



INFORMATION TECHNOLOGY P2

GRADE 12

JUNE 2019

MARKS: 150

EXAMINER(S): R. PILLAY

TIME: 3 hours

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This question paper consists of 13 pages

INSTRUCTIONS AND INFORMATION

1. This question paper consists of SIX sections:

Section A:	Short questions	(15)
Section B:	System Technologies	(27)
Section C:	Communication and Network Technologies	(25)
Section D:	Data and Information Management	(24)
Section E:	Solution Development	(29)
Section F:	Integrated Scenario	(30)

2. Read ALL the questions carefully.
3. Answer ALL the questions.

SECTION A: SHORT QUESTIONS**QUESTION 1**

- 1.1 Various options are provided as possible answers to the following questions. Choose the answer and **write only the letter (A to D) next to the question numbers (1.1.1 to 1.1.3 and 1.2.1 to 1.2.2)** in the **ANSWER BOOK, e.g. 1.1.4 D.**
- 1.1.1 When a signal is intercepted from a cable allowing someone to gain unauthorised access to the data being relayed.
- A. Attenuation
 - B. EMI
 - C. Eavesdropping
 - D. Spyware
- (1)
- 1.1.2 Expansion slot in the Motherboard used for Dedicated Graphics Cards.
- A. DIMM
 - B. PCIx
 - C. USB
 - D. ZIF
- (1)
- 1.1.3 A protocol used for the fast, easy transfer of large files between remote computers that have a network connection.
- A. File Transfer Protocol
 - B. Hyper Text Transfer Protocol
 - C. Simple Mail Transfer Protocol
 - D. Internet Protocol
- (1)
- 1.1.4 Programming languages that rely on extensive pre-written libraries to execute complex instructions with just a few lines of code.
- A. Binary
 - B. Low Level Programming Language
 - C. Assembly Language
 - D. High Level Programming language
- (1)

- 1.1.5 The ability of an operating system to allow programs to split themselves into multiple tasks that can be run at the same time.
- A. Multithreading
 - B. Multitasking
 - C. Multiprocessing
 - D. Dual core
- (1)
- 1.1.6 Hardware/Software which controls which applications have network access.
- A. Firewall
 - B. NIC
 - C. Windows 8
 - D. Network Operating system
- (1)
- 1.1.7 Cracker who does not write their own malicious code but uses somebody else's code to launch a cyber-attack.
- A. Zombie
 - B. Botnet
 - C. Script Kiddie
 - D. Trojan Horse
- (1)
- 1.1.8 Compressing data without losing any portion of the data. It allows the exact original data to be reconstructed.
- A. Lossy compression
 - B. Archiving
 - C. Lossless compression
 - D. .zar
- (1)
- 1.1.9 Collection of programs designed to use administrator rights provided by the Operating System to gain control of a computer for malicious purposes
- A. Trojan Horse
 - B. Malware
 - C. Rootkit
 - D. Spyware
- (1)
- 1.1.10 The concept that more and more devices/objects are being connected to the Internet with the ability to communicate with other devices/objects and to take 'intelligent' decisions based on the input received.
- A. Global village
 - B. The internet of things
 - C. Digital divide
 - D. Network
- (1)

SUBTOTAL [10]

1.2 Give ONE word/term for each of the following descriptions. Write only the word/term next to the question numbers (1.2.1 to 1.2.10) in the ANSWER BOOK.

- 1.2.1 An electronic signature used to identify and validate the sender of an electronic message. (1)
- 1.2.2 Any permanent high speed, high bandwidth connection to the internet. (1)
- 1.2.3 The type of memory that stores the BIOS settings that can be updated or changed. (1)
- 1.2.4 Data capture technology using smart tags / labels which are captured wirelessly using radio waves when the tag comes near a receiver. (1)
- 1.2.5 An Intellectual Property license that allows you to use parts of the content and distribute it for non-profit purposes. (1)

TOTAL SECTION A: 15

SECTION B: SYSTEM TECHNOLOGIES

QUESTION 2:

Big Concerts is South Africa's premier live entertainment promoter. The company has approached the IT learners at your school to help their company under go changes in different departments.

2.1 Read the specification below and answer the questions that follow:



BIG CONCERTS COMPUTER

SPECS

Dell Desktops
OptiPlex 3050
Intel Core i5 7th Gen 7500
(3.4ghz)
8 GB DDR4 RAM
500 HDD
Intel HD Graphics 630
Windows 10 Pro

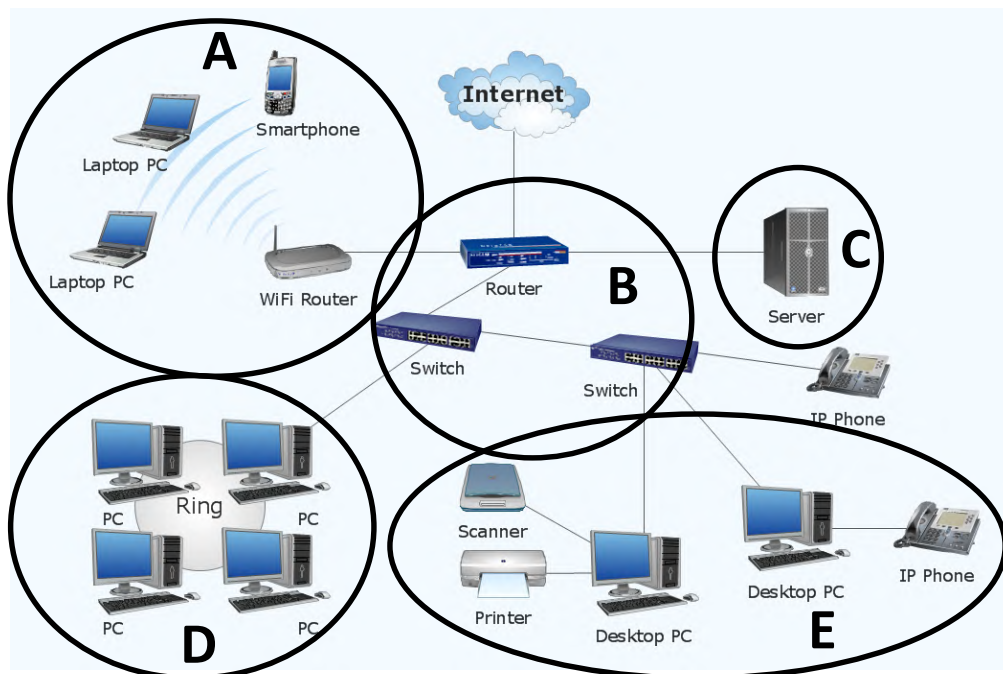
- 2.1.1 Name the operating system provided with the advertised system. (1)
- 2.1.2 Refer to “**8 GB DDR4 RAM**”
- Discuss the function of RAM in a computer system (2)
 - State **ONE** difference between RAM and storage. (2)
 - What effect would installing a 32bit version of an Operating System (for example Windows 7 Starter) have on the general performance of the PC? (2)
- 2.1.3 Which **TWO** aspects of a CPU influence the performance of a computer? (2)
- 2.1.4 Explain how CPU caching improves the performance of a computer system. (2)
- 2.2 **The company is looking for new mobile technology to add to the technology currently being utilized at concerts.**
- 2.2.1 What does the term ‘**always on**’ refer to? (1)
- 2.2.2 State **ONE** advantage and **ONE** disadvantage of mobile technology. (2)
- 2.2.3 “**Mobile operating systems have limitations**”
Do you agree with the statement? Justify your answer. (3)
- 2.3 ***All applications used on the desktop at each venue will be cloud applications.***
- 2.3.1 How does a cloud application differ from a local application? (2)
- 2.3.2 Define the term **SaaS**. (2)
- The company requires all data of concert goes to be accessible at any time on any one of these desktop computers.***
- 2.3.3 Would a **file syncing service** or **back up service** be most appropriate in this situation? Justify your answer and provide an example. (3)
- 2.3.4 Discuss the term ‘**Scalability**’ . (1)
- 2.3.5 Give **TWO** potential risks of using cloud computing. (2)

TOTAL SECTION B: 27

SECTION C: COMMUNICATION AND NETWORK TECHNOLOGIES

QUESTION 3:

*The network diagram below shows the network layout of devices linked to the **BIG CONCERTS** network.*



3.1 Identify **THREE essential** hardware requirements when setting up a network. (3)

3.2 Describe **TWO** characteristics of ADSL (2)

3.3 Differentiate between a router and switch by making specific reference to their specific functions in a network. (2)

3.4 From the diagram above, refer to section labelled A.

a) What type of network is this? (1)

b) Give **ONE advantage** and **ONE disadvantage** of this network. (2)

c) Would you recommend a **Wi-Fi** or **WiMAX** connection in this situation? Justify your answer. (2)

3.5 From the diagram above, refer to sections labelled **B**, **E** and **D**

State whether UTP or Fibre Optic cables would be most suitable and provide **ONE** reason each:

a) **within** sections **B**, **E** and **D**

b) **between** sections **B**, **E** and **D** (4)

3.6 **User rights is an important aspect of sharing data over any network.**

3.6.1 How would a standard user differ from an administrator on a network? (2)

3.6.2 Discuss the scope of the following permissions:

- a) Read
- b) Execute (2)

3.7 **The manager needs to be able to help with software problems at any venue throughout the country, while at his office base in Cape Town.**

a) Explain the term “**Remote Access**’ (1)

b) Discuss the differences between remotely controlling a computer with software and using a VPN. (2)

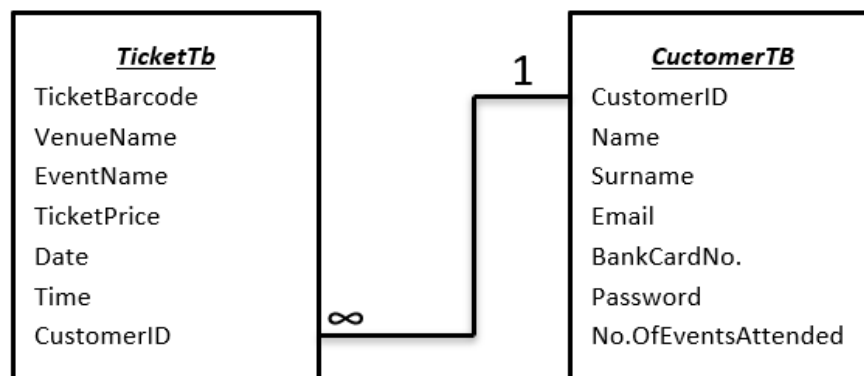
c) Describe **ONE** advantage and **ONE** disadvantage of using a VPN. (2)

TOTAL SECTION C: 25

SECTION D: DATA AND INFORMATION MANAGEMENT

QUESTION 4:

The tables shown below represent data stored about customers and the tickets they purchase for different events.



- 4.1.1 Explain what a primary key is. (1)
- 4.1.2 Suggest a field from TicketTb which could be set as its Primary Key. (1)
- 4.2 Transaction processing can be used to maintain data integrity. (2)
- Define the term **data integrity**. (2)
 - Explain what physical integrity refers to and give **ONE** example. (2)
 - Name and explain **ONE** anomaly that can occur during manipulation of a database. (2)
 - Briefly explain what a transaction processing system is. (2)
 - Discuss what it means to 'Roll Back' a transaction/s and why this might be necessary. (3)
- 4.3 Refer to the tables above and complete the SQL questions that follow:
- 4.3.1 Write an SQL to display all Tickets that cost more than R1000 (4)
- 4.3.2 Assume the user has input their CustomerID and it has been stored in a variable called sID.
Write an SQL to display the customerID, the number of events they have purchased tickets for, the name of the event, and the date attended (or will attend the event) that matches the entered CustomerID. (7)

TOTAL SECTION D: 24

SECTION E: SOLUTION DEVELOPMENT**QUESTION 5:**

5.1

5.1.1 What term is used when joining string values? (1)

5.1.2 Explain the term Modular Programming. (1)

5.1.3 List **TWO** advantages of using modular programming techniques (2)5.1.4 Name **THREE** types of programming errors that can occur and give an example of each one. (3)

5.1.5 Evaluate the structures that follow and give a reason for the use of EACH in a Delphi program:

a) FormShow event (1)

b) Repeat until instead of a for loop (2)

c) StringReplace(sValue, ' a ', ' * ', [rfReplaceAll, rflIgnoreCase]) (4)

5.2 **With the rise of identity theft, a validity check of the tickets will be done at the entrance of every venue. When the barcode on a ticket is scanned the customer ID and associated customer data will appear on the system.**

Answer the question that follows to perform the validity check.

5.2.1 Write Delphi code to check if the ticket barcode scanned matches the bankcard the customer will provide.

NOTE:

ONLY use the COPY() method when manipulating parts of the string variables mentioned below.

Variables to be used:

<i>Variable name</i>	<i>Data type</i>	<i>Description</i>
sTicketBCEnt	String	<i>Ticket Barcode</i> scanned at <i>entrance</i>
sBankCdEnt	String	<i>Bankcard number</i> given at <i>entrance</i>
sBankCdDB	String	<i>Bankcard number</i> from the <i>database</i>
sCvvEnt	String	<i>CVV number</i> on bankcard given at <i>entrance</i>
sCvvDB	String	<i>CVV number</i> from the <i>database</i>

- a) Check 1:
- The **7th** and **8th digits** of the ***ticket barcode scanned at the entrance*** must match the **2nd** and **3rd digits** of the ***bankcard number given at the entrance***
 - **AND** the **digits** of the ***bankcard number given at the entrance must match the bankcard number*** stored in the database.
- b) Check 2:
- ***If check 1 is successful***, a check must be done to validate if the ***CVV number on bankcard given at the entrance*** matches the ***CVV number retrieved from the database***.
- c) If ***check 1 is unsuccessful***
or
check 1 is successful and ***check 2 is unsuccessful***,
- The customer cannot be permitted entrance to the concert.***
- d) **If check 1 and check 2 are successful**, the customer is permitted to enter the concert.
- e) Display appropriate messages where necessary.

(15)
SECTION E TOTAL: 29

SECTION F: INTEGRATED SCENARIO**QUESTION 6:**

6.1 **Big concerts have had many cyberattacks recently.**

6.1.1 Differentiate between a hacker and cracker. (2)

6.1.2 What is spam and why is it considered a problem? (2)

6.1.3 Discuss **TWO** examples of cyber related theft. (2)

6.1.4 Describe **ONE** effect that Identity Theft could have on an individual. (1)

6.2 **The company has formulated a plan to upgrade equipment every 10 years.**

6.2.1 Do you think an upgrade once every 10 years is a good plan for this company? Justify your answer. (2)

6.2.2 List **TWO** reasons why is it also important to keep software up to date? (2)

6.2.3 Give **ONE** example of software that needs to be updated regularly. (1)

6.3 **With the update of equipment comes the disposal of old equipment**

6.3.1 Briefly explain what e-waste is and give **ONE** example. (2)

6.3.2 Give **ONE** reason why e-waste can be regarded as dangerous to the environment. (1)

6.4 Customers have been receiving the following email



Dear Customer,

Please send us your card details as we seem to be having a problem with your ticket information. If you fail to do so, you will not be able to enter the venue on the specified concert date.

Follow the link below to send us this much needed information.

<http://big+concertsportal.com/mail/u/0/?tab=wm#search/big+concerts/FMfcgxwBVqVlhHrcgfmBnkFmcfGqLcM?compose=ClIgCJfrLKBfhgSkDcBbKXxlgJRTVZTD>

Thank you.

Regards.

BIG Concerts Co.

- 6.4.1 Explain the difference between phishing and pharming. (2)
- 6.4.2 Discuss **TWO** indications that the email above might be a phishing attack. (2)
- 6.4.3 State **ONE** way for a user to verify the authenticity of this email. (1)
- 6.4.4 Name **TWO** items found on a digital certificate. (2)
- 6.5 **Videos of previous concerts are being sold online on the BIG Concert website. The company has had an extremely high demand for these videos and customers are complaining of slow download speeds and site crashes. The company would like to make use of BitTorrent technology to solve this problem.**
- 6.5.1 Explain what a BitTorrent is and how it would solve the problem explained above. (2)
- 6.5.2 State **ONE** risk involved in using BitTorrents (1)
- 6.5.3 Give one example of software that can be used to access torrents (1)
- 6.6 **Big concerts offer WiFi hotspots at venues to encourage concert goers to make video calls, post on social media and create vodcasts of the aspects of the concert they most enjoyed. The video also automatically geotags the location of where the vodcast was taken.**
- 6.6.1 What protocol allows for voice calling or video calling to take place? (1)
- 6.6.2 Do you think that one Wi-Fi hotspot is sufficient to allow customers to perform all tasks mentioned above? Give a reason for your answer. (2)
- 6.6.3 What technology allow the videos to automatically include the location the video was taken. (1)

SECTION F TOTAL: 30

TOTAL : 150

**GRADE 12 PAPER 2 JUNE 2019
MEMO**

SECTION A: SHORT QUESTIONS

QUESTION 1

1.1	Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A to D) next to the question numbers (1.1.1 to 1.1.3 and 1.2.1 to 1.2.2) in the ANSWER BOOK, e.g. 1.1.4 D.	
1.1.1	<p>When a signal is detected on a cable allowing someone to gain access to data.</p> <p>A. Attenuation B. EMI C. Eavesdropping D. Spyware</p>	(1)
1.1.2	<p>Expansion slot in the Motherboard used for Dedicated Graphics Cards.</p> <p>A. DIMM B. PCIx C. USB D. ZIF</p>	(1)
1.1.3	<p>A protocol used for the fast, easy transfer of large files between remote computers that have an internet connection.</p> <p>A. File Transfer Protocol B. Hyper Text Transfer Protocol C. Simple Mail Transfer Protocol D. Internet Protocol</p>	(1)
1.1.4	<p>Programming languages that rely on extensive pre-written libraries to execute complex instructions with just a few lines of code.</p> <p>A. Binary B. Low Level Programming Language C. Assembly Language D. High Level Programming language</p>	(1)

1.1.5	<p>The ability of an operation system to allow programs to split themselves into multiple tasks that can be run at the same time.</p> <p>A. Multithreading B. Multitasking C. Multiprocessing D. Dual core</p>	(1)
1.1.6	<p>Hardware/Software which controls which applications have network access.</p> <p>A. Firewall B. NIC C. Windows 8 D. Network Operating system</p>	(1)
1.1.7	<p>Cracker who does not write their own malicious code but uses somebody else's code to launch a cyber-attack.</p> <p>A. Zombie B. Botnet C. Script Kiddie D. Trojan Horse</p>	(1)
1.1.8	<p>Compressing data without losing any portion of the data. It allows the exact original data to be reconstructed.</p> <p>A. Lossy compression B. Archiving C. Lossless compression D. .zar</p>	(1)
1.1.9	<p>Collection of programs designed to use administrator rights provided by the Operating System to gain control of a computer for malicious purposes</p> <p>A. Trojan Horse B. Malware C. Rootkit D. Spyware</p>	(1)
1.1.10	<p>The concept that more and more devices/objects are being connected to the internet with the ability to communicate with other devices/objects and to take 'intelligent' decisions based on the input received.</p> <p>A. Global village B. The internet of things C. Digital divide D. Networks</p>	(1)

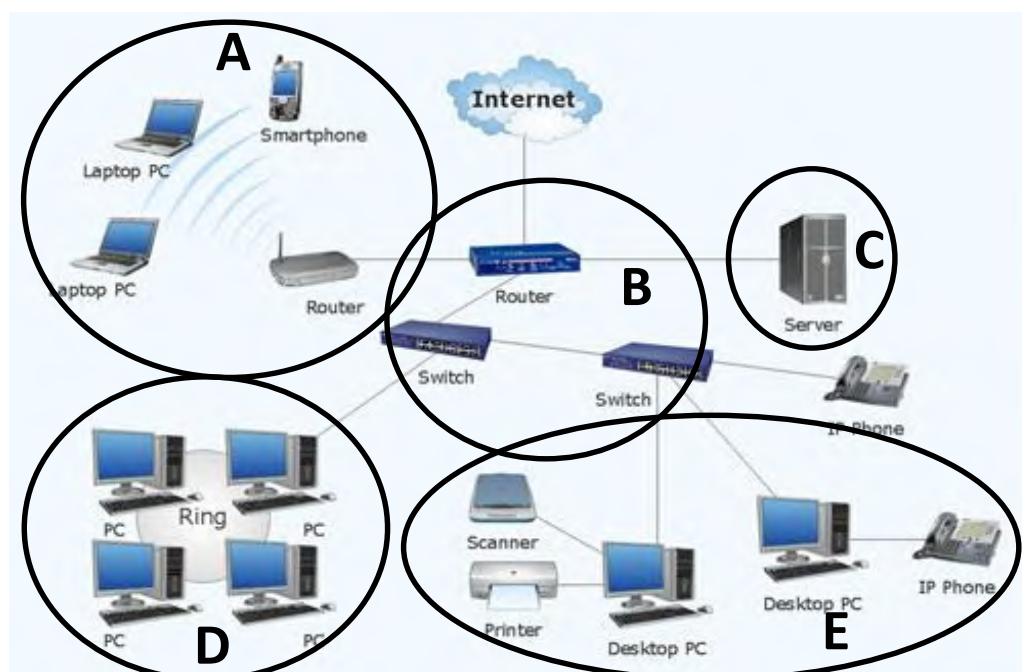
1.2	Give ONE word/term for each of the following descriptions. Write only the word/term next to the question numbers (1.2.1 to 1.2.10) in the ANSWER BOOK.	(1)										
1.2.1	An electronic signature used to identify and validate the sender of an electronic message. Digital signature	(1)										
1.2.2	Any permanent high speed, high bandwidth connection to the internet. broadband	(1)										
1.2.3	The type of memory that stores the BIOS settings that can be updated or changed. CMOS	(1)										
1.2.4	Data capture technology using smart tags / labels which are captured wirelessly using radio waves when the tag comes near a receiver. RFID	(1)										
1.2.5	An Intellectual Property license that allows you to use parts of the content and distribute it for non-profit purposes. Creative commons	(1)										
	TOTAL SECTION A:	15										
SECTION B: SYSTEM TECHNOLOGIES												
QUESTION 2:												
2.1	Read the advert below and answer the questions that follow:											
2.1.1	Name the operating system listed above. Windows 10 PRO✓	(1)										
2.1.2												
	a. Discuss the function of RAM in a computer system All data/instructions are/have to be loaded into RAM ✓before the CPU can work with them.✓ Or To hold what the computer is currently working with	(2)										
	b. State ONE difference between RAM and storage.	(2)										
	<table><tr><td>RAM</td><td>Storage</td></tr><tr><td>Volatile✓</td><td>Non-volatile✓</td></tr><tr><td>Electroic/fast</td><td>Slower</td></tr><tr><td>Expensive</td><td>Cheaper</td></tr><tr><td>limited</td><td>mechanical</td></tr></table>	RAM	Storage	Volatile✓	Non-volatile✓	Electroic/fast	Slower	Expensive	Cheaper	limited	mechanical	
RAM	Storage											
Volatile✓	Non-volatile✓											
Electroic/fast	Slower											
Expensive	Cheaper											
limited	mechanical											

	c. What effect would installing a 32bit version of an Operating System (for example Windows 7 Starter) have on the general performance of the PC?	(2)
	A 32 bit operating system can only use/see 4 GB RAM/memory✓. To use more RAM a 64 bit is used.✓	
2.1.3	Which TWO aspects of a CPU influence the performance of a computer?	(2)
	Speed✓ Number of cores✓	
2.1.4	Explain how CPU caching improves the performance of a computer system.	(2)
	Cache memory stores recently/frequently✓ accessed data/instructions on a faster media✓ so they can be accessed faster	
2.2	The company is looking for new mobile technology to add to the technology currently being utilized at concerts.	
2.2.1	What does the term 'always on' refer to?	(1)
	Mobile technology is never off, it is always working in the background✓	
2.2.2	State ONE advantage and ONE disadvantage of mobile technology.	(2)
	Advantages: <ul style="list-style-type: none"> • Always on✓ • Always connected • Powerful • Convergent • Mobile/wearable <p><u>(any 1 advantage one mark each)</u></p> Disadvantages <ul style="list-style-type: none"> • Limited battery life✓ • Speed or availability of communication • Size <p><u>(any 1 disadvantage one mark each)</u></p>	
2.2.3	Mobile operating systems are known to have limitations	
	Do you agree with the statement? Justify your answer.	(3)
	Yes✓, standard webpages cannot be viewed, battery life is limited✓✓ Any suitable reason (2 marks)	
2.3	All applications used on the desktop at each venue will be cloud applications.	

2.3.1	How does a cloud application differ from a local application?	(2)
	A cloud application is not installed on your local drive, all processing is done on the cloud. Internet is needed. ✓ A local application is installed on your local storage space of your computer. Internet may not be necessary ✓	
2.3.2	Define the term SaaS .	(2)
	Renting software ✓ instead of buying a license to use it forever ✓	
2.3.3		
	Would a file syncing service or back up service be most appropriate in this situation? Justify your answer and provide an example.	(3)
	File syncing ✓, stores or share files to access from multiple devices ✓ e.g. drop box/ google drive/ one drive ✓ (any 1, one mark)	
2.3.4	Discuss the term ' Scalability '.	(1)
	The ability to increase or decrease in size/ power of resources according to the need of the user ✓	
2.3.5	Give TWO potential risks of using cloud computing.	(2)
	<ul style="list-style-type: none"> • The service is trusted to stay in business ✓ • Needs to follow good security policies ✓ • Follow good backup practices • Cannot not over sell their services (any 2 one mark each)	
	TOTAL SECTION B:	27

SECTION C: COMMUNICATION AND NETWORK TECHNOLOGIES

QUESTION 3:



3.1	Identify THREE essential hardware requirements when setting up a network.	(3)
	<p>Network interface controller✓ Switch✓ Cables✓ Wireless base stations</p> <p>(any 3 one mark each)</p>	
3.2	Describe TWO characteristics of ADSL	(2)
	<ul style="list-style-type: none"> - Permanent digital connection to the internet using a telephone line✓ - Different packages from different service providers✓ - Download speeds are faster than upload speeds - Different bandwidth speeds available - Can be used for small or large networks <p>(any 2 one mark each)</p>	
3.3	Differentiate between a router and switch by making specific reference to their specific functions in a network.	(2)
	<p>Router makes communication between networks over the internet by directing data to its correct destination✓</p> <p>A switch is used to connect computers on a network to a central location so communication can occur ✓</p> <p>or</p> <p>directs traffic between devices connected to the network</p>	

3.4	From the diagram above, refer to section labelled A.	
	a) What type of network is this?	(1)
	WLAN✓	
	b) Give ONE advantage and ONE disadvantage of this network.	(2)
	<p>Advantages</p> <ul style="list-style-type: none"> - Many users can connect at once✓ - No wired connection necessary <p>(any 1 one mark)</p> <p>Disadvantages</p> <ul style="list-style-type: none"> - Many users can cause slow data transfer rates✓ - May not be secure - Data transfer rates are slower over a wireless connection <p>(any 1 one mark)</p>	
	c) Would you recommend a Wi-Fi or WiMAX connection in this situation? Justify your answer.	(2)
	<p>Recommendation: Wi-Fi✓</p> <p>Reason: WiMAX covers a distance in kms and the distance in the diagram is much smaller with few devices✓</p>	
3.5	<p>From the diagram above, refer to sections labelled B, E and D</p> <p>State whether UTP or Fibre Optic cables would be most suitable and provide ONE reasons each:</p> <p>a) within sections B,E and D:</p> <p>UTP✓, can be used short distances ✓</p> <p>or</p> <p>, is not damaged when folded to fit in cramped areas</p> <p>b) between sections B,E and D:</p> <p>fibre optic✓, can be used over larger distances without attenuation ✓</p> <p>or</p> <p>, is damaged when folded to fit in cramped areas</p>	(4)
3.6	User rights is an important aspect of sharing data over any network.	
3.6.1	How would a standard user differ from an administrator on a network?	(2)
	<p>Administrator- have full control over the system✓</p> <p>Standard user- allowed to access own data and only what they have been granted access to.✓</p>	

3.6.2	Discuss the scope of the following permissions: a) Read – allows user to only read/copy files/folders✓ b) Execute – allows user to view / access/ run/ execute program files✓	(2)
3.7	The manager needs to be able to help with software problems at any venue throughout the country, while at his office base in Cape Town.	
	a) Explain the term “ Remote Access ’	(1)
	Gain access/ control over a device from a remote location via the internet	
	b) Discuss the differences between remotely controlling a computer with software and using a VPN.	(2)
	Remote control- installing software on devices to allow you to view the screen and control the keyboard and mouse of a target computer remotely✓ VPN-creates a secure encryption connection between your computer on the target network to access resources✓	
	Describe ONE advantage and ONE disadvantage of using a VPN. Disadvantages -you have to log in to access resources/have to have access the network to access resources✓ -the connection provided remotely must be secure Advantages - all resources connected to the network can be utilised over a VPN connection✓ - all communication can be routed through the remote network	(2)
	total	25

SECTION D: DATA AND INFORMATION MANAGEMENT

QUESTION 4:

<fill in scenario>

	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p style="text-align: center;"><u>TicketTb</u></p> <p>TicketBarcode</p> <p>VenueName</p> <p>EventName</p> <p>TicketPrice</p> <p>Date</p> <p>Time</p> <p>CustomerID</p> </div> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p style="text-align: center;"><u>CustomerTB</u></p> <p>CustomerID</p> <p>Name</p> <p>Surname</p> <p>Email</p> <p>BankCardNo.</p> <p>Password</p> <p>No.OfEventsAttended</p> </div> </div>	
4.1.1	With aid of the TicketTb table, explain what a primary key is.	(1)
	TicketBarcode refers to a unique way to ✓identify information associated with each ticket bought.✓	
4.1.2	Suggest a field from TicketTb which could be set as its Primary Key.	(1)
	TicketBarcode	
4.2	Transaction processing can be used to maintain data integrity.	
	<p>a) Define the term data integrity</p> <p>Monitoring the accuracy ✓and consistency of data stored in a database✓</p>	(2)
	<p>b) Explain what physical integrity refers to and give ONE example.</p> <p>Deals with physical storage and retrieval of data✓ e.g. UPS/RAID✓ or overcoming physical issues e.g. power failure/ mechanical failure/ natural disasters</p>	(2)
	<p>c) Name and explain ONE anomaly that can occur during manipulation of a database.</p> <p>Insert anomaly ✓- when the design of the database prevents a user from capturing data they want to✓ or Delete anomaly – when deleting one piece of data leads to simultaneous removal of other unrelated data. or Update anomaly – when an item of data changes and has to be altered in multiple records in a table</p>	(2)

	<p>d) Briefly explain what a transaction processing system is.</p> <p>Software system that captures and processes data ✓from everyday business activities.✓</p>	(2)
	<p>e) Discuss what it means to 'Roll Back' a transaction/s and why this might be necessary.</p> <p>If something goes wrong with a transaction, some transactions will be completed if possible ✓but when errors occur when others are attempted the transaction processing DBMS rolls back all ✓of the transactions of the group including the successful ones to its original state✓</p>	(3)
4.3	Refer to the tables above and complete the SQL questions that follow:	
4.3.1	Write an SQL to display all Tickets that cost more than R1000	(4)
	SELECT *✓ FROM TicketTb ✓WHERE TicketPrice > 1000✓✓	
4.3.2	<p>Assume the user has input their CustomerID and it has been stored in a variable called sID.</p> <p>Write an SQL to display the customerID, the number of events they have purchased tickets for, the name of the event, and the date attended (or will attend the event) that matches the entered CustomerID.</p>	(7)
	<p>SELECT CustomerID, NoOFEventsAttended, EventName, Date✓✓</p> <p>FROM TicketTb✓, CustomerTb✓</p> <p>WHERE CustomerTb.CustomerID = TicketTb.CustomerID✓✓</p> <p>AND CustomerID = ' " + sID + " ' ;✓</p>	
	TOTAL SECTION D:	24

SECTION E: SOLUTION DEVELOPMENT**QUESTION 5:**

5.1		
5.1.1	What term is used to explain the joining is string values?	(1)
	Concatenate/ concatenation✓	
5.1.2	Explain the term Modular Programming.	(1)
	The use of methods/modules to solve and break up sections of a program.	
5.1.3	List TWO advantages of using modular programming techniques	(2)
	<ul style="list-style-type: none"> - Makes reading and debugging easier✓ - Allows reuse of code✓ - Allows collaboration <p>(any 2 one mark each)</p>	
5.1.4	Name THREE types of programming errors that can occur and give an example of each one.	(3)
	<ul style="list-style-type: none"> - Runtime - Syntax - logical 	
5.1.5	Evaluate the structures that follow and give a reason for the use of EACH in a Delphi program:	
	a) FormShow event	(1)
	A method/procedure that activates containing code when the form shows for the first time✓	
	b) Repeat until instead of a for loop	(2)
	When the number of times to run a loop is unknown✓✓ or Only stops the loop if a condition is true or false	
	c) StringReplace(sValue, 'a ', ' * ', [rfReplaceAll, rflgnoreCase])	(4)
	Replaces all occurrences of uppercase or lower case✓ 'a'✓ with a ' * '✓ ✓in the string sValue✓	

5.2	<p>With the rise of identity theft, a validity check of the tickets will be done at the entrance of every venue. When the barcode on a ticket is scanned the customer ID and associated customer data will appear on the system.</p> <p><i>Answer the question that follows to perform the validity check.</i></p>																			
5.2.1	<p>Write Delphi code to check if the ticket barcode scanned matches the bankcard the customer will provide.</p> <p style="text-align: center;"><u>NOTE:</u></p> <p><u>ONLY</u> use the COPY() method when manipulating parts of the string variables mentioned below.</p>																			
	<p>Variables to be used:</p> <table border="1"> <thead> <tr> <th>Variable name</th><th>Data type</th><th>Description</th></tr> </thead> <tbody> <tr> <td>sTicketBCEnt</td><td>String</td><td><i>Ticket Barcode</i> scanned at <i>entrance</i></td></tr> <tr> <td>sBankCdEnt</td><td>String</td><td><i>Bankcard number</i> given at <i>entrance</i></td></tr> <tr> <td>sBankCdDB</td><td>String</td><td><i>Bankcard number</i> from the <i>database</i></td></tr> <tr> <td>sCvvEnt</td><td>String</td><td><i>CVV number</i> on bankcard given at <i>entrance</i></td></tr> <tr> <td>sCvvDB</td><td>String</td><td><i>CVV number</i> from the <i>database</i></td></tr> </tbody> </table> <p>a) Check 1:</p> <ul style="list-style-type: none"> - The <i>7th</i> and <i>8th</i> <i>digits</i> of the <i>ticket barcode scanned at the entrance</i> must match the <i>2nd</i> and <i>3rd</i> <i>digits</i> of the <i>bankcard number given at the entrance</i> - <i>AND</i> the <i>digits</i> of the <i>bankcard number given at the entrance</i> must match the <i>bankcard number</i> stored in the database. 	Variable name	Data type	Description	sTicketBCEnt	String	<i>Ticket Barcode</i> scanned at <i>entrance</i>	sBankCdEnt	String	<i>Bankcard number</i> given at <i>entrance</i>	sBankCdDB	String	<i>Bankcard number</i> from the <i>database</i>	sCvvEnt	String	<i>CVV number</i> on bankcard given at <i>entrance</i>	sCvvDB	String	<i>CVV number</i> from the <i>database</i>	
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	<p>b) Check 2:</p> <ul style="list-style-type: none"> - <i>If check 1 is successful</i>, a check must be done to validate if the <i>CVV number on bankcard given at the entrance</i> matches the <i>CVV number retrieved from the database</i>. 																			
	<p>c) If <i>check 1</i> is <i>unsuccessful</i> or <i>check 1</i> is <i>successful</i> and <i>check 2</i> is <i>unsuccessful</i>,</p> <p><i>The customer cannot be permitted entrance to the concert.</i></p>																			
	<p>d) If <i>check 1</i> and <i>check 2</i> are <i>successful</i>, the customer is permitted to enter the concert.</p>																			
	<p>e) Display appropriate messages where necessary.</p>																			

	<p><u>ANSWER:</u></p> <p>✓If (Copy✓ (sTicketBCEnt,7✓,2)✓ =✓ Copy(sBankCDEnt,2,2)✓✓) AND✓ (sBankCDEnt = sBankCDDDB✓) then Begin If sCvvEnt = sCvvDB ✓then Showmessage('Customer permitted entrance');✓ Else✓ Showmessage('Invalid Cvv number! Customer NOT permitted Entrance!');✓ End Else✓ Showmessage('Invlid Car details!, Customer NOT permitted entrance!');✓</p>	(15)
	SECTION E TOTAL:	29
SECTION F: INTEGRATED SCENARIO		
QUESTION 6:		
6.1	Big concerts has many cybercrimes occurring of late.	
6.1.1	Differentiate between a hacker and cracker.	(2)
	<p>Hacker- general term used for any person who uses ICT skills to access computer systems, networks and information illegally✓ Cracker- term no longer in general use, refers to a bad hacker who does illegal things such as stealing or making unauthorised changes to data✓</p>	
6.1.2	What is spam and why is it considered a problem?	(2)
	<p>Spam can be used to spread malware such as viruses or spyware ✓and clogs the internet with unnecessary traffic✓</p>	

6.1.3	Discuss TWO examples of cyber related theft.	(2)
	<ul style="list-style-type: none"> - theft of physical computer equipment✓ - theft of intellectual property✓ - identity theft - theft for financial gain - theft of data/ espionage - theft of resources <p>(any 2 one mark each)</p>	
6.1.4	Describe ONE effect that Identity Theft could have on an individual.	(1)
	<ul style="list-style-type: none"> - we become careful of where we go or what we do✓ - we are suspicious or wary of payment mechanisms - we spend more time and money on steps to make us safe - decreased discretionary spending - decreased productivity - increased social stratification - develops a culture of fear and suspicion <p>(any 1 one mark each)</p>	
6.2	The company has formulated a plan to update equipment every 10 years.	
6.2.1	Do you think an upgrade once every 10 years is a good plan for this company? Justify your answer.	(2)
	<p>yes✓, technology is constantly changing and should be updated regularly✓</p> <p>or</p> <p>no✓, technology should be upgrade in plus minus 5 years not 10✓</p> <p>Any suitable answer</p>	
6.2.2	List TWO reasons why is it also important to keep software up to date?	(2)
	<ul style="list-style-type: none"> - bug fixes - new features or improvements - close security loops holes 	
6.2.3	Give ONE example of software that needs to be updated regularly.	(1)
	Antivirus ✓	

6.3	With the update of equipment comes the disposal of old equipment	
6.3.1	Briefly explain what e-waste is and give ONE example.	(2)
	Anything electronic or related to electronics that is thrown away✓	
6.3.2	Give ONE reason why e-waste can be regarded as dangerous to the environment.	(1)
	many of the materials that go into making electronic devices are toxic or carcinogenic or both.✓ (any appropriate answer)	
6.4	<p>Customers have been receiving the following email</p> <div data-bbox="692 828 900 1037" data-label="Image"> </div> <p>Dear Customer,</p> <p>Please send us your card details as we seem to be having a problem with your ticket information. If you fail to do so, you will not be able to enter the venue on the specified concert date.</p> <p>Follow the link below to send us this much needed information.</p> <p>http://big+concertsportal.com/mail/u/0/?tab=wm#search/big+concerts/FMfcgxwBVqVlhbHrcgfmBnkFmcfGqLCM?compose=CllgCJfrLKBfhgSkDcBbKXxlJRTVZTD</p> <p>Thank you.</p> <p>Regards.</p> <p>BIG Concerts Co.</p>	
6.4.1	Explain the difference between phishing and pharming.	(2)
	<p>Phishing- an identity theft scam where the users computer is infiltrated so they are automatically redirected to another fake website✓</p> <p>Pharming-attempts from people generally employing email to direct other people to fake websites where they are tricked into releasing personal information.✓</p>	

6.4.2	Discuss TWO indications that the email above might be a phishing attack.	(2)
	<ul style="list-style-type: none"> - asking for card details is inappropriate in an email✓ - the link is not secure/ does not contain https✓ 	
6.4.3	State ONE way for a user to verify the authenticity of this email.	(1)
	https in the address bar or padlock ✓	
6.4.4	Name TWO items found on a digital certificate.	(2)
	<ul style="list-style-type: none"> - owners public key✓ - owners name✓ - expiration date of the public key - name of the issuer - serial number of the digital certificate - digital signature of the issuer <p>(any 2 one mark each)</p>	
6.5	Videos of previous concerts are being sold online on the BIG Concert website. The company has had an extremely high demand for these videos and customers are complaining of slow download speeds and site crashes. The company would like to make use of BitTorrent technology to solve this problem.	
6.5.1	Explain what a BitTorrent is and how it would solve the problem explained above.	(2)
	<p>BitTorrent is a peer-to-peer protocol used to transfer and share larger files across a network.✓</p> <p>Solves problem by allowing parts of the files being downloaded will be accessed from different computers✓ therefore decreasing data traffic and allowing for faster download speeds✓</p>	
6.5.2	State ONE risk involved in using BitTorrent's	(1)
	<ul style="list-style-type: none"> - file could be infected✓ - torrenting is only legal if you have a license to use the software✓ - no technology to monitor or restrict activity <p>(any 1 one mark)</p>	
6.5.3	Give one example of software users can use to access torrents	(1)
	uTorrent✓	

6.6	Big concerts offer WiFi hotspots at venues to encourage concert goers to make video calls, post on social media and create vodcasts of the aspects of the concert they most enjoyed. The video also automatically geotags the location of where the vodcast was taken.	
6.6.1	What protocol allows for voice calling or video calling to take place?	(1)
	VOIP✓	
6.6.2	Do you think that one Wifi hotspot is sufficient to allow customers to perform all tasks mentioned above? Give a reason for your answer.	(2)
	no✓, the data traffic will be too high causing slow download and upload speeds✓	
6.6.3	What technology allow the videos to automatically include the location the video was taken.	(1)
	GPS location services✓	
SECTION F TOTAL:		30

TOTAL 150