



# basic education

Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

**PINETOWN DISTRICT**

**GRADE 11**

**INFORMATION TECHNOLOGY P2**

**MAY/JUNE 2024**

**MARKS: 120**

**DURATION: 3 HOURS**

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**This paper consists of 10 pages**

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**INSTRUCTIONS AND INFORMATION**

1. This paper consists of **SIX** questions:

|             |                                        |      |
|-------------|----------------------------------------|------|
| Question 1: | Short questions                        | (15) |
| Question 2: | System Technologies                    | (20) |
| Question 3: | Communication and Network Technologies | (20) |
| Question 4: | Data and Information Management        | (20) |
| Question 5: | Solution Development                   | (20) |
| Question 6: | Integrated Scenario                    | (25) |

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.

**QUESTION 1: SHORT QUESTIONS**

1.1 Various options are provided as possible answers to the following questions. Choose the correct answer and write only the letter (A–D) next to the question number (1.1.1–1.1.10) in your ANSWER BOOK, for example 1.1.11 D.

1.1.1 Translates programming instructions into machine code one line at a time.

- A Interpreter
- B Computer
- C Compiler
- D Programmer

(1)

1.1.2 Which of the following is NOT true?

- A Many laptops have a built-in/integrated video adapter and a video card.
- B All computers come out with separate video card.
- C A video card's job is to generate images that are displayed on your monitor.
- D Without a separate video card, the CPU has to do the job of the video card.

(1)

1.1.3 Calculate the answer of the following:  $2 - 30 + 3 * (30 \text{ DIV } 3)$

- A 166
- B -150
- C 2
- D -2

(1)

1.1.4 Which ONE is NOT a characteristic of quality data in a database?

- A Accuracy
- B Punctuality
- C Currency
- D Relevance

(1)

1.1.5 Start-up test performed by hard coded instructions on a ROM chip to ensure that all essential hardware is present and in working order.

- A Caching
- B CMOS
- C Plug and Play
- D POST

(1)

1.1.6 LTE stands for ...

- A Long Transfer Evolution.
- B Life Time Energy.
- C Life Transfer Everywhere.
- D Long Term Evolution

(1)

1.1.7 What is the value of  $30 \text{ DIV } 5 - 10 \text{ MOD } 4$ ?

- A 6
- B 3
- C 4
- D 2

(1)

1.1.8 A device that directs data or signal to its intended destination on a network.

- A Hotspot
- B Modem
- C Switch
- D Mouse

(1)

1.1.9 Which one CANNOT be used in a Boolean expression?

- A  $X > Y$
- B  $X <> Y$
- C  $X := Y$
- D  $X = Y$

(1)

1.1.10 VPN stands for ...

- A Very Private Network.
- B Virtual Protocol Network.
- C Very Powerful Network.
- D Virtual Private Network.

(1)

1.2 Give ONE word/term for EACH of the following descriptions. Write only the word/term next to the question number (1.2.1–1.2.5) in the ANSWER BOOK.

- 1.2.1 A single fact or the smallest unit of data in a database (1)
- 1.2.2 A startup test performed by the BIOS to ensure that all essential hardware is present and in working order (1)
- 1.2.3 Variety of symbols that show the start and end of individual pieces of data in plain text (1)
- 1.2.4 The first word or letter is in lowercase and each word/letter afterwards starts with an uppercase letter, e.g. sLastName (1)
- 1.2.5 A temporal memory of the computer which can store and retrieve active data and programs at high speed (1)

**TOTAL QUESTION 1 : [15]**

**QUESTION 2: SYSTEM TECHNOLOGIES**

- 2.1 High resolution video files are being modified on the computer system provided. As a result, the performance seems to be very slow.
- 2.1.1 List the FOUR steps of the machine cycle the CPU uses to carry out an instruction. (4)
- 2.1.2 Discuss the term GPU. (2)
- 2.1.3 List TWO benefits of having a GPU. (2)
- 2.2 The operating system makes it possible for a computer to process many different tasks at the same time. (3)
- 2.2.1 Describe THREE functions of the operating system. (3)
- 2.2.2 Give ONE example of a desktop operating system and TWO examples of a mobile operating system. (3)
- 2.3 Virtualisation is a tool used by many developers and technicians today.
- 2.3.1 What is a virtual machine? (1)
- 2.3.2 List any TWO uses of virtual machines. (2)
- 2.4 Processors have advanced in order to handle multiple tasks.
- 2.4.1 List any ONE difference between multi-processing and multi-threading. (2)
- 2.4.2 How does processor multitasking assist in the receiving of new instructions? (1)

**TOTAL QUESTION 2: [20]**

**QUESTION 3: COMMUNICATION AND NETWORK TECHNOLOGIES**

Computers are primary means of local and global communication for billions of people. Consumers use computers to correspond with business, employees with other employees, customers, students with classmates and teachers. Through computers, society has instant access to information from around the globe.

- 3.1 Data transmission is supported by various pieces of hardware, media and devices setup in a specific layout.
- 3.1.1 Name and explain TWO categories/classification of communication medium. (4)
- 3.1.2 A computing device connected to a network is usually referred to as a ... (1)
- 3.1.3 List THREE reasons for having a network. (3)
- 3.2 There are many network topologies used by network engineers to connect computers.
- 3.2.1 Briefly explain what a network topology is. (1)
- 3.2.2 List TWO advantages of a star network. (2)
- 3.2.3 Name the main disadvantage of a star network. (1)
- 3.2.4 Name the role of a switch other than connecting computers on the same wired network. (1)
- 3.2.5 Name another device that can be used to connect computing devices in a star network except a switch. (1)
- 3.3
- 3.3.1 What is another name for an access point? (1)
- 3.3.2 Distinguish between *hotspot* and *bandwidth*. (2)
- 3.4 Voice over Internet Protocol (VoIP) is the communication protocol, the technologies, the methodologies and transmission methods involved in the delivery of voice communications and multimedia sessions over the Internet.
- 3.4.1 Name the popular software package that allows people to communicate using VoIP. (1)
- 3.4.2 Name TWO disadvantages of using VoIP software. (2)

**TOTAL QUESTION 3: [20]**

**QUESTION 4: DATA AND INFORMATION MANAGEMENT**

You have been appointed as a Database Analyst for a School. More than 1000 learners attend the school, you have to make a number of presentations to the school management, teachers and governing body.

- 4.1 One of the governing body members has suggested that you plan for a distributed DBMS instead of a server DBMS.
- 4.1.1 What is a DBMS? (1)
- 4.1.2 List THREE activities that a DBMS allows you to do. (3)
- 4.1.3 Explain the main differences between a distributed database and a server database. (2)
- 4.1.4 Describe how a client software application relates to its server DBMS and the underlying database. (2)
- 4.1.5 Give TWO reasons when it becomes necessary for an organisation to have a distributed database. (2)
- 4.2 The information retrieved will depend on the quality of data that was entered into the database.
- 4.2.1 List THREE characteristics of quality data. (3)
- 4.2.2 Describe TWO methods that can be used to validate the data (4)
- 4.3 A Database Administrator will have to be appointed. List TWO tasks of a database administrator. (2)
- 4.4 There are many tables in the database. The primary keys, composite keys and foreign keys need to be identified in order for them to be linked
- 4.4.1 What is a primary key? (1)

**TOTAL QUESTION 4: [20]**

**QUESTION 5: SOLUTION DEVELOPMENT**

5.1 An array called **arrRooms** holds the names of the 22 teachers in the Science block as shown. The subscript of the array represents the room number

|      |                   |
|------|-------------------|
| [20] | Mr T Mashinga     |
| [21] |                   |
| [22] | Mr S. D .Govender |
| [23] |                   |
| ⋮    |                   |
| [24] | Mrs S. David      |
| [25] | Ms C Chetty       |

5.1.1 What is an array in computer programming ? (1)

5.1.2 Write the array declaration for the array in the Delphi application. (2)

5.1.3 When using a linear search, what are the two conditions that could terminate the loop? (2)

5.2 List TWO reasons a programmer would choose to use methods in their programs. (2)

5.3 A generated list of learners and ID numbers are stored in a text file. A list of learners who are turning 18 must be compiled.

The layout of the text file is as follows:

- The first line contains the name of the grade.
- Each following line contains the name of the learner and the ID number that appears on the birth certificate. The two fields are separated by a ‘,’ symbol.

Example of data in the text file:

|                        |
|------------------------|
| Grade 12D              |
| Shaiden,0605222525089  |
| Azaria,0702020042085   |
| Lizo,0612285523087     |
| Victoria,051012514089. |
| ⋮                      |
| ⋮                      |

5.3.1 Write an algorithm to execute the following steps:

- Read the contents of the file
- Determine which learners turn 18 years old in the current year.
- Display the names of the learners who will turn 18. (13)

**TOTAL QUESTION 5: [20]**

**QUESTION 6: INTEGRATED SCENARIO**

6.1 The School Management Team (SMT), working together with the network manager and the database administrator, will have to draft AUP documents for end users. The network manager has to specifically set policies, restrictions and firewalls.

6.1.1 Why is it necessary to set policies, restrictions and firewalls? (1)

6.1.2 Describe each of the following clearly stating what they are and how they are implemented.

(a) Policies

(b) Restrictions

(c) Firewalls

(3)

6.1.3 What are AUP documents?

(1)

6.1.4 List FOUR aspects that should be included in an AUP document.

(4)

6.1.5 Suggest what should be done for an AUP to work effectively at the school.

(2)

6.2 The majority of the devices connected to networks are mobile devices, and the number of devices seems to be increasing.

6.2.1 List the THREE main reasons that has driven this growth.

(3)

6.2.2 Most mobile devices are always on hence the need to save battery power. Advise THREE ways in which battery life can be maximised.

(3)

6.3 The SMT has decided to use smartphones and mobile apps to conduct school business whilst at home.

6.3.1 What is meant by the term *mobile apps*?

(1)

6.3.2 Provide TWO advantages of using mobile apps to access the Internet instead of using browsers.

(2)

6.4 Data plays a critical role in both our lives and society as a whole. This means that any threat to our data can have a far-reaching and devastating effect/result.

6.4.1 Mention TWO ways in which we can make mistakes as humans and cause the loss of data.

(2)

6.4.2 There needs to be a systematic plan or schedule in place to guarantee that data is backed up regularly. List any THREE backup tips.

(3)

**TOTAL QUESTION 6: [25]**

**GRAND TOTAL: [120]**