Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2011

INFORMATION TECHNOLOGY P1

MARKS: **120**

TIME: **3 hours**

This question paper consists of 9 pages.

INSTRUCTIONS AND INFORMATION

1. This is a three-hour examination. 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.

2. You require the files listed below in order to answer the questions. They are EITHER on a stiffy disk OR CD issued to you, OR the invigilator/educator will tell you where to find them on the hard drive of the workstation you are using OR in which network folder it is. If the files are issued to you on a CD, you need to copy them onto your hard disk.

   QUESTION 1
   RugbyWorldCup.mdb
   Fixtures.txt
   TicketPrices.txt
   Question1_u.pas
   Question1_u.dfm
   Question1_p.dpr

   QUESTION 2
   PlayerStats.txt
   Question2_u.pas
   Question2_u.dfm
   Question2_p.dpr

   QUESTION 3
   Question3_u.pas
   Question3_u.dfm
   Question3_p.dpr

   If a disk or CD containing the files was issued to you, write your surname on the label.

3. Save your work at regular intervals as a precaution against power failures.

4. Read ALL the questions carefully. Do only what is required by the question.

5. During the examination you may use the manuals originally supplied with the hardware and software. You may also use the HELP functions of the software. You may NOT refer to any other resource material.

6. At the end of this examination session you will be required to hand in the stiffy or CD given to you by the invigilator with your work saved on it, or you must make sure that all your work has been saved on the network as explained to you by the invigilator/educator. Ensure that all files can be read.

7. You also have to hand in printouts of the programming code for all the questions you have done.

8. All printing of programming questions will take place within an hour of the completion of the examination.

SCENARIO

The Rugby World Cup 2011 was hosted by New Zealand this year. As expected it was a highly successful tournament which had loyal rugby supporters following every game that was played, to ensure that their favourite team qualified for the next round.

QUESTION 1 DATABASE AND DELPHI

The database, **RugbyWorldCup.mdb**, which contains data related to this topic, has been supplied to you in a folder named **Question 1**.

Two text files have been supplied as well. If you cannot use the database provided, use the text files named **Fixtures.txt** and **TicketPrices.txt** to create your own database named **RugbyWorldCup** containing two tables named **Fixtures** and **TicketPrices**. Change the data types of the fields of the tables to the specifications given below. Create a one-to-one relationship between the two tables.

The **Fixtures** table stores data about the rugby fixtures including the venue, date and time. The fields in this table are defined as follows:

Fixtures

Field Name	Data Type
MatchNo	AutoNumber
Date	Date/Time
Pool	Text
MatchDetails	Text
Location	Text
Stadium	Text

The following table is an example of the data contained in the table named **Fixtures** in the database named **RugbyWorldCup.mdb**.

Fixtures

MatchNo	Date	TimeNZ	Pool	MatchDetails	Location	Stadium
1	2011/09/09	20:30	A	New Zealand vs Tonga	Auckland	Eden Park
2	2011/09/10	13:00	B	Scotland vs Romania	Invercargill	Rugby Park Sta
3	2011/09/10	15:30	D	Fiji vs Namibia	Rotorua	Rotorua Intern
4	2011/09/10	18:00	A	France vs Japan	Auckland	North Harbour
5	2011/09/10	20:30	B	Argentina vs England	Dunedin	Otago Stadium
6	2011/09/11	15:30	C	Australia vs Italy	Auckland	North Harbour
7	2011/09/11	18:00	C	Ireland vs USA	New Plymouth	Stadium Taran
8	2011/09/11	20:30	D	South Africa vs Wales	Wellington	Wellington Re
9	2011/09/14	14:30	D	Samoa vs Namibia	Rotorua	Rotorua Intern
10	2011/09/14	17:00	A	Tonga vs Canada	Whangarei	Northland Eve
11	2011/09/14	19:30	B	Scotland vs Georgia	Invercargill	Rugby Park Sta
12	2011/09/15	19:30	C	Russia vs USA	New Plymouth	Stadium Taran
13	2011/09/16	20:00	A	New Zealand vs Japan	Hamilton	Waikato Stadiu
14	2011/09/17	15:30	B	Argentina vs Romania	Invercargill	Rugby Park Sta
15	2011/09/17	18:00	D	South Africa vs Fiji	Wellington	Wellington Re
16	2011/09/17	20:30	C	Australia vs Ireland	Auckland	Eden Park

The **TicketPrices** table stores data on the ticket prices for the matches taking place at the different venues and the different categories for adults as well as children under 16 years. The fields in this table are defined as follows:

TicketPrices

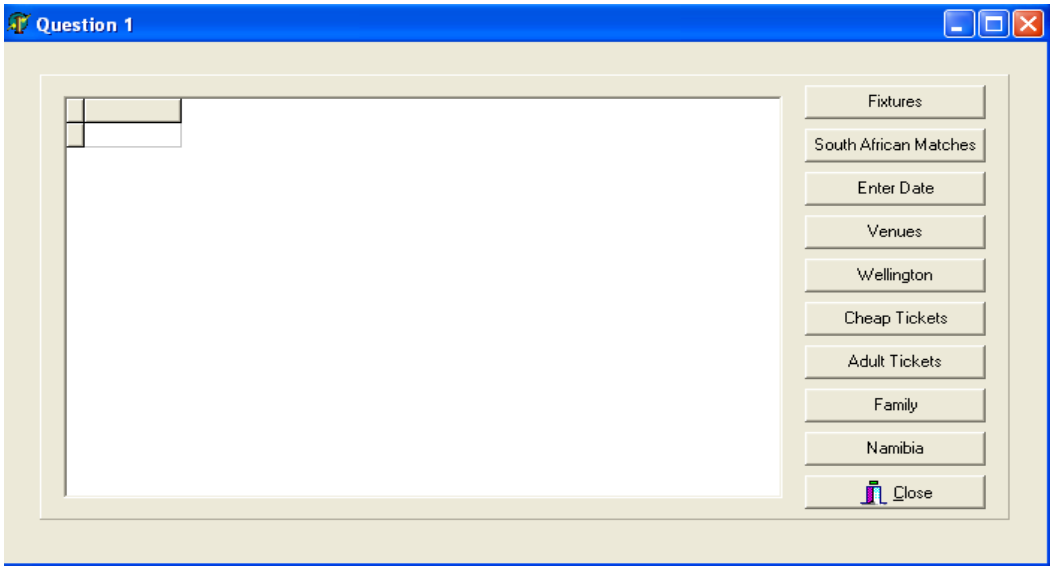
Field Name	Data Type
MatchNo	AutoNumber
CategoryAAdult	Currency
CategoryBAdult	Currency
CategoryCAdult	Currency
CategoryDAdult	Currency
CategoryDChild	Currency
CategoryGAAdult	Currency
CategoryGAChild	Currency

The following table is an example of the data contained in the table named **TicketPrices** in the database named **RugbyWorldCup.mdb.**

TicketPrices

MatchNo	CategoryAA	CategoryBA	CategoryCA	CategoryDA	CategoryDC	CategoryGA	CategoryGA
1	R 2,530.00	R 1,969.00	R 1,237.50	R 676.50	R 335.50	R 0.00	R 0.00
2	R 533.50	R 423.50	R 0.00	R 0.00	R 0.00	R 170.50	R 82.50
3	R 396.00	R 335.50	R 0.00	R 0.00	R 0.00	R 170.50	R 82.50
4	R 533.50	R 423.50	R 280.50	R 225.50	R 110.00	R 0.00	R 0.00
5	R 1,408.00	R 1,067.00	R 786.50	R 533.50	R 269.50	R 0.00	R 0.00
6	R 841.50	R 676.50	R 533.50	R 363.00	R 187.00	R 0.00	R 0.00
7	R 533.50	R 423.50	R 0.00	R 225.50	R 110.00	R 170.50	R 82.50
8	R 1,969.00	R 1,628.00	R 1,067.00	R 533.50	R 269.50	R 0.00	R 0.00
9	R 396.00	R 335.50	R 0.00	R 0.00	R 0.00	R 170.50	R 82.50
10	R 396.00	R 335.50	R 0.00	R 0.00	R 0.00	R 170.50	R 82.50
11	R 533.50	R 423.50	R 0.00	R 0.00	R 0.00	R 170.50	R 82.50
12	R 396.00	R 335.50	R 0.00	R 225.50	R 110.00	R 170.50	R 82.50
13	R 1,408.00	R 1,067.00	R 786.50	R 533.50	R 269.50	R 335.50	R 170.50

You have also been supplied with an incomplete Delphi program with a unit named **Question1_U** and a project named **Question1_P** in the folder named **Question 1**. Open the incomplete program.



- The program should be able to connect to the database named **RugbyWorldCup.mdb**.
- When you do QUESTION 1.1 and you find that the connectivity is not in place, use the following steps to establish connection with the database:
  - Click on the ADOQuery component named **qryWorldCup**.
  - Click on the Ellipse button (three dots) to the right of the ConnectionString property in the Object Inspector.
  - Click on the Build button which takes you to the Data Link Properties dialogue box.
  - Select Microsoft Jet 4.0 OLE DB Provider and click on Next.
  - The first option on the Connection tab sheet allows you to browse and find the **RugbyWorldCup.mdb** file.
  - Remove the user name Admin.
  - Click on the Test Connection button.
  - Click OK on each one of the open dialogue windows.

NOTE: If you cannot establish connectivity with the database at all when you execute the program you must still do and submit the programming code for marking.

Marks will only be awarded for the programming code that contains the SQL statements in the unit named Question1_U as well as code that makes use of an inputbox.

1.1 Complete the code in the **Fixtures** button by formulating an SQL statement to display all information from the Fixtures table, sorted according to the Pool as well as the Date of the respective matches.

Example of output of the first few records:

MatchNo	Date	Pool	MatchDetails	Location	Stadium
41	2011/10/08		Quarter-Final 1	Wellington	Wellington Re
42	2011/10/08		Quarter-Final 2	Auckland	Eden Park
44	2011/10/09		Quarter-Final 4	Auckland	Eden Park
43	2011/10/09		Quarter-Final 3	Wellington	Wellington Re
45	2011/10/15		Semi-Final 1	Auckland	Eden Park
46	2011/10/16		Semi-Final 2	Auckland	Eden Park
47	2011/10/21		Bronze Final	Auckland	Eden Park
48	2011/10/23		Final	Auckland	Eden Park
1	2011/09/09	A	New Zealand vs Tonga	Auckland	Eden Park
4	2011/09/10	A	France vs Japan	Auckland	North Harbour

(3)

1.2 Complete the code in the **South African Matches** button by formulating an SQL statement to display all the information from the Fixtures table of all the matches involving South Africa and display it sorted according to the date.

Example of output:

MatchNo	Date	Pool	MatchDetails	Location	Stadium
8	2011/09/11	D	South Africa vs Wales	Wellington	Wellington Regional S
15	2011/09/17	D	South Africa vs Fiji	Wellington	Wellington Regional S
22	2011/09/22	D	South Africa vs Namibia	Auckland	North Harbour Stadiun
33	2011/09/30	D	South Africa vs Samoa	Auckland	North Harbour Stadiun

(3)

1.3 Complete the code in the **Enter Date** button by formulating an SQL statement to display the Date and Location from the Fixtures table of all the matches played on the day as entered by the user, by means of an Inputbox.

Example of output if the day entered is 9:

date	location
2011/09/09	Auckland
2011/10/09	Wellington
2011/10/09	Auckland

(5)

1.4 Complete the code in the **Venues** button by formulating an SQL statement to display the locations from the Fixtures table which would be used during the Rugby World Cup Tournament.

Example of output:

location
Auckland
Dunedin
Hamilton
Invercargill
Napier
Nelson
New Plymouth
Palmerston North
Rotorua
Wellington
Whangarei

(3)

1.5 Complete the code in the **Wellington** button by formulating an SQL statement to display how many matches will be played in Wellington. Display the answer with a suitable heading.

Example of output:

Total Matches played in Wellington
8

(4)

1.6 Complete the code in the **Cheap Tickets** button by formulating an SQL statement to display the MatchDetails, Date and CategoryBAdult fields from the Fixtures and TicketPrices tables. Display all the records where the ticket price for the CategoryBAdult is R500 or less.
NB: You will need to link the tables with an appropriate ***where*** clause to be able to do this.

Example of output:

MatchDetails	Date	CategoryBAdult
Scotland vs Romania	2011/09/10	423.5
Fiji vs Namibia	2011/09/10	335.5
France vs Japan	2011/09/10	423.5
Ireland vs USA	2011/09/11	423.5
Samoa vs Namibia	2011/09/14	335.5
Tonga vs Canada	2011/09/14	335.5
Scotland vs Georgia	2011/09/14	423.5
Russia vs USA	2011/09/15	335.5

(5)

1.7 Complete the code in the **Adult Tickets** button by formulating an SQL statement to display all the ticket prices for adults (all categories) for all the South African matches taking place in the group stages.
NB: You will need to link the tables with an appropriate ***where*** clause to be able to do this.

Example of output of the first few records:

	matchNo	categoryAAdult	categoryBAdult	categoryCAdult	categoryDAdu
▶	8	1969	1628	1067	533
	15	841.5	676.5	533.5	3
	22	533.5	423.5	280.5	225
	33	676.5	533.5	335.5	225

(5)

1.8 Complete the code in the **Family** button by formulating an SQL statement that will determine how much a family of four (2 adults, 2 children younger than 16) will pay for the matches. Display the price they will have to pay for the entire family if they buy tickets from CategoryDAdult and CategoryDChild and are based in Auckland. Family price will be a calculated field.

Example of output of the first few records:

	matchNo	MatchDetails	Family Price
▶	1	New Zealand vs Tonga	R 2,024.00
	4	France vs Japan	R 671.00
	6	Australia vs Italy	R 1,100.00
	16	Australia vs Ireland	R 1,606.00
	22	South Africa vs Namibia	R 671.00
	25	New Zealand vs France	R 2,024.00
	26	Fiji vs Samoa	R 671.00
	33	South Africa vs Samoa	R 671.00
	36	England vs Scotland	R 1,606.00
	42	Quarter-Final 2	R 2,134.00
	44	Quarter-Final 4	R 2,134.00
	45	Semi-Final 1	R 3,256.00
	46	Semi-Final 2	R 3,256.00
	47	Bronze Final	R 1,606.00
	48	Final	R 4,389.00

(8)

1.9 Complete the code in the **Namibia** button by formulating an SQL statement to display the number of matches Namibia will play in the group stages of the World Cup. Display your answer with a suitable heading.

Example of output of the first few records:

	Number of Matches Namibia will be playing
▶	4

(4)

- Enter your name and surname as a comment line in the first line of the file named **Question1_UXXXX.pas** containing the SQL statements.
- Save the unit **Question1_UXXXX** and the project **Question1_PXXXX** (File|Save All).
- Make a printout of the code of the **Question1_UXXXX.pas** file. **[40]**

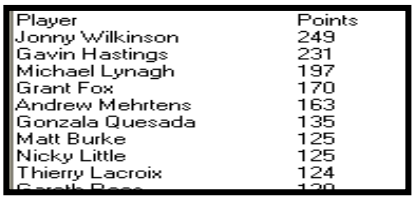
QUESTION 2 DELPHI PROGRAMMING

Player Statistics are rather important in the World Cup competition. All points scored are kept and updated after each match. The player statistics are stored in a text file. The code to get the information from the text file has already been written and information is stored in an array called **arrPlayers**. Do not delete or alter the code.

arrPlayers contents are stored as follows: **Name,Team,Matches,Tries,Con,Pen,DG**

2.1 Complete the code in the **FormCreate** Event Handler to separate the contents of arrPlayers into four separate arrays to hold the following information: name of the player (arrnames), team represented (arrteam), number of matches played (arrmatches), as well as total points (arrpoints). Total points are calculated by multiplying number of tries by 5, conversions by 2, penalties by 3 and drop goals by 3. (13)

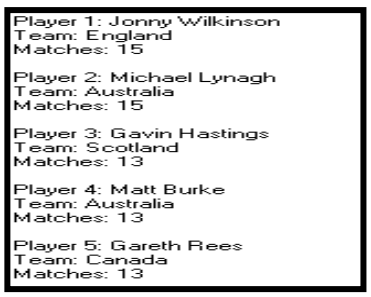
2.2 Write code for the **Total Points Per Player** button to display the points for each player. Display the name of the player and the points neatly in columns in the richedit component.



Player	Points
Jonny Wilkinson	249
Gavin Hastings	231
Michael Lynagh	197
Grant Fox	170
Andrew Mehrtens	163
Gonzala Quesada	135
Matt Burke	125
Nicky Little	125
Thierry Lacroix	124

(7)

2.3 Write code for the **Most Matches Played** button which will sort the players' statistics according to the number of matches they have played, in descending order. (All arrays must be sorted to ensure that information regarding each player is kept together.)
Once sorted, display the name, team represented and number of matches of the five players who have played the most matches.



Player 1: Jonny Wilkinson
Team: England
Matches: 15

Player 2: Michael Lynagh
Team: Australia
Matches: 15

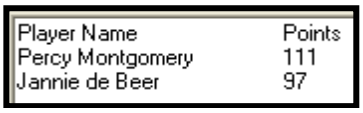
Player 3: Gavin Hastings
Team: Scotland
Matches: 13

Player 4: Matt Burke
Team: Australia
Matches: 13

Player 5: Gareth Rees
Team: Canada
Matches: 13

(15)

2.4 Write code for the **Display According User's Input** button that will display the name and points of the players that represented that particular team as entered by the user using an inputbox. Example of output if the user types in South Africa.



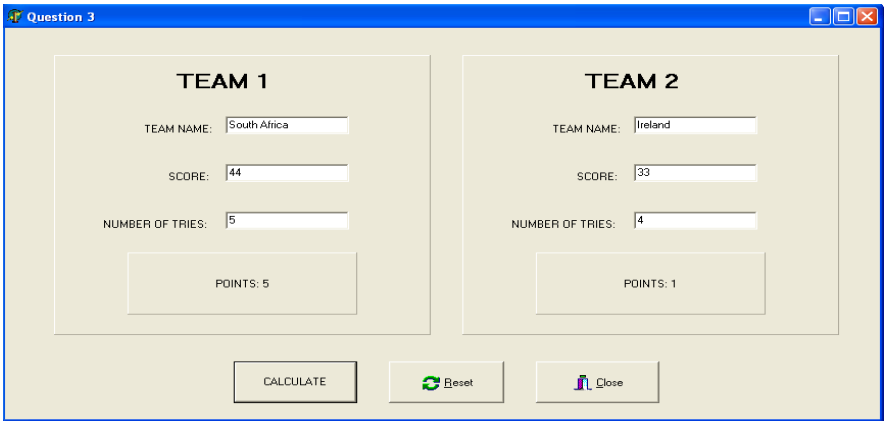
Player Name	Points
Percy Montgomery	111
Jannie de Beer	97

(5)

- Enter your name and surname as a comment line in the first line of the file named **Question2_UXXXX.pas**.
- Save the unit **Question2_UXXXX** and the project **Question1_PXXXX** (File|Save All).
- Make a printout of the code of the **Question2_UXXXX.pas**. **[40]**

QUESTION 3 DELPHI PROGRAMMING

This program will calculate how many points each team will have after each match played, by entering all the relevant information.



3.1 Write a function called **CalcBonusPoints**, which will receive the scores for both teams and tries scored for that *particular team* as parameters.

Calculate the points for each team according to the following criteria:

- If either team scored 4 tries or more, then 1 point is awarded
- If the losing team lost by 7 points or less, then 1 point is awarded

HINT: CalcBonusPoints will be called for each team as the bonus points are calculated separately. (13)

3.2 Write a procedure **CalcPoints**, which will receive the scores and bonus points of both teams as value parameters and send the total points for each team back to the Calculate button by making use of reference parameters.

Points are calculated as follows:

- Winning team = 4 points
- Losing team = 0 points
- Draw = 2 points for each team (12)

3.3 Write code for the **Calculate** button to retrieve the team names, their respective scores as well as the number of tries each team scored. Call statements for the function and procedure will be made in this event handler. Once the points have been calculated, they must be displayed on the respective panels. (10)

3.4 Write code for the **Reset** button which will clear all the editboxes, put the cursor in the first editbox and clear the panels. (5)

- Enter your name and surname as a comment line in the first line of the file named **Question3_UXXXX.pas.**
- Save the unit **Question3_UXXXX** and the project **Question3_PXXXX** (File|Save All).
- Make a printout of the code of the **Question3_UXXXX.pas** file. **[40]**

TOTAL: 120