



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

INFORMATION TECHNOLOGY P2

2019

MARKS: 150

TIME: 3 hours

This question paper consists of 14 pages.



INSTRUCTIONS AND INFORMATION

1. This question paper consists of SIX sections as follows:



SECTION A: Short Questions	(15)
SECTION B: System Technologies	(25)
SECTION C: Communication and Network Technologies	(24)
SECTION D: Data and Information Management	(26)
SECTION E: Solution Development	(24)
SECTION F: Integrated Scenario	(36)

2. Read ALL the questions carefully.
3. Answer ALL the questions.
4. The mark allocation generally gives an indication of the number of facts/ reasons required.
5. Number the answers correctly according to the numbering system used in this question paper.
6. Write neatly and legibly.



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–D) next to the question numbers (1.1.1 to 1.1.5) in the ANSWER BOOK, e.g. 1.1.6 D.

1.1.1 A document that sets out the rights and responsibilities of users in a network environment is called a/an ...

- A firewall restrictions document.
- B access restrictions document.
- C server software policy.
- D AUP.

(1)

1.1.2 A common compression standard used for website images:

- A BMP
- B JPEG
- C MPEG-4
- D MPEG-2

(1)

1.1.3 The technique whereby identical copies of data are kept on a storage device:

- A Disk imaging
- B Distributing
- C Mirroring
- D Partitioning

(1)

1.1.4 The following algorithm for an IF statement needs to be tested:

<pre>IF Number > 5 AND Number < 10 Then Display Number</pre>
--

In order to test this algorithm, the **best** set of test data for the variable **Number** would be ...

- A 2, 6, 10, 14, 15.
- B 3, 4, 5, 6, 10.
- C 4, 5, 6, 10, 11.
- D 3, 4, 5, 10, 11.

(2)

1.1.5 The correct Delphi statement to test if the content of the variable **cChr** is in the range of characters 'A' to 'D' (inclusive):

- A `if (cChr > 'A') AND (cChr < 'D')`
- B `if (not (cChr < 'A')) AND (not (cChr > 'D'))`
- C `if (cChr >= 'A') OR (cChr <= 'D')`
- D `if (cChr = 'A') AND (cChr = 'B')`
`AND (cChr = 'C') AND (cChr = 'D')`

(2)

1.2 Give ONE word/term for each of the following descriptions. Write only the word/term next to the question numbers (1.3.1 to 1.3.8) in the ANSWER BOOK.



- 1.2.1 The action of conning or tricking a person into providing personal information, such as passwords, willingly (1)
- 1.2.2 A digital audio or video file or recording that can be downloaded from a website to a portable media player or computer (1)
- 1.2.3 A method of gaining illegal access to a computer system by bypassing normal computer authentication systems (1)
- 1.2.4 Records that are created to keep track of who made changes to a database and when the changes were made (1)
- 1.2.5 A peer-to-peer protocol which is used for sharing large files across a network such as the internet (1)
- 1.2.6 The web version that allows consumers of content to also become creators of content (1)
- 1.2.7 An electronic device in a computer system that issues a steady high-frequency signal that synchronises all the internal components (1)
- 1.2.8 The use of an unprotected Wi-Fi connection without the permission and knowledge of the owner (1)

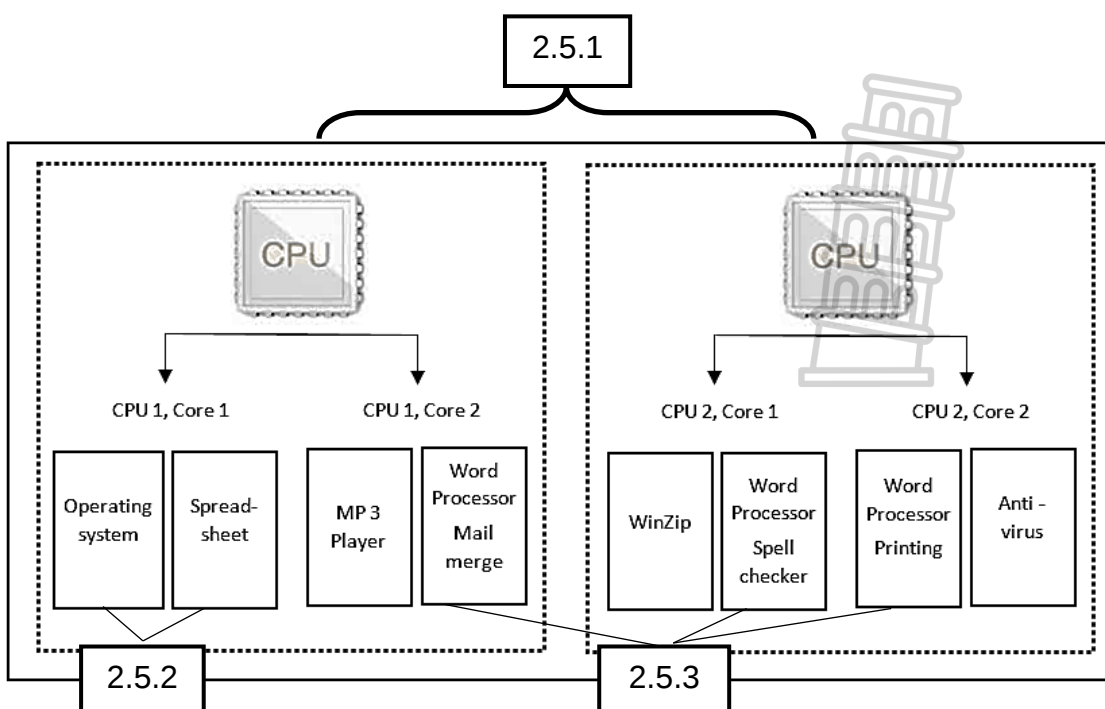
TOTAL SECTION A: 15



SECTION B: SYSTEM TECHNOLOGIES

QUESTION 2

- 2.1 State TWO main functions of a motherboard. (2)
- 2.2 What is the main difference between a *bus* and a *point-to-point connection*? (2)
- 2.3 Expansion slots are used to add components to a computer system.
- 2.3.1 State ONE type of controller card that can be connected through an expansion slot. (1)
- 2.3.2 Name ONE port that is commonly used to connect a wide variety of devices to a computer system. (1)
- 2.4 The configuration settings of the BIOS can be changed during the start-up process of a computer system.
- 2.4.1 Where will the changes made to the configuration settings of the BIOS be saved? (1)
- 2.4.2 Why don't the changes made to the configuration settings get lost when the computer is switched off and unplugged? (1)
- 2.5 Multitasking, multiprocessing and multithreading are processing techniques that are used by operating systems.



2.6 Define the following terms:

2.6.1 Cache memory (2)

2.6.2 Hardware interrupt (1)

2.7 Use an example to explain why plug-in software, such as Flash or QuickTime, is sometimes required by your browser to access certain websites. (2)

2.8 2.8.1 Write out the acronym *POS*. (1)

2.8.2 State TWO benefits of using barcodes with barcode scanners in a POS system. (2)

2.9 Scalability is one of the features of a cloud-based service, which ensures stability when a service, such as hosting a blog on a site, is rendered.

Define the term *scalability* in a cloud-based computing environment. (2)

2.10 2.10.1 Give TWO reasons why the software needs to be updated regularly. (2)

2.10.2 State TWO advantages of software updates that are managed by a service provider for a company that uses cloud-based computing services. (2)

TOTAL SECTION B: 25



SECTION C: COMMUNICATION AND NETWORK TECHNOLOGIES

QUESTION 3

- 3.1 Explain the function of a network switch. (2)
- 3.2 State the common use/purpose of EACH of the following technologies:
- 3.2.1 Wi-Fi (1)
- 3.2.2 Bluetooth (1)
- 3.2.3 3G (1)
- 3.3 An Ethernet network was set up with star topology to connect four computers.
- 3.3.1 Name TWO types of cables that are commonly used in an Ethernet network. (2)
- 3.3.2 Draw a diagram to illustrate the layout of a star topology network for the four computers. Use labels to show the components the network will consist of. (3)
- 3.4 State TWO disadvantages of using a peer-to-peer network. (2)
- 3.5 3.5.1 Explain what is meant by the term *encryption*. (2)
- 3.5.2 Give ONE reason why services, such as Skype, use encryption processes. (1)
- 3.5.3 Encryption software is often used to control access to media files to prevent unauthorised copying of digital books or movies.
- What is this category of encryption software called? (1)
- 3.6 The two main components of an expert system are the knowledge base and the inference/decision engine.
- 3.6.1 Briefly describe how the inference/decision engine functions. (3)
- 3.6.2 What does the term *fuzzy logic* refer to? (1)
- 3.7 What is meant by the term *distributed computing*? (2)
- 3.8 What is the JavaScript programming language used for? (2)

TOTAL SECTION C: 24

SECTION D: DATA AND INFORMATION MANAGEMENT

QUESTION 4

The information for a large international company is stored in a database.

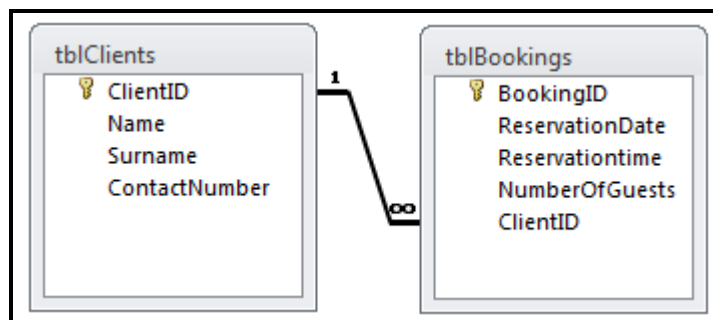
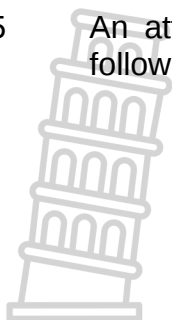
- 4.1 A data capturer captures all organisational data.
- 4.1.1 Explain what the *GIGO principle* is. (2)
- 4.1.2 Name TWO types of checks to ensure that the captured data is valid. (2)
- 4.1.3 What does the concept *logical integrity of data* refer to in general? (1)
- 4.2 The company runs a DBMS (database management system) on their server.
- 4.2.1 Explain how SQL injection can be used in a poorly designed DBMS to gain unauthorised access to data. (2)
- 4.2.2 What is *record locking* in the context of a DBMS? (2)
- 4.3 A distributed database server is used at the company.
- 4.3.1 Explain what a *distributed database system* is. (2)
- 4.3.2 State TWO situations where a single-server database will not be able to operate efficiently and the use of a distributed database becomes necessary. (2)
- 4.4 Clients must make reservations to use the company's dining facilities.

A database with the table **tblBookings** is used to save information about clients attending a restaurant daily.

Field Name	Data Type
BookingID	AutoNumber
Name	Text
Surname	Text
ContactNumber	Number
ReservationDate	Date/Time
Reservationtime	Date/Time
NumberOfGuests	Number

- 4.4.1 Differentiate between the **Number** and **AutoNumber** data types. (2)
- 4.4.2 The data type of one of the fields shown in the diagram above is not suitable for its purpose.
Name the field and motivate a more suitable alternative data type. (3)
- 4.4.3 Give ONE reason why it is good practice to limit the length of a text field. (1)

- 4.5 An attempt has been made to normalise the table **tblBookings** using the following table structure:



4.5.1 Explain the term *normalisation*. (2)

4.5.2 State the type of relationship that exists between the **ClientID** fields in the **tblClients** table and the **tblBookings** table. (1)

4.5.3 The following message is displayed when an attempt is made to delete a record from the **tblClients** table:



(a) Explain how the rule related to referential integrity has been violated. (2)

(b) What needs to be done before the record can be deleted successfully from the **tblClients** table? (1)

4.5.4 If the **BookingID** field is removed from the **tblBookings** table, a combination of the **ClientID**, **ReservationDate** and **ReservationTime** fields can be used to form a unique key.

What is this type of key called? (1)

TOTAL SECTION D: 26



SECTION E: SOLUTION DEVELOPMENT

QUESTION 5

5.1 Software that is designed goes through multiple development stages.

5.1.1 Complete the statement:

Software development entails the processes of analysis, design, development, implementation and ... (1)

5.1.2 Name ONE visual tool (diagram) that can be used for design purposes. (1)

5.1.3 The *Repeat...until* and *While...do* loops are both conditional loops.

Write down which loop structure (*Repeat...until*/*While...do*) would be more suitable for EACH of the following purposes:

(a) A loop that must be executed at least once (1)

(b) A loop that must check a condition before execution (1)

5.1.4 What type of error (syntax, logical or runtime) occurred if the following result is obtained when code is compiled or executed?

(a) Division by zero (1)

(b) When the output of a calculated value is incorrect (1)

5.2 The form below was designed to be used for online registration on a website.

5.2.1 Comment on the layout of the GUI by analysing the placement of any TWO components on the form. (2)

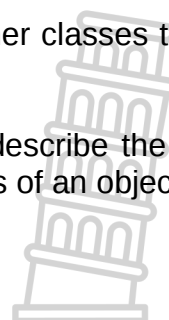
5.2.2 Identify ONE component on the form that should be replaced with a component that is more suitable for its purpose. Suggest a more suitable component to use instead. (2)

- 5.3 An object-orientated software program was developed to manage bookings at the company restaurant. The **TBooking** class was designed, as shown below.



TBooking
Attributes
-ReservationNumber -ClientID -ReservationDate -ReservationTime -NumberOfGuests -AmountSpent
Methods
+Create() +setAmountSpent(amount) +getClientID() +getReservationNumber() +getAmountSpent()

- 5.3.1 Name TWO types of methods that can be used to **change the value** of a private attribute of an object. (2)
- 5.3.2 The **Create** method will be used to instantiate the **Booking** object.
- What is the general term used in OOP to refer to a method that instantiates an object? (1)
- 5.3.3 Name the standard method used in OOP to return a description of the attributes of an object as a string. (1)
- 5.3.4 All the attributes in the **TBooking** class are declared as private.
- (a) Explain how private attributes affect other classes that use the **TBooking** class. (1)
- (b) Write down the term used in OOP to describe the concept of enforcing private access to the attributes of an object. (1)



5.4 The lowest common multiple (LCM) of any two numbers is the smallest number that both numbers can divide into without a remainder.



5.4.1 The following algorithm determines the LCM of the number 3 and the number 4:

Line number	Statement
1	Biggest $\leftarrow$ 4
2	Smallest $\leftarrow$ 3
3	Counter $\leftarrow$ 0
4	Repeat
5	Increase Counter
6	Multiple $\leftarrow$ Smallest x Counter
7	Until remainder of (Biggest / Counter) = 0
8	Display Multiple

Copy the trace table provided below into your ANSWER BOOK and complete the table by tracing through the given algorithm.

NOTE: Add more lines to the table as required.

Line number	Biggest	Smallest	Counter	Multiple	Remainder of Biggest / Counter = 0?	Output
1,2,3	4	3	0			
5			1			

(6)

5.4.2 (a) The algorithm can be improved by changing ONE of the statements, which will cause the loop to be executed one less time without affecting the result.

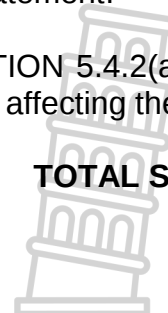
Identify and write down the improved statement.

(1)

(b) Explain why your suggestion in QUESTION 5.4.2(a) will result in one less repetition of the loop without affecting the result.

(1)

TOTAL SECTION E: 24



SECTION F: INTEGRATED SCENARIO

QUESTION 6

The school's technology centre has been upgraded and now includes a LAN and a hotspot. Users of the technology centre will have access to the internet and be able to print documentation on research that has been done. The technology centre uses an electronic database to record and issue all stock, e.g. stationery, cartridges and paper.

- 6.1 A biometric access system has been installed for access control at the technology centre.
- 6.1.1 Define the term *biometric*. (2)
- 6.1.2 State TWO possible biometric properties that could be used for access control at the centre. (2)
- 6.2 Many learners bring their mobile devices to school to use the hotspot at school.
- 6.2.1 State ONE disadvantage of using a hotspot. (1)
- 6.2.2 Give TWO reasons why many well-known websites have specifically developed apps that can be used on mobile devices. (2)
- 6.2.3 State TWO advantages of allowing the use of mobile devices at school in terms of teaching and learning. (2)
- 6.2.4 Learners often use the hotspot to listen to music.
- Give TWO reasons why learners would prefer to stream music instead of downloading it. (2)
- 6.2.5 Learners are encouraged to use a media repository.
- Explain what a *media repository* is. (2)
- 6.3 The DVDs that the learners can borrow from the technology centre are fitted with RFID tags.
- 6.3.1 Write out the acronym *RFID*. (1)
- 6.3.2 State TWO advantages of using RFID tags on items in the technology centre. (2)
- 6.4 The school website has a link to a blog for the community project. The blog is maintained by the chairperson of the project and is entitled 'Community service – 67 minutes for Mandela Day'.
- 6.4.1 What is a *blog*? (2)
- 6.4.2 Name ONE advantage for the project team that might be gained by users contributing to the blog. (1)

6.5 The networking of computers can have a negative impact on our lives in some instances.



6.5.1 A hacker stole a large amount of money from the bank account of one of the teachers.

State ONE general precaution that both the teacher and the bank could have taken to minimise the risk of exposure to hacking. (2)

6.5.2 Some schools block learners' access to Facebook and other social websites on the school's network.

Give ONE reason why you agree with this practice, or not. (1)

6.6 Transaction processing is used in the technology centre for the issuing of stock.

Briefly explain how transaction processing ensures that data integrity is maintained. (3)

6.7 State TWO advantages for learners who use online storage services, such as Dropbox. (2)

6.8 State ONE advantage of using remote desktop software. (1)

6.9 Name ONE task performed by EACH of the following role players who assisted with upgrading the LAN in the technology centre:

6.9.1 PC technician (1)

6.9.2 Network administrator (1)

6.10 They consider the use of a robot for cleaning the technology centre.

Besides wheels, a CPU and software, state ONE component that will be essential for a robot to be able **to navigate** as it cleans the floor. (1)

6.11 Learners often conduct searches on the internet as part of research for school projects.

6.11.1 State ONE distinctive characteristic of EACH of the following types of search processes:

(a) Mediated search (1)

(b) Semantic search (1)

6.11.2 What is a *sponsored link*? (1)

6.11.3 Briefly explain what *click farms* are and how they can negatively affect the quality of results produced via search engines. (2)

TOTAL SECTION F: 36
GRAND TOTAL: 150



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MARKING GUIDELINES

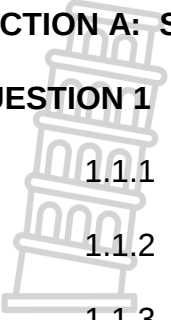
MARKS: 150

These marking guidelines consist of 14 pages.



SECTION A: SHORT QUESTIONS

QUESTION 1

- 
- | | | | |
|-----|-------|---|-----|
| 1.1 | 1.1.1 | D ✓ | (1) |
| | 1.1.2 | B ✓ | (1) |
| | 1.1.3 | C ✓ | (1) |
| | 1.1.4 | C ✓✓ | (2) |
| | 1.1.5 | B ✓✓ | (2) |
| 1.2 | 1.2.1 | Social engineering/ Social manipulation/ Phishing/ Pharming/ Spoofing ✓ | (1) |
| | 1.2.2 | Podcast/ Vodcast/ MP3/ MP4✓ | (1) |
| | 1.2.3 | Hacking/ Cracking / Back door accessing ✓ | (1) |
| | 1.2.4 | Audit trail ✓ | (1) |
| | 1.2.5 | BitTorrent/ torrent ✓ | (1) |
| | 1.2.6 | Web 2.0 ✓ | (1) |
| | 1.2.7 | System clock / clock ✓ | (1) |
| | 1.2.8 | Piggybacking ✓ | (1) |

TOTAL SECTION A: 15



SECTION B: SYSTEMS TECHNOLOGIES

QUESTION 2

- 2.1 Any TWO functions of a motherboard: ✓✓
- Provides connectors to allow other circuits (CPU, RAM etc.) to connect to it/houses components.
 - Ensures that all components of the computer can communicate with one another
 - Distributes power to the parts that connect to it
- (2)
- 2.2 A point-to-point connection is dedicated. ✓✓ This means that the wires or paths used to transfer data are not shared between multiple components. The wires or paths in a bus are shared between components.
- (2)
- 2.3 2.3.1 Any ONE of: ✓
- Video cards
 - Network cards
 - Modems
 - Sound cards
 - RAID card
- (1)
- 2.3.2 USB ✓
- (1)
- 2.4 2.4.1 CMOS memory ✓
- (1)
- 2.4.2 The battery ✓ on the motherboard keeps the CMOS from losing its data.
- (1)
- 2.5 2.5.1 Multiprocessing ✓
- (1)
- 2.5.2 Multitasking ✓
- (1)
- 2.5.3 Multithreading ✓
- (1)
- 2.6 2.6.1 Cache uses a limited amount of faster media✓ to speed up access to data and instructions stored on a slower media✓
- OR
- Cache temporarily stores recently/frequently accessed data and instructions on a faster medium
- OR
- A limited amount of fast memory used to speed up access to data and instructions stored on a slower medium
- OR
- Predicts the instructions to be loaded next.
- Concepts:
- Faster access/high speed memory
 - temporary storage of data and instructions frequently used
- (2)

2.6.2 A hardware interrupt is a means/method/signal whereby a device can indicate that it needs attention from the CPU. ✓ (1)

2.7 Any ONE ✓✓

They add extra features to browser to be able to view multimedia – e.g. in a web browser they are needed to allow the user to view 'special' effects.

OR

This has become necessary as more and more multimedia (a combination of text, pictures, sound and video) is added to the web which might not be supported by the browser.

Concepts:

- website contains specific types of multimedia
- browser needs plug-in to view/play media (2)

2.8 2.8.1 Point of sale ✓ (1)

2.8.2 Any TWO benefits of using barcodes in POS systems: ✓✓

- Faster and more efficient for capturing prices.
- More accurate/prevents errors in the capture of prices that occur when people type in the prices.
- Business does not need to do individual pricing.
- Reference to updating stock
- Prevents tampering of prices on items (2)

2.9 The ability to increase and decrease resources (size and power) ✓ quickly and efficiently based on the changing requirements. ✓

Concepts:

- Increase/decrease
- Changing needs (2)

2.10 2.10.1 Any TWO of: ✓✓

- Fix known bugs in programs
- Fix security loopholes
- Add new functions and features
- Improved performance
- Reference to malware

2.10.2 Any TWO of: ✓✓

- The company does not have to check for and install updates/ updates are done automatically
- All users get the updates at the same time
- Do not use local resources. (2)

TOTAL SECTION B: 25

SECTION C: COMMUNICATION AND NETWORK TECHNOLOGIES

QUESTION 3

- 3.1 The switch connects computers to one another ✓ and determines the destination of each network signal it receives, and forwards this signal to that destination. ✓

Concepts:

- Connecting computers
- Directing signals

(2)

- 3.2 3.2.1 Wi-Fi – connect to a LAN/HAN/ PAN
Reference to a small network ✓

(1)

- 3.2.2 Bluetooth – file transfer ✓ / send files between laptop and cell phone
OR
to connect compatible devices over short distances
OR
A suitable example to illustrate Bluetooth

(1)

- 3.2.3 *Any one* ✓
3G – use of cellular or mobile data/ use a 3G modem to access an ISP for Internet and e-mail activities when physically away from a wired network or Wi-Fi hotspot.

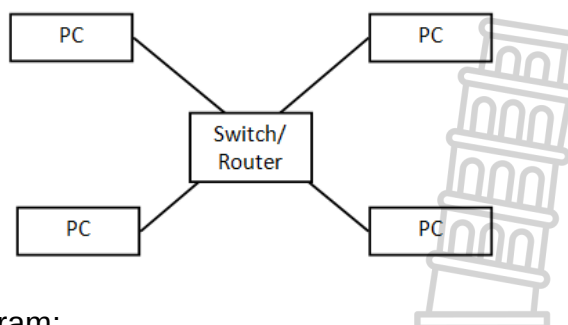
(1)

- 3.3 3.3.1 *Any TWO types of cable* ✓✓

- UTP/STP/Twisted Pair
- Coaxial
- Fibre optic cables

(2)

- 3.3.2



Criteria for diagram:

- All computers ✓
- a switch ✓
- showing the connections to the switch ✓

(3)

- 3.4 *Any TWO disadvantages of peer-to-peer:* ✓✓

- Less security than a client-server
- Harder to manage than client-server
- Not suitable for a large number of node

(2)

- 3.5  3.5.1 The data/text is transformed/ changed into a new unreadable/format ✓ using a specified set of rules/keys. ✓ (2)
- 3.5.2 Any ONE reason: ✓
- Ensure privacy of users
 - To prevent third parties from eavesdropping on the conversation
- (1)
- 3.5.3 Digital Rights Management (DRM) ✓ (1)
- 3.6 3.6.1 The decision engine refers to the program accepting data from the user ✓ looks it up in the knowledge base ✓ and then deduces new facts or follows rules to generate a decision output. ✓
- Concepts:
- Input from user
 - Looks it up in the knowledge base
 - Generates decision
- (3)
- 3.6.2 Fuzzy logic refers to reasoning/decision making that works with probabilities ✓ (1)
- 3.7 Distributed computing is a system whereby the resources of different computers ✓ are shared and used at the same time to solve a single problem ✓. (2)
- 3.8 Java Script is used for automating elements ✓ on web pages. ✓
OR
Java script commands help transform webpages from static to dynamic and interactive. (2)

TOTAL SECTION C: 24



SECTION D: DATA AND INFORMATION MANAGEMENT

QUESTION 4

- 4.1 4.1.1 The relationship between the quality of data entered ✓ and the quality of information that can be extracted. ✓
OR
If the data entered is incorrect, the output produced will also be incorrect.
- NOTE:** No marks for only expanding the abbreviation. (2)
- 4.1.2 Any TWO: ✓✓
- Format check/ Input mask
 - Range check/ Validation rules
 - Data type check
 - Presence check
- (2)
- 4.1.3 Any ONE: ✓
- The correctness of data/free of errors
OR
Data which makes sense in a particular context. (1)
- 4.2 4.2.1 A code injection technique used to attack data-driven applications in which SQL statements ✓ are inserted into an entry/text field ✓ for execution
- Concepts:
Reference to using an SQL statement/command
Action example Inserting, deleting, commanding the database (2)
- 4.2.2 When a record is open for either editing or inserting, the record is flagged to be in use. ✓ That means that no other user can make changes to that specific record. ✓
- Concepts:
• Record in use
• Only 1 person can make changes to the specific record (2)
- 4.3 4.3.1 A distributed database is a system where parts of a database ✓ are spread (distributed) across servers in separate locations. ✓ (2)
- 4.3.2 When the number of connected users becomes too large for a single server to cope with ✓
When a business is spread over a large geographical area ✓ (2)
- 4.4 4.4.1 Number – Any numeric value entered by the user ✓
AutoNumber – A numeric value created by the program in sequence ✓ (2)



4.4.2 Field – ContactNumber ✓
Data type – Text ✓
Motivation – The leading 0 will not be retained ✓ (3)

4.4.3 Any ONE ✓
• To save memory space
• To avoid unnecessary /extra information being entered
• To help ensure that only valid data is captured (1)

4.5 4.5.1 Any TWO ✓✓
• Separate tables
• Relationships using correct primary and foreign keys
• Reduces redundancy
• Limit anomalies (2)

4.5.2 One to many ✓ (1)

4.5.3(a) Parent records in a table cannot be deleted if there is a child record in a related table ✓✓ (2)

4.5.3(b) All records with the respective client number must first be deleted from the **tblBookings** table ✓ (1)

4.5.4 Composite ✓ key
Also accept
Concatenated
Compound (1)

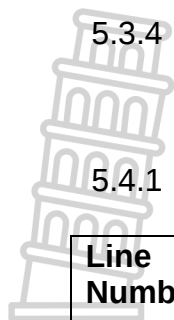
TOTAL SECTION D: 26



SECTION E: SOLUTION DEVELOPMENT

QUESTION 5

- 5.1 5.1.1 Testing ✓ (1)
- 5.1.2 Any ONE ✓
- TOE (Task, Objects, Events) charts
 - IPO
 - UML/ Class diagram
 - ERD
 - Use case diagram/ UCD
 - Flowchart (1)
- 5.1.3 (a) Repeat...Until ✓ (1)
- (b) While...do ✓ (1)
- 5.1.4 (a) Runtime ✓ (1)
- (b) Logical ✓ (1)
- 5.2 5.2.1 Any TWO component's positions ✓✓
- Submit button should be placed at the bottom of the form
 - The label indicating all information is necessary should be at the top of the form
 - The label for the title-label must be to the left of the edit box (*similar to the other labels*)
 - The vertical alignment of the labels relative to the edits differ – Full name-label is bottom aligned; Gender-label is top aligned and the Occupation-label is centre aligned
 - The gender edit field does not require as many characters as a name/some edit fields are too wide/could be confusing (2)
- 5.2.2 Any ONE (Field ✓)(Component✓)
- Title - combo box/list box/radio group
 - Gender - combo box/list box/radio group
 - Occupation - edit box/list box (2)
- 5.3 5.3.1 Mutator/ set method ✓
 Auxiliary ✓ (2)
- 5.3.2 Constructor✓ (1)
- 5.3.3 toString ✓ (1)



5.3.4 (a) The other class will not have direct access ✓ to the attributes (1)

(b) Encapsulation ✓ (1)

5.4 5.4.1

Line Number	Biggest	Smallest	Counter	Multiple	Remainder of Biggest / Counter = 0?	Output
1,2,3	4	3	0			
5			1			
6				3✓		
7					No✓	
5			2✓			
6				6✓		
7					No✓	
5			3✓			
6				9✓		
7					No✓	
5			4✓			
6				12✓		
7					Yes✓	
8						12 ✓

(12/2
=6)

5.4.2(a) Start the counter at the value of 1 ✓ (1)

5.4.2(b) It is not necessary to test 1 as it would not be an LCM ✓/The LCM has to be 2 or more (1)

TOTAL SECTION E: 24



SECTION F: INTEGRATED SCENARIO

QUESTION 6

- 6.1 6.1.1 The measurement and identification ✓ of unique physical characteristics ✓ (2)
- 6.1.2 Any TWO ✓✓
- Finger print
 - Iris scan
 - Face scan
 - Palm scan (2)
- 6.2 6.2.1 Any ONE ✓
- Security/vulnerability
 - Speed of connection when lots of users are connected
 - Often limited to small coverage area (1)
- 6.2.2 Any TWO of: ✓✓
- Interface is easier to navigate and therefore faster to use
 - Have a dedicated purpose/no distraction and loss of focus.
 - Don't have to remember URLs/use menus/bookmarks.
 - Less data transfer needed – interface already installed/saves money and increases speed.
 - Can be set to fetch data in the background/Data on your device can be continually synchronised with online storage in the 'cloud'.
 - Make use of the additional sensors in your mobile device /offers a more integrated experience than a web page (2)
- 6.2.3 Any TWO ✓✓
- Cell phones can be used interactively by in class to do a quick quiz after a concept was discussed
 - Teacher can provide the link to a YouTube video that explains a specific concept that learners need to apply in class e.g. How to declare an array in Delphi.
 - Teacher can set up a discussion group for the duration of the class to encourage learners to investigate and discuss specific topics. Participation is evaluated afterwards and teacher can identify learners who are not participating for remedial action.
 - Any other suitable answer (2)

- 
- 6.2.4
- Can start listening immediately ✓/Do not have to wait for download to finish
 - Does not take up storage space on device ✓/Music is not locally stored (2)
- 6.2.5 Safe online ✓ storage area/site for media files ✓ (2)
- 6.3 6.3.1 Radio Frequency Identification ✓ (1)
- 6.3.2 Any TWO ✓✓
- Easy to stock take
 - Items fitted with RFID tags cannot easily be removed from the centre/Security
 - Scanner can read items from a distance
 - Scanner can read more than 1 item at a time (2)
- 6.4 6.4.1 Websites where an individual/company/organisation can write about their experiences ✓regarding a specific topic which are updated ✓often with events in chronological order.
- Concepts
- Online diary/ refer to experiences
 - Regular updates (2)
- 6.4.2 Any ONE: ✓
- Interaction with users of site
 - The user can receive feedback from others about what the team is doing
 - The blog gives the team an opportunity to make the work known to others
- Also accept any other valid answer. (1)
- 6.5 6.5.1 Two marks allocated as follows:
- if single argument (bank or teacher) with single justification: one mark
 - if arguments both ways with justification: two marks
- Examples:
- The bank should have:**
- Adequate firewall protection
 - Secure procedures (for example, not accepting telephonic instructions to change personal details for a person's bank account)
- 



Teacher should have:

- An updated anti-virus(required by the banks)
- Check that the computer's firewall protection is adequate
- Not done banking while at an Internet café/public free Wi-Fi connection
- Changed logon codes on a regular basis
- Kept the PIN number secret

6.5.2 Accept any well substantiated answer ✓

Yes,

- learners spend too much *work time* on social websites
- the use of school's data is high/learners use up the school's data cap

No

- If the learner needs to download material from their personal account for a school project

(1)

- 6.6
- Transactions that are dependent on one another and are grouped together✓
 - The DBMS will only complete the operation if all the individual transactions are successful✓
 - If only some of the transactions are completed but errors occur the DBMS rolls back/reverses all transactions in the group. ✓

(3)

6.7 Any TWO ✓✓

- Provides limited free storage
- Synchronising of files between devices
- Able to share files with others/collaboration is possible
- Access files anywhere on any device
- Can serve as a backup

(2)

6.8 Any ONE ✓

- Manage/access any computer remotely across a network.
- Can make changes to the data/files directly on the server via the network.
- Changes can be made on any PC from any location on the network.
- Can take control of a learners PC.

(1)



- 6.9 6.9.1 *Any ONE for PC technician ✓*
- Assemble computers/Upgrade the computers
 - Repair hardware/software
 - Lay cables
 - Install new trunking for cabling
 - Install new switches/routers/wireless access points
 - Install/ upgrade software
- (1)
- 6.9.2 *Any ONE for Network administrator ✓*
- Creates and manages accounts/Access control to hardware/ software
 - Implements backup policy
 - Installs and updates software
 - Responsible for network security.
- (1)
- 6.10 *Any ONE ✓*
- Sensors
 - Camera
- (1)
- 6.11 6.11.1(a) Mediated search: ✓
- Uses humans rather than reliance on algorithms.
 - Search engine returns fewer more relevant results
- (1)
- 6.11.1(b) Semantic search: ✓
- Search engine software has the ability to interpret metadata on the web pages
 - Search engine allows navigation without human intervention applying search criteria
 - Automated searches for information
- (1)
- 6.11.2 A paid sponsored link is an advert which is often displayed on the results page ✓ and do not take one to a relevant website or web page.
- (1)
- 6.11.3 Click farms are companies that pay workers to repeatedly click on website elements ✓ to artificially 'increase' or 'boost' the status of a product or web page. ✓
- (2)

TOTAL SECTION F: 36
GRAND TOTAL: 150