# INFORMATION TECHNOLOGY P1

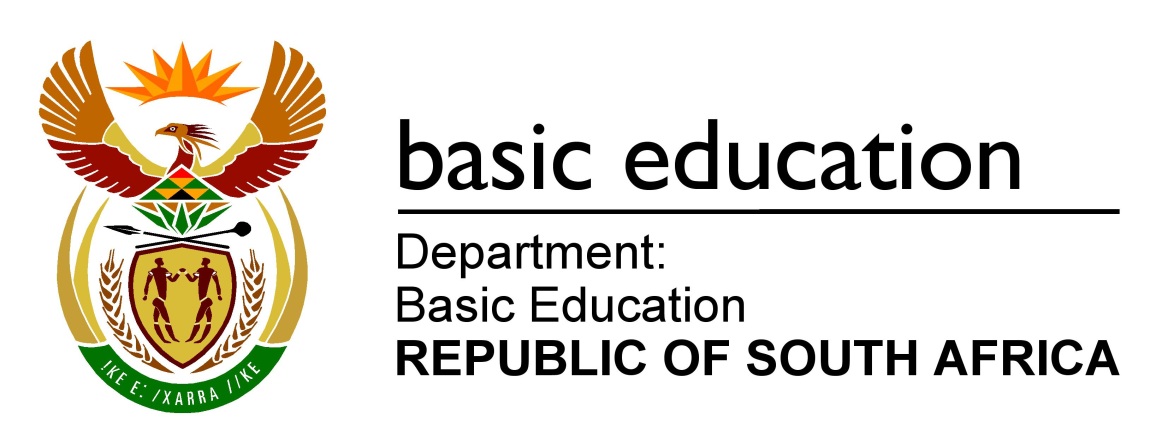
# NOVEMBER 2017

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# NATIONAL

# SENIOR CERTIFICATE

# GRADE 12



# MARKS: 150

## TIME: 3 hours

### This question paper consists of 16 pages.

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| **INSTRUCTIONS AND INFORMATION** |  |  |

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| 1. | This paper is divided into THREE sections. Candidates must answer ALL THREE sections. |
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| 2. | The duration of this examination is three hours. Because of the nature of this examination it is important to note that you will not be permitted to leave the examination room before the end of the examination session. |
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| 3. | This question paper is set with programming terms that are not specific to any particular programming language (Delphi/Java (using the Netbeans IDE)). |
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| 4. | Make sure that you answer the questions according to the specifications that are given in each question. Marks will be awarded according to the set requirements. |
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| 5. | Answer only what is asked in each question. For example, if the question does not ask for data validation, then no marks will be awarded for data validation. |
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| 6. | Your programs must be coded in such a way that they will work with any data and not just the sample data supplied or any data extracts that appear in the question paper. |
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| 7. | Routines, such as search, sort and selection, must be developed from first principles. You may NOT use the built-in features of a programming language for any of these routines. |
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| 8. | All data structures must be defined by you, the programmer, unless the data structures are supplied. |
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| 9. | You must save your work regularly on the disk/CD/DVD/flash disk you have been given, or on the disk space allocated to you for this examination session. |
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| 10. | Make sure that your examination number appears as a comment in every program that you code, as well as on every event indicated. |
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| 11. | If required, print the programming code of all the programs/classes that you completed. You will be given half an hour printing time after the examination session. |
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| 12. | At the end of this examination session you must hand in a disk/CD/DVD/flash disk with all your work saved on it OR you must make sure that all your work has been saved on the disk space allocated to you for this examination session. Ensure that all files can be read. |

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| 13. | The files that you need to complete this question paper have been given to you on the disk/CD/DVD/flash disk or on the disk space allocated to you. The files are provided in the form of password-protected executable files.  **NOTE:**   * Delphi candidates must use the file **DelphiDataENGNov2016.exe**. * Java candidates must use the file **JavaDataENGNov2016.exe**.   Do the following:   * Double click on the password-protected executable file. * Click on the extract button. * Enter the following password: **AquaS@&$16**   Once extracted, the following list of files will be available in the folder  **DelphiDataENGNov2016/JavaDataENGNov2016**: |

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|  | **DELPHI FILES** | **JAVA (NETBEANS) FILES** | |  |  |
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|  | **Question1:** | **Question1:** | |  |  |
|  | Question1\_P.dpr  Question1\_P.res  Question1\_U.dfm  Question1\_U.pas | Question1.form  Question1.java | |  |  |
|  |  |  | |  |  |
|  | **Question2:** | **Question2:** | |  |  |
|  | DataQ2.txt  Question2\_P.dpr  Question2\_P.res  Question2\_U.dfm  Question2\_U.pas | DataQ2.txt  Question2.form  Question2.java | |  |  |
|  |  |  | |  |  |
|  | **Question3:** | **Question3:** | |  |  |
|  | Question3\_P.dpr  Question3\_P.res  Question3\_U.dfm  Question3\_U.pas | Question3.form  Question3.java | |  |  |
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| **SCENARIO** |

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| **SECTION A** |  |  |
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| **QUESTION 1: GENERAL PROGRAMMING SKILLS** |  |  |
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| The online shopping company requires the user to complete certain details and make selections about the way the packages are delivered. |  |  |

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| Do the following: |  |  |
| * Compile and execute the program found in the **Question1** folder. The user interface displays four different sections named Question 1\_1 to Question 1\_4. Currently the program has no functionality.   Example of graphical user interface (GUI): |  |  |
| * Complete the code for each section of QUESTION 1, as described in QUESTION 1.1 to QUESTION 1.4 on the next page. |  |  |

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| 1.1 | **Button [Question 1\_1]**  Write code to obtain the name and the town in which the user lives from the text boxes provided. Create a user account as follows:   * The name field and the town field must not be blank otherwise a suitable message should be displayed to indicate the specific field that must be completed. * Generate the account code by joining the surname, a ‘$’, a random number between 1 and 10 and the first letter of the town. * Display the account code on the panel which must only be visible at display time.   NOTE:  Default data is provided for testing purposes. |  |  |
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|  | Example of output if the name is Peter Smit and the town is Benoni: |  |  |
|  |  |  | (11) |

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| 1.2 | **Button [Question 1\_2]**  An item must be selected from the combo box and the quantity must be entered in the edit box.  Write code to do the following:   * Display the corresponding picture in the image component once an item has been selected. * Obtain the quantity for the specific item * Display the total number of items |  |  |
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|  | Example of output after selecting 2 laptops: |  |  |
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|  |  |  | (7) |

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| 1.3 | **Button [Question 1\_3]**  There are 3 ways of obtaining the parcel namely door-to-door, collection or via post. Select the method of delivery, choose priority or not, enter the weight of the parcel |  |  |
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|  | Write code to obtain the delivery method and display the basic cost (correct to 2 decimal places) as follows on the delivery panel:   * Door-to-door costs are R 250 * Collection is free and the font colour of the panel is changed to red * Postage is R12.30 per kilogram * 18% is added to the total is the parcel is delivered by priority mail.   NOTE:  A private variable, **rCost** has been declared. |  |  |
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|  | Example of output if parcel is collected: |  |  |
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|  | Example of output if postage is selected and the parcel of 5 kg is delivered priority mail: |  |  |
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|  |  |  | (10) |

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| 1.4 | **Button [Question 1\_4]**  For **door-to-door** deliveries, the company has a different delivery rate depending on whether it is an inland or coastal delivery. The first 5 kilometres are free. Thereafter petrol is charged at 218 cents per kilometre for inland deliveries and 168 cents per kilometre for coastal deliveries. The cost of petrol decreases by 9.8 cents per kilometre for every 10 kilometres travelled.  NOTE:  The delivery charge is calculated as follows:  Petrol cost \* kilometres for delivery + basic cost determined in QUESTION 1.3  Write code to do the following:   * Obtain the basic cost from QUESTION 1.3 * Generate the delivery costs for the first 50 kilometres for inland and coastal delivery * Display this information in neat columns in the output area. |  |  |
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|  | Example of output for door-to-door delivery: |  |  |
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|  | Example of output for door-to-door delivery with priority delivery: |  |  |
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|  |  |  | (12) |
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| * Enter your examination number as a comment in the first line of the program file. * Save your program. * Make a printout of the code if required. |  |  |

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| **TOTAL SECTION A:** |  | **40** |

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| **SECTION B** |  |  |

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| **QUESTION 2: OBJECT-ORIENTATED PROGRAMMING** |  | |  |
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| * Enter your examination number as a comment in the first line of the class and  the form. * Save all the files. * Print the code contained in the class and the form (Delphi)/both classes (Java) if required. | | |  | |

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| **TOTAL SECTION B:** |  |  |

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| **SECTION C** |  |  |

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| **QUESTION 3: PROBLEM-SOLVING PROGRAMMING** |  |  |

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| * Enter your examination number as a comment in the first line of the program file. * Save your program. * Make a printout of the code if required. |  |  |

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|  | **TOTAl SECTION C:**  **Grand total:** |  | **150** |