basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/
NATIONAL SENIOR CERTIFICATE EXAMINATIONS

INFORMATION TECHNOLOGY P2

2022

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 13 pages.

SECTION A: SHORT QUESTIONS

QUESTION 1

1.1	1.1.1	B ✓			(1)
	1.1.2	D ✓			(1)
	1.1.3	A ✓			(1)
	1.1.4	C ✓			(1)
	1.1.5	D ✓			(2)
1.2	1.2.1	K ✓		Cyberbullying	(1)
	1.2.2	F ✓		iOS	(1)
	1.2.3	E ✓		RSI	(1)
	1.2.4	A ✓		Algorithm	(1)
	1.2.5	H ✓		Spam	(1)
	1.2.6	D ✓		Hyperlink	(1)
	1.2.7	R ✓		Machine Cycle	(1)
	1.2.8	C ✓		Machine code	(1)
	1.2.9	L ✓		GIGO	(1)

TOTAL SECTION A: 15

SECTION B: SYSTEMS TECHNOLOGIES

QUESTION 2

2.1.1   a) DIMM slot ✓   (1)

         b) *Any TWO:* ✓✓
             • Houses components
             • Connects components
             • Provides power/distributes power to components   (2)

         c) Decreased use of virtual memory/more instructions and data can be stored
             in RAM ✓
             Instructions and data is fetched faster from RAM than from storage ✓   (2)

2.1.2   It is a single/separate processor✓ on a CPU chip   (1)

2.1.3   SD card ✓   (1)

2.1.4   Mobility/ portability✓
         Access to camera/ front and rear facing camera/built in camera✓   (2)

2.1.5   Central Processing Unit (CPU) ✓   (1)

2.1.6   *Any ONE:* ✓
         • Needed for graphics intensive applications like CAD
         • Improve overall performance
         • Reduce the processing load on the CPU   (1)

2.2.1   A computer is built up from separate modules/components ✓   (1)

2.2.2   *Any ONE:* ✓
         • Components can be combined according to your needs
         • Easy to upgrade/ replace
         • Easy to repair   (1)

2.3.1   Cache memory is high speed memory✓ used to store frequently used
         instructions ✓   (2)

2.3.2   Web caching✓
         Disk caching✓   (2)

2.4.1   A Trojan is malware disguised as useful software ✓
         A user is tricked into installing the Trojan with the assumption that they are
         installing legitimate software ✓   (2)

2.4.2   A firewall monitors/ checks incoming and outgoing traffic on a network ✓
         and prevents unauthorised communication ✓   (2)

2.5 An update fixes code and adds new features to software ✓
A patch removes software bugs by replacing incorrect code ✓ (2)

2.6 *Any TWO:* ✓✓
- Use a disk clean-up tool
- Uninstall unused software/applications
- Empty the recycle bin
- Compress data not frequently used (2)

TOTAL SECTION B: 25

SECTION C: COMMUNICATION AND NETWORK TECHNOLOGIES

QUESTION 3

3.1   3.1.1   *Any ONE:* ✓
- UTP
- Fibre   (1)

     3.1.2   *Any ONE:* ✓

- Radio waves
- Electromagnetic waves   (1)

     3.1.3   Wi-Fi ✓   (1)

3.2   3.2.1   VPN (Virtual Private Network) ✓   (1)

     3.2.2(a) A numerical address/sequence of numbers that uniquely identifies a device on a network ✓   (1)

     3.2.2(b) To obtain the correct IP-address for a specific URL/linking URL's to IP-addresses ✓   (1)

     3.2.3   The NIC encodes/ decodes data ✓ that is transmitted across a network ✓   (2)

     3.2.4   Intranet is a network similar to the Internet/browser based network ✓ of which the access is limited to a specific organisation ✓   (2)

3.3   3.3.1   *Any ONE:* ✓
- The immediate and real-time delivery of media content to a receiving device
- The file is not saved to the storage devices media, but only played on the device   (1)

     3.3.2   *Any ONE:* ✓
- Use on a closed channel/do not connect to a larger network
- Use a login/password to control access the content   (1)

3.4   3.4.1   You will find "HTTPS" in the URL ✓   (1)

3.4.2 (a)   The public key is used to encrypt the data. ✓
The data can only be decrypted using the specific private key. ✓   (2)

3.4.2 (b)   The CA verifies that the business or organisation is valid. ✓   (1)

3.5   A modem converts the signal from a computer to a format that can be transmitted over a specific communication medium ✓ while a router determines the best route ✓ for the transmission of a message ✓ between two points on a network.   (3)

3.6   3.6.1   Semantic Search✓   (1)

3.6.2   To ensure that search engines ✓ will place the company's site higher up in the order of search result's.✓   (2)

3.7   3.7.1   FTP (File Transfer Protocol) ✓   (1)

3.7.2   Any ONE ✓

Cloud storage
Git/Git hub   (1)

3.7.3   Any ONE of: ✓
- accessible from many devices/places
- collaboration/sharing   (1)

TOTAL SECTION C: 25

SECTION D: DATA AND INFORMATION MANAGEMENT

QUESTION 4

4.1   It is the primary key. ✓   (1)

4.2   Must be unique ✓
        Cannot be empty/have a null value/required field ✓   (2)

4.3   IDNumber ✓   (1)

4.4   Short Text (any text data type) ✓
        A vehicle registration number contains numbers and letters✓   (2)

4.5   There is more than one piece of information in the field ✓
        OR
        It might be necessary to separately work with the name and surname values   (1)

4.6   4.6.1   Data redundancy refers to the unnecessary repetition of data ✓   (1)

        4.6.2   Normalisation ✓   (1)

4.7   4.7.1   Skipping a stop sign is the most common offence ✓

                  *Accept any relevant or correct answer of information gained from
                  the table*   (1)

        4.7.2   Knowledge obtained - Motorists do not stop at stop signs ✓
                  Decision made - Increasing policing at stops ✓

                  *Also accept other correct examples based on the information from
                  QUESTIONS 4.7.1*   (2)

        4.7.3   Fuzzy logic deals with reasoning that works with probabilities. ✓

                  Drivers not stopping at stops are reckless drivers/there are many
                  reckless drivers in the community ✓   (2)

4.8   4.8.1   A hacking technique where SQL statements are entered ✓ into
                  data input fields ✓ instead of data.   (2)

        4.8.2   A record or 'trail' that is made to keep track of who ✓made changes
                  to a database and when ✓those changes were made,   (2)

4.9   4.9.1 (a)   Logical integrity ✓   (1)

          4.9.1 (b)   Physical integrity - ensuring that data is protected against damage
                       from power surges, natural disasters, theft, etc.✓   (1)

          4.9.2   *Any TWO:* ✓✓

                       •   Provide a list/component to select from
                       •   Specify format in input component
                       •   Format/Data type check   (2)

4.10   •   In transaction processing, transactions that are dependent on one another
              to work are grouped together✓.
          •   The transaction will only be completed if all the individual transactions are
              successful. ✓
          •   If any one of the parts/instructions are unsuccessful, everything will be
              rolled back. ✓   (3)

                                                                        TOTAL SECTION D: 25

SECTION E: SOLUTION DEVELOPMENT

5.1   5.1.1   2✓   (1)

       5.1.2   0-9✓ A-F ✓   (2)

5.2   5.2.1   When working with a large number of related values/an array can store
               multiple values while a variable can store only one value. ✓   (1)

       5.2.2   *Any ONE of:* ✓

               • Only one data type can be stored in an array.
               • The provided array can only store integer values
               • An array can only store values of one specific data type while names
                 and ages are represented by two different data types.   (1)

       5.2.3   Loop k index 10 ✓ down to 7 ✓
                arrNum[k] ✓← arrNum[k-1] ✓
               arrNum[6] ← 92 ✓   (5)

5.3   5.3.1   (a)   FALSE   (1)

               (b)   TRUE   (1)

               (c)   FALSE   (1)

       5.3.2   An accessor returns the value of an attribute of an object ✓ and a
               mutator changes the value of an attribute of an object ✓   (2)

5.4

Factor	Loop	Number mod Loop = 0	Factor = 1	Output
0				
	2			
		True		
1				
	3			
		False		
	4			
		True		
2				
			False	
				4 is NOT a prime number
✓	✓	✓	✓	✓

Notes:
   • Values may be placed in the same line as long as progression of
     algorithm is clear.
   • Mark with fault by penalising for the faulty value in that column only.   (5)

                                                          TOTAL SECTION E: 20

SECTION F: INTEGRATED SCENARIO

QUESTION 6

6.1   6.1.1   The practice of funding a project or venture by raising money from a large number of people ✓ who each contribute a small amount, typically via the internet/social networks. (1)

         6.1.2   (a)   *Any TWO*: ✓✓
- Safer work environment
- Fewer people employed/cost saving
- Greater precision of repetitive tasks
- Greater efficiency
- Improved productivity

                     Also ACCEPT other valid answers. (2)

                 (b)   A learning algorithm observes the current processes/trends that are followed, for example, colour preference of vehicles, also extras that are popular, ✓ creates a set of rules based on the observation ✓ and creates an optimal process that can be implemented ✓

                     Also ACCEPT other valid justifications. (3)

6.2   6.2.1   Radio Frequency Identification ✓ (1)

         6.2.2
- Energy from reader's radio signal at tollgate powers the tag ✓
- Tag sends a signal that the reader use to identify the specific tag ✓ (2)

         6.2.3   (a)   GPS ✓ (1)

                 (b)   *Any ONE of*: ✓
- The signal needs to be transmitted over longer distances
- Stronger signal needed to communicate with satellite
- Signal needs to be transmitted continuously (1)

6.3　　6.3.1　Unlimited amount of data that can be used in a month ✓
　　　　　　　OR
　　　　　　　No limit on amount of data used.　　　　　　　　　　　　　(1)

　　　　6.3.2　*Any ONE*: ✓
　　　　　　　• Fixed location internet cheaper than mobile LTE / lower cost per
　　　　　　　　GB
　　　　　　　• Fibre might have faster connection speeds depending on the
　　　　　　　　speed of the package

　　　　　　　Also ACCEPT other valid answers.　　　　　　　　　　　(1)

　　　　6.3.3　Router/ONT ✓　　　　　　　　　　　　　　　　　　(1)

　　　　6.3.4　Yes. ✓ backup procedures can be done overnight ✓
　　　　　　　OR any other applicable motivation

　　　　　　　OR

　　　　　　　No. Outside office hours
　　　　　　　OR any other applicable motivation　　　　　　　　　　(2)

6.4　　6.4.1　(a)　Software designed to obtain administrator rights to a computer
　　　　　　　　　for unauthorised access.✓　　　　　　　　　　　(1)

　　　　　　　(b)　*Any ONE risk to data*: ✓
　　　　　　　　　Makes computer susceptible to hacking and malware:
　　　　　　　　　　　o illegally accessing data files
　　　　　　　　　　　o creating backdoors for other malware
　　　　　　　　　　　o used as a bot for launching attacks on other
　　　　　　　　　　　　computers and networks.

　　　　　　　　　Also ACCEPT other valid answers.　　　　　　　(1)

　　　　6.4.2　An attempt to manipulate or con someone ✓ into installing malware
　　　　　　　or giving out sensitive personal information. ✓　　　　　(2)

　　　　6.4.3　*Any ONE*: ✓
　　　　　　　• The anti-virus software scans the files to identify known threats
　　　　　　　　using signature-based detection techniques that find malicious
　　　　　　　　patterns.
　　　　　　　• Looks for pieces of code that is unique to specific viruses.　(1)

6.5   6.5.1   *Any TWO:* ✓✓
                  • find possible connections among datasets
                  • recognize knowledge using natural language processing
                  • can be used to automate and accelerate data preparation tasks
                  • can learn common human error patterns
                  • detect and resolve potential flaws in information
                  • can learn by watching how the user interacts with an analytics program
                  • can identify data types
                  • it can alert users to anomalies or unexpected patterns in data
                  • identify potential threats from system logs or social networking data   (2)

        6.5.2   With the duplication model, each separate site has a complete copy of the entire database stored. ✓
                  With the partitioning model, each site manages its own data and uploads the data to a central database ✓ in a scheduled batch process.   (2)

        6.5.3   (a)   Purging is deleting/removing obsolete records from a database. ✓   (1)

                  (b)   The purpose of purging is to limit the size of the database file. ✓   (1)

6.6   6.6.1   Virtualisation is the use of software ✓ to create an entity that only exist for as long as the software is being run ✓ .   (2)

        6.6.2   *Any ONE:* ✓
                  • Saving on hardware
                  • Can run software written for other platforms
                  • Convenience of not having to keep multiple devices   (1)

        6.6.3   Yes✓,the user must pay for the operating system to avoid committing piracy✓   (2)

        6.6.4   Combining the resources of many machines into one powerful service ✓
                  Sharing the resources of one powerful machine between many users ✓   (2)

6.7.1   *Any ONE:* ✓
    • For security reasons
    • Prevent access to your account due to password leaks

    Also ACCEPT other valid reasons.   (1)

6.7.2   *Any TWO:* ✓✓
    • Password too short/must be more than 8 digits
    • Only lowercase characters/must contain an uppercase and lowercase letter, number and special character
    • Can easily be guessed/do not use personal information   (2)

6.7.3   (a)   It is used to easily query, monitor, analyse and act on data✓, regardless of the source.   (1)

      (b)   *Any TWO:* ✓✓
         • Bypasses the latency caused by cloud computing.
         • Acts as mini data centres which cloud computing lacks.
         • Used to process time-sensitive data in remote locations with limited or no connectivity to a centralised location.   (2)

TOTAL SECTION F: 40
GRAND TOTAL: 150