education

Department:
Education
PROVINCE OF KWAZULU-NATAL

STANMORE SECONDARY SCHOOL

INFORMATION TECHNOLOGY P2

GRADE 12

JUNE 2022 EXAMINATIONS

MARKS: 80   **TIME: 2 hours**

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This question paper consists of 9 pages including this cover page.

Read the following instructions carefully before answering the questions.

1. This paper consists of _**FIVE**_ questions:

    Question 1: Multiple-choice questions   (10)

    Question 2: System Technologies - Hardware and Software   (20)

    Question 3: Communication and Network Technologies   (25)

    Question 4: Data and Information Management   (10)

    Question 5: Solution Development   (15)

                                                                                              [80]

2. Answer ALL the questions.

3. Read ALL the questions carefully before answering.

4. Number the answers correctly according to the numbering system used in this question paper.

5. Write neatly and legibly.

6. Write on both sides of the answer booklet.

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. to1.1.5) in the answer book, e.g. 1.1.6 D

1.1.1 ... is a wireless technology that allows devices to communicate wirelessly over short distances, typically 10m or less.
A WAN
B Bluetooth
C Wi-Fi
D GPRS (1)

1.1.2 A ... is a small text file used to store customised settings for a website on your local computer.
A Log file
B CSV file
C blockchain
D cookie (1)

1.1.3 Determine the value of **sWord** if the following code was executed

```
sText := 'abcdefghijklmnopqrstuvwxyz';
sWord := '';
for I := length(sText) downto 1 do
begin
    if I mod 5 = 0 then
    begin
        sWord := sWord + sText[I];
    end;
end;
```

A zxvtrpnljhfdb
B ytoj
C afkpty
D ytoje (2)

1.1.4 To establish a relationship between two tables in a database, a link must be made from the . . .
A public key to the private key
B foreign key to the private key
C primary key to the public key
D primary key to the foreign key (1)

1.2 Choose a term from COLUMN B that matches the description in COLUMN A. Write only the letter (A-T) next to the question number (1.2.1 – 1.2.5) in the answer book, e.g. 1.2.6 U

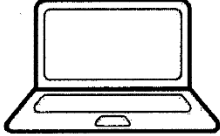|	COLUMN A		COLUMN B
1.2.1	The use of ICT tools and devices to malign, mock, embarrass, threaten or intimidate a person online.	A	Validation
		B	Machine cycle
1.2.2	An operating System for Apple		
		C	Adware
1.2.3	Step by step approach followed to solve a problem		
		D	IOS
1.2.4	Unsolicited e-mail, usually in the form of advertisements.		
		E	spoofing
1.2.5	A specific sequence of steps followed by the CPU when carrying out instructions		
		F	Spam
		G	Android
		H	Cyber bullying
		I	Machine code
		J	Algorithm

(5)

TOTAL QUESTION 1:   10

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QUESTION 2: SYSTEM TECHNOLOGY

SCENARIO
A transport company is evaluating the computer systems and devices that they are using.

2.1 The following devices are used by the company:

Device A : Desktop	Device B : Laptop	Device C : Tablet
• GeTEx 7080 graphics card • AMD Ryzen 9 5900X 12 core 3.7 GHz AM4 • 16 GB RAM • 512 GB SSD	• 13.4 inch UHD touch display • Intel Core i7 1185G7 Processor Quad Core • 16 GB RAM • 512 GB SSD • Intel on board graphics	• 12.4 inch TFT display • 128 GB storage • Rear and front cameras • 8 GB RAM • Wi-Fi/LTE/5G • Battery 10.090 mAh • SD card reader

2.1.1 Device A and B each has 16 GB RAM while device C has 8 GB RAM

    (a)   Name the slot used to connect RAM to the motherboard. (1)

    (b)   Apart from housing RAM, state 2 other functions of a motherboard (2)

2.1.2 Device C has 128 GB storage. Analyse the features of device C and indicate the type of storage device that can be used to increase the storage space of this device. (1)

2.1.3 The company is experiencing a shortage of handheld scanners.

    Give 2 reasons why device C would be most suitable device to scan QR codes (2)

2.1.4 The motherboard of device A contains a zero insertion force (ZIF) socket. Which component will be housed in this socket? (1)

2.1.5 Except for gaming, what other reason might there be for a dedicated graphics card to be installed in device A? (1)

2.2 Some computers are built using modular design.

    2.2.1   Explain the term modular design. (1)

    2.2.2   State why modular design is needed. (1)

2.3 CPU caching improves the performance of the computer.

    2.3.1   What is CPU cache memory? (1)

    2.3.2   Name TWO other types of cache memory. (2)

2.4 Devices on a company's network is vulnerable to malware.

    2.4.1   Explain how a Trajan malware can gain access to a user's computer. (2)

    2.4.2   Explain how a firewall can be used to safeguard against threats on a network. (2)

2.5 The company regularly updates their software. Explain why there is a need to update their anti-virus software. (1)

2.6 When a computer's storage is depleted, it can cause the computer to slow down. State TWO ways to free up storage space on a computer. (2)

TOTAL QUESTION 2: (20)

QUESTION 3: COMMUNICATION AND NETWORK TECHNOLOGY

A transport company has a central depot from where they run their operations.

3.1 The company has decided to use a wired LAN for the computers in the control room and one wireless connection point for all the other devices at the depot.

    3.1.1 Name the type of cable that is commonly used in a wired LAN. (1)

    3.1.2 Name the wireless technology widely used in a LAN. (1)

    3.1.3 What media is used to transmit data a wireless network? (1)

3.2 Managers from the depot can access the central network's resources over the internet with the same security as the manager in the central depot.

    3.2.1 What is the name of this secure type of network? (1)

    3.2.2 What is the function of the network interface card (NIC)? (2)

3.3 A new switch and router was bought to increase the number of devices on the network.

    3.3.1 What is the function of a switch? (2)

    3.3.2 What is the function of a router (2)

3.4 Employees were assigned different permissions in the network to control access to files or folders and to prevent the use of applications like BitTorrent.

    3.4.1 Explain the difference between the Administrator and Standard user. (2)

    3.4.2 Explain the difference between read permission and write permission. (2)

    3.4.3 Explain what is BitTorrent? (2)

3.5 The company's website uses secure socket layer (SSL) technology.
    3.5.1 How can a URL be used to determine whether the site uses SSL or not? (1)

    3.5.2 Explain what a digital certificate is? (2)

    3.5.3 Explain what a digital signature is? (2)

    3.5.4 What is the main difference between private key and public key encryption? (2)

3.6 The company wants an app for mobile devices. List 2 reasons for having an app. (2)

TOTAL QUESTION 3: (25)

QUESTION 4: DATA AND INFORMATION MANAGEMENT

The MMA (Motorist Monitoring Agency) keeps a database on all motorist information and their offences.
The following screenshots shows the structure of the two tables in the database.

tblMotorists

Field Name	Data Type	Description
🔑 IDNumber	Short Text	ID number, max 13 characters
NameandSurname	Short Text	Person name and surname, max 50 characters
ContactNumber	Short Text	Cell number, max 10 characters
DateofBirth	Date/Time	Date and time the motorist was born

tblOffences

Field Name	Data Type	Description
🔑 OffenceNumber	AutoNumber	Unique number of each offence
OffenceDate	Date/Time	Date when offence took place
IDNumber	Short Text	ID number of offender
VehicleRegNumber	Number	Example ND 95175
OffenceType	Short Text	Description of type of offence, max 50 characters

Study the layout of the database and answer the following questions

4.1 What does the key symbol on the left of **IDNumber** field indicate? (1)

4.2 State a distinct requirement of a field designated with the key symbol. (1)

4.3 Which field in **tblOffences** table would be best to establish a one to one relationship between the two tables? (1)

4.4 Provide a more suitable data type for the **VehicleRegNumber** field and motivate your answer. (2)

4.5 You have suggested that name and surname should be captured in two fields rather than one field as shown above.

    Provide a motivation to defend your suggestion (2)

4.6 A poorly designed table structure may lead to data redundancy.

    4.6.1 What is data redundancy? (2)

    4.6.2 Name the process during which the design is changed to prevent anomalies from occurring. (1)

TOTAL QUESTION 4: (10)

QUESTION 5: SOLUTION DEVELOPMENT

5.1   Binary is a number system used in computing. Write down the numbers used in the
        binary system   (1)

5.2   Arrays are frequently used to store data in a program.

        5.2.1   When does it become necessary to use an array instead of a variable?   (2)
        5.2.2   The names and ages of learners must be stored in an array.

                  arrData : array [1 . . 30] of Integer;

                  Motivate why the names and ages cannot be stored in the array provided.   (1)

5.3   OOP is the abbreviation for object – orientated programming.

        5.3.1   State whether the following statements are true of false.

                  (a)   A toString method is used to change the value of an attribute to a
                          string for display purposes.   (1)
                  (b)   It is possible to instantiate an object without creating a constructor
                          method for the object class.   (1)
                  (C)   The number of parameters received in a constructor must be equal to
                          the number of attributes in the object class.   (1)

        5.3.2   Differentiate between an accessor method and a mutator method.   (2)

5.4   Prime numbers are numbers with only two factors.
        A factor is a number that divides into another number without a remainder.
        The following pseudocode determines an input number is a prime number or not and
        displays the result.

        1   Input number
        2   Factor ← 0
        3   For Loop ← 2 to number
        4   If number mod Loop = 0
        5   Factor ← Factor + 1
        6   If Factor = 1
        7   Output number + ' is a prime number'
        8   Else
        9   Output number + ' is not a prime number'

        Redraw and complete the trace table below if the value of **4** is entered for number.   (6)

Number	Factor	Loop	Number mod Loop = 0	Factor = 1	Output

                                                          TOTAL QUESTION 5   (15)

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