4	

		<p>Visual Advantages</p> <ul style="list-style-type: none"> Reinforces oral communication Added visual stimuli Simplifies written and spoken word Quantifies ideas in number form Provides simulations of situations <p>Visual Disadvantages</p> <ul style="list-style-type: none"> Difficulties in interpretation without written and spoken word Skills in comprehension and interpretation are a prerequisite Can be expensive 			
c	i	Email. Blogs. Web conferencing. Chatting. Social networks.	1 mark each for any two	2	
	ii	Email: sending/receiving messages via internet; blogs: web logs (online diary); web conferencing: conducting a meeting/session using audio visual tools; chatting: sending short messages using any of the available platforms; social networks: posting comments on one of the various platforms.	1 mark for each description ½ mark for each example	3	
d		eCommerce is buying and selling over the internet whilst eBusiness is all business conducted online (hence includes eCommerce).		1	
e		<p>eCommerce advantage:</p> <ul style="list-style-type: none"> Shopping from comfort of own home (benefit to customer) Shopping open 24x7 (customer + business) No need of real shop (business) Less overheads (business) <p>eCommerce disadvantage:</p> <ul style="list-style-type: none"> Item might be different from what it looks like on screen (customer) Problem with sizes (customer) Fraud (customer + business) Postal charges (customer + business) 	1 mark for advantage 1 mark for disadvantage	2	
			Total:	20	
2	a	Big Data: data which is retrieved from a variety of sources, e.g. transactions, customer databases, mobile apps, etc.	1 1	2	
	b	Reduce energy consumption (smart lighting/heating/cooling). Waste management (iBins). Smart farming (sensors for humidity, temperature). Pollution control (smart detectors for leaks of dangerous gases). Fleet management (choosing best paths to reduce fuel consumption).	1 mark each for any two	2	
	c	i	RSI. Headaches. Obesity. Musculo-skeletal. Stress. Sleep issues.	1 mark each for any two	2
		ii	Frequent breaks. Adequate lighting. Posture. Office chair.	1 mark each for any two	2
	d	A special website which brings together a number of services, e.g. servizz.gov.mt; myhealth.gov.mt	1 1	2	
	e	Login to gov portal to access the required services.		1	
	f	Better customer service, customer retention, increased sales, detailed analytics, higher efficiency, managed communications, centralized information.	1 mark each for any two	2	

	g	Ability of a computer or a machine to do things like a human (or any similar definition).		1	
	h	Siri assistant (smart phone), Cortana (windows), Bixby(Samsung), self-driving cars, finance investing platforms, health, google, hopper (travel), Meta.	1 mark each for any two	2	
	i	Online support, chat bots, chats, FAQs, manuals.	1 mark each for any two	2	
	j	Advantage: learn at your own pace, cost effective, personalized, better retention. Disadvantage: no human contact, cheating, requires an internet connection, self-motivation, theory based.	1 mark for any advantage 1 mark for any disadvantage	2	
Total:				20	
Section C					
C1	a	<pre> <html> <head> <title>Gamers</title> <style> p{ color:red; text-decoration:underline; } </style> </head> <body> Click Here </body> </html> </pre>	1 mark for each solved error	5	
	b	<pre> </pre>	1 mark for the proper usage of the tag. 1 mark for the proper folder path.	2	
	c	<pre> <style> font-weight: bold; </style> </pre>	2	2	
	d	<pre> Simulators Indie Survival </pre>	1 mark for the proper usage of the tag 1 mark for the proper usage of the tag.	2	
	e	i	Cascade style sheets (CSS) is a stylesheet language which allows web designers to format web page appearance. The CSS is read by the browser which in turn displays the web page as intended by the designer.	1	1
		ii	It would be ideal for Pam to use an external CSS sheet, so that Pam can enforce the same set of rules across multiple web pages.	2	2
	f	<ol style="list-style-type: none"> Sitemaps help in understanding the structure of your website. Helps search engine to index your website. <p><i>Any other correct answer apart from the listed answers here may be considered.</i></p>	1 1	2	
	g	i	<ol style="list-style-type: none"> Name: Presence check Surname: Presence check E-mail: Presence and format check 	½ mark for each field	2

		4. Comments: Presence check			
	ii	A presence check is necessary for all the fields, because empty fields should not be accepted on this form. Furthermore, a format check on the email field is necessary to ensure that any email address is entered in an acceptable format.	1 mark for each field justification	2	
			Total:	20	
2	a	Software refers to a set of instructions or programs that run on a computer device in order to perform a function.	1	1	
	b	Trevor would analyse the cost of the software to check whether it fits within his budget or not. <i>Any other correct answer apart from the listed answers here may be considered.</i>	1	1	
	b	Open source programs; Proprietary software.	1 1	2	
	c	i	1. System software is software that is designed to manage and control computer hardware and provides a service to other high-level software. 2. Application software is software that helps to perform specific tasks for users.	1 1	2
		ii	1. General purpose software; 2. Operating systems	1 1	2
	d	Allows software to be used on multiple platforms e.g. different operating systems Allows software to work on different hardware. <i>Any other correct answer apart from the listed answers here may be considered.</i>	1 1	2	
			Total:	10	
3	a	Access Time: In centralised databases data access can be quite high especially if there is a large amount of users or distance. Access time for decentralised databases can be significantly less, as the whole database can be fractured to be more efficient in terms of user needs and location. Efficiency: In terms of efficiency decentralised databases are less efficient as data might be distributed across multiple locations, which might lead to slower queries. Cost: In terms of cost, centralised databases can sometimes be more expensive as they might require an expensive dedicated server. Decentralised databases might use multiple less expensive hardware which can cost much less than a single server. However, cost can vary greatly according to design needs and specifications. Control: In a centralised database, all data is stored in a single location generally called a server, which is controlled by a single entity. In the decentralised approach the data is scattered across multiple network nodes and thus no single entity has full control of the entire database. <i>Any other correct answer apart from the listed answers here may be considered.</i>	1 1 1 1	4	

<p>b</p>	<p>Centralised Database</p>  <p>Decentralised Database</p> 	<p>1 1</p>	<p>2</p>
<p>c</p>	<p>A database is a collection of data which is organised in such a way that it can be easily manipulated, retrieved and accessed. A database management system (DBMS) is the software that is used to manage and manipulate the data in the database.</p>	<p>1 1</p>	<p>2</p>
<p>d</p>	<p>The main roles of a database administrator include:</p> <ol style="list-style-type: none"> 1) Design of the database itself; 2) Management of data security. <p><i>Any other correct answer apart from the listed answers here may be considered.</i></p>	<p>1 1</p>	<p>2</p>
<p>Total:</p>		<p>10</p>	