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**NATIONAL  
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**GRADE 12**

**SEPTEMBER 2022**

**INFORMATION TECHNOLOGY P2**

**MARKS: 150**

**TIME: 3 hours**

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This question paper consists of 14 pages.

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**INSTRUCTIONS AND INFORMATION**

1. This paper consists of SIX sections:

SECTION A: Short questions	(15)
SECTION B: System Technologies	(24)
SECTION C: Communication and Network Technologies	(29)
SECTION D: Data and Information Management	(23)
SECTION E: Solution Development	(24)
SECTION F: Integrated Scenario	(35)

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**

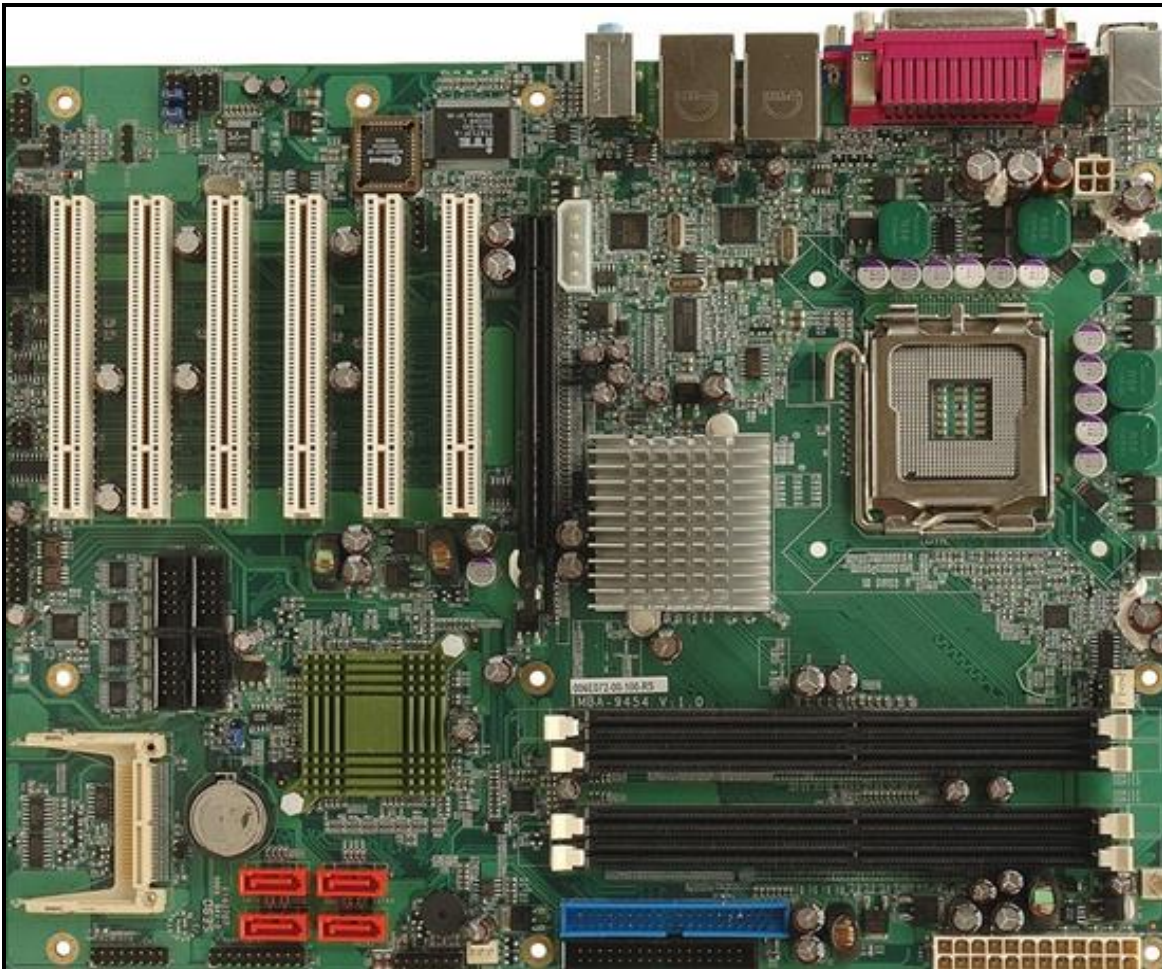
- 1.1 Give the correct computer term for each of the following descriptions. Write only the term next to the question numbers (1.1.1 to 1.1.10) in the ANSWER BOOK.
- 1.1.1 The combination of related fields in a table (1)
- 1.1.2 The process of specifying and defining tables, keys, columns, and relationships in order to create an efficient database (1)
- 1.1.3 The slot/socket that is used to connect the CPU (1)
- 1.1.4 A person who uses computers to gain unauthorised access to data (1)
- 1.1.5 System software that helps users to analyse, configure, monitor or help maintain their computers (1)
- 1.1.6 A computing device connected to a network is usually referred to as a ... (1)
- 1.1.7 The concept that more and more devices and objects are connected to the internet with the ability to communicate and make intelligent decisions (1)
- 1.1.8 Storage area for all running programs and data being processed by the computing device (1)
- 1.1.9 An image, video piece or text typically/normally humorous/funny in nature that is copied and spread rapidly by the internet users (1)
- 1.1.10 ... is a locked private network used to share information on a private network (1)

- 1.2 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 (1.2.1 to 1.2.5) in the ANSWER BOOK, for example 1.2.6 D.
- 1.2.1 An instance of a class is called ...
- A object-oriented programming.
  - B an object.
  - C a variable.
  - D scope. (1)
- 1.2.2 A method name followed by its parameters:
- A Method overloading
  - B Behaviour
  - C Method signature
  - D Arguments (1)
- 1.2.3 The time taken for a disk drive to locate the area on the disk where the data to be read is stored, is called ...
- A catchup time.
  - B seek time.
  - C process time.
  - D response time. (1)
- 1.2.4 The general term that refers to people who uses their computers to do advanced tasks:
- A Home users
  - B Small office users
  - C Gamers
  - D Power users (1)
- 1.2.5 The loss of a signal strength over a distance is called ...
- A cross talk
  - B electromagnetic interference (EMI)
  - C attenuation
  - D network disturbance (1)

**TOTAL SECTION A: 15**

**SECTION B: SYSTEMS TECHNOLOGIES**

**QUESTION 2**



2.1 The above picture shows a hardware component found inside a desktop computer box.

2.1.1 Name the above hardware component. (1)

2.1.2 List TWO functions performed by the above hardware component. (2)

2.1.3 There are lines that are found on the above hardware component called buses.

What is the purpose of a bus? (1)

2.1.4 Your friend suggests that you upgrade the BIOS of the component in the above picture for it to be faster and more powerful.

List the FOUR main tasks of the BIOS. (4)

- 2.1.5 Name the slots that are found on the above hardware component used to connect the following hardware components:
- (a) Storage (1)
  - (b) RAM (1)
- 2.1.6 Briefly explain the term *CMOS* (acronym not needed). (1)
- 2.2 RAM is essential for the operation of a computer. List TWO characteristics of RAM. (2)
- 2.3 Briefly explain the concept *POST* (Acronym is not needed). (1)
- 2.4 Expand the acronym *PnP*. (1)
- 2.5 Give the function of a system clock. (1)
- 2.6 Give TWO types/categories of memory and list ONE example for each. (4)
- 2.7 Name TWO components that transfer data using a point-to-point connection. (2)
- 2.8 Differentiate between the concepts *compilers* and *interpreters*. (2)
- TOTAL SECTION B: 24**

**SECTION C: COMMUNICATION AND NETWORK TECHNOLOGIES****QUESTION 3**

- 3.1 Avoiding information overload is difficult in today's world with more than 80 million live websites available at all times of the day.
- 3.1.1 Differentiate between *information overload* and *digital divide*. (2)
- 3.1.2 Write out the acronym SEO in full. (1)
- 3.1.3 Name TWO indicators on the browser that tells you that you are on a secured website. (2)
- 3.2 There are concerns about lack of security measures in companies' websites because of on-going cyber-attacks by computer criminals.
- 3.2.1 Briefly explain *SSL (acronym not needed)*. (1)
- 3.2.2 Name the purpose of SSL. (1)
- 3.2.3 List TWO items/information SSL certificate should contain. (2)
- 3.3 Sometimes you do not need to run specific software on a specific computer, instead you need access to the files or other resources on your home or work network.
- 3.3.1 Briefly explain the term *virtual private network*. (1)
- 3.3.2 State TWO advantages of using VPN. (2)
- 3.4 Configuring a network covers a wide range of concepts from choosing or buying hardware, planning and implementing user rights and permission.
- 3.4.1 Briefly explain what a *network communication channel* is. (1)
- 3.4.2 Name TWO categories of network communication channels/media and list ONE example for each. (4)
- 3.4.3 List TWO functions of a network interface card/(NIC). (2)
- 3.4.4 Explain the difference between a *switch* and a *router*. (2)
- 3.5 Briefly explain the concept *bandwidth*. (1)



- 3.6 Companies own private networks which are used to exchange network resources.
- 3.6.1 Name TWO network resources shared by companies in a network. (2)
- 3.6.2 State the difference between *extranet* and *intranet*. (2)
- 3.7 Automatic encryption is something that happens without you consciously choosing to use software to encrypt data.
- List THREE places where automatic encryption is used. (3)

**TOTAL SECTION C: 29**

**SECTION D: DATA AND INFORMATION MANAGEMENT****QUESTION 4**

- 4.1 The information that data generates is an important asset. People make decisions daily using all types of information stored digitally.
- 4.1.1 Differentiate between *data* and *information*. (2)
- 4.1.2 Explain what a *database* is. (1)
- 4.2 Data validation is created by a programmer.
- 4.2.1 Briefly explain what *data validation* is. (1)
- 4.2.2 Name TWO validity checks/techniques used to perform data validation. (2)
- 4.3 Database developers must adhere to database design rules to eliminate errors in databases.
- 4.3.1 An error found in a database is called ... (1)
- 4.3.2 Differentiate between *data redundancy* and *data integrity*. (2)
- 4.4 It is critical for large corporations to have secure, quick and easy access to reliable data.

<b>tblEmployees</b>
EmployeeID
FirstName
LastName
HourlyRate
JobTitle
FirstAidTraining

<b>tblHoursLog</b>
LogID
EmpID
Date
HoursWorked

- 4.4.1 Identify the primary key in each table (*tblEmployees* and *tblHoursLog*). (2)
- 4.4.2 Name the table that has a foreign key and name the foreign key field. (2)
- 4.4.3 Name the datatype for the field *FirstAidTraining*. (1)
- 4.4.4 Redraw the tables in your ANSWER BOOK.  
Map an ER (entity relationship) by using the appropriate ERD symbol. (4)
- 4.4.5 What is another name of a table in databases? (1)
- 4.4.6 A set of more than one primary key that uniquely identifies each record in a table is called a ... (1)

- 4.5 Name TWO roles/responsibilities of a database analyst. (2)
- 4.6 Briefly explain the concept *logging* in a database. (1)

**TOTAL SECTION D: 23**

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

- 5.1 Differentiate between *physical filename* and *logical filename*. (2)
- 5.2 Name the filename extension of text files. (1)
- 5.3 Briefly explain the following program segments:
- 5.3.1 Append(tPayrollReport); (1)
- 5.3.2 WriteIn(tPayrollReport, 'Report Date:'+' '+DateToStr(Date()) :15); (1)
- 5.3.3 Rewrite(tPayrollReport); (1)
- 5.3.4 Reset(tPayrollReport); (1)
- 5.4 A series of steps followed by a programmer to solve a problem is called ... (1)
- 5.5 Study the following class diagram and answer the questions that follow.

<b>TEmployee</b>	
<ul style="list-style-type: none"> <li>- EmpNo</li> <li>- EmpSurname</li> <li>- EmpName</li> <li>- YearsInService</li> <li>- YearlySalary</li> </ul>	<ul style="list-style-type: none"> <li>+ Constructor Create (sEmpNo, sEmpSurname, sEmpName: String; iYearsInService: Integer);</li> <li>+ GiveRaise (rRaisePerc: Real);</li> <li>+ YearEnd;</li> <li>+ GetYearly: Real;</li> <li>+ CalcMonthlySalary: Real;</li> <li>+ toOutputString: String;</li> </ul>

- 5.5.1 What does the prefix T in class name TEmployee mean? (1)
- 5.5.2 Name the datatype that can be used for the field YearlySalary. (1)
- 5.5.3 The method used to create an object and initialise the properties of an object is called ... (1)
- 5.5.4 Give ONE example of the following methods found in the class diagram:
- (a) Helper (1)
- (b) Mutator (1)
- (c) Accessor (1)

- 5.6 The grouping of attributes and behaviour of a class in one entity is called ... (1)
- 5.7 The name of an error which occurs when the algorithm that was used to solve the problem is wrong and therefore produces the wrong results. (1)
- 5.8 A data type that is having only two possible values. (1)
- 5.9 Reflect on the following array diagram which represent student marks and answer the questions that follow.

60	70	40	80	90	59
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- 5.9.1 The values or items stored in the above array are called ... (1)
- 5.9.2 Write code/pseudocode to declare a constant array named arrStudentMarks using the above diagram (QUESTION 5.9). (3)
- 5.9.3 Create a subscript to access the student mark 70. (1)
- 5.9.4 What type of data structure is an array (Permanent or Temporal)? (1)
- 5.9.5 Name another data structure except arrays. (1)

**TOTAL SECTION D: 24**

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

- 6.1 It is crucial that users take measures to protect their computers and data from loss, damage and misuse. Organisations must ensure that sensitive data and information such as credit records, employee and customer data and purchase information is secure.
- 6.1.1 Differentiate between a *script kiddie* and a *cracker*. (2)
- 6.1.2 Define the term *malware*. (1)
- 6.1.3 Name THREE measures used to safeguard against computer crimes, threats and computer criminals. (3)
- 6.1.4 Give TWO good password policies that must be followed when creating a password. (2)
- 6.2 Biometric devices authenticate a person's identity by translating personal characteristics into digital code stored in the computer for verification or identification.
- 6.2.1 Name TWO examples of biometric devices or systems. (2)
- 6.2.2 Give TWO disadvantages of biometric systems. (2)
- 6.3 Millions of people around the globe send and receive various forms of messages.
- 6.3.1 Briefly explain what a *network protocol* is. (1)
- 6.3.2 Differentiate between *SMTP* and *POP3* (*acronyms are not needed*). (2)
- 6.3.3 Name a network protocol used to transfer large files across a network. (1)
- 6.3.4 What does *Bcc* mean when writing an email? (1)
- 6.4 Shopping becomes a virtual experience. Part of retail shopping at a mall or grocery store is the ability to browse aisles, view labels and compare products side by side. Online shoppers are able to share the shopping experiences in three-dimensional environments, complete with shelving, signs, overhead lighting and outdoor plazas.
- 6.4.1 Briefly explain the concept *e-commerce*. (1)
- 6.4.2 List any TWO benefits of e-commerce. (2)
- 6.4.3 A shopping cart is used in e-commerce. Name the purpose of a shopping cart. (1)
- 6.4.4 Name TWO payment methods or options that can be used in e-commerce to pay for services. (2)

- 6.5 The general consensus is that a person has a technology overload problem when they use technology negatively. It impacts on health, personal life and professional life.
- 6.5.1 Name TWO common health problems associated with the regular use of computer usage. (2)
- 6.5.2 Explain the term *digital divide*. (1)
- 6.5.3 Name TWO golden rules or code of acceptance to follow when participating in online activities. (2)
- 6.5.4 Briefly explain the concept *green computing*. (1)
- 6.5.5 The process of designing products that will not harm users both at workplaces and at home is called ... (1)
- 6.6 Appification of the web is a very popular trend now.
- 6.6.1 Name TWO benefits or reasons websites have developed apps for people to use to interact with information on their sites. (2)
- 6.6.2 List TWO consequences/disadvantages of appification on website browsers and search engines. (2)
- 6.7 Explain how RIA works. (1)

**TOTAL SECTION F: 35**  
**GRAND TOTAL: 150**