

Reg. No. : 2000/000752/07



RICHFIELD

MAIN CAMPUS
292 SMITH STREET
DURBAN
4000

FACULTY OF INFORMATION TECHNOLOGY

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

1ST YEAR

ACADEMIC YEAR 2020

ASSIGNMENT BOOKLET

Registered with the Department of Education as a Private Higher Education Institution under the
Higher Education Act, 1997. Registration Certification No. 2000/HE07/008

- NB:**
1. Candidates are advised to read the guide lines.
 2. For reference use prescribed, recommended books and other source you may come across.
 3. Correct referencing carries 10 Marks.

GUIDELINES

The purpose of an assignment is to ensure that the Learner is able to:

- Use methods of enquiry and research in a disciplined field.
- Interpret and evaluate text.
- Have a sound understanding of key principles and theories, rules and awareness.
- Solve unfamiliar problems using correct procedures as well as investigate and critically analyse information and report thereof.
- Present and communicate information reliably and coherently.

Instructions and guidelines for writing assignments

1. Use the correct cover page provided by the institution.
2. All essay type assignments must include the following:
 - 2.1 Table of contents
 - 2.2 Introduction
 - 2.3 Main body with subheadings
 - 2.4 Conclusions and recommendations
 - 2.5 Bibliography
3. The length of the entire assignment **must** have minimum of 5 pages. Preferably typed with font size 12
 - 3.1 ***The quality of work submitted is more important than the number of assigned pages.***
4. Copying is a serious offence which attracts a severe penalty and must be avoided at all costs. If any learner transgresses this rule, the lecturer will retain the assignments and ask the affected learners to resubmit a new assignment which will be capped at 50%.
5. Use the Harvard referencing method.

ASSIGNMENTS DUE DATES

Module	Due Date	Signature
COMPULSORY MODULES		
Information Technology 511	22 March 2020	
Networks 511	22 March 2020	
Mathematics 511	18 April 2020	
Programming 511	18 April 2020	
Web Technology 511	10 May 2020	

RICHFIELD

FACULTY OF INFORMATION TECHNOLOGY

INFORMATION SYSTEMS 511

1ST SEMESTER ASSIGNMENT

Name & Surname: _____ ICAS No: _____

Qualification: _____ Semester: _____ Module Name: _____

Date Submitted: _____

ASSESSMENT CRITERIA	MARK ALLOCATION	EXAMINER MARKS	MODERATOR MARKS
MARKS FOR CONTENT			
QUESTION ONE	20		
QUESTION TWO	40		
QUESTION THREE	30		
TOTAL MARKS	90		
MARKS FOR TECHNICAL ASPECTS			
1. TABLE OF CONTENTS Accurate numbering according to the numbering in text and page numbers.	2		
2. LAYOUT AND SPELLING Font – Calibri 12 Line Spacing – 1.0 Margin should be justified.	3		
3. REFERENCE According to the Harvard Method	5		
TOTAL MARKS	10		
TOTAL MARKS FOR ASSIGNMENT	100		
Examiner's Comments:			
Moderator's Comments:			
Signature of Examiner:		Signature of Moderator:	

QUESTIONS

[90 MARKS]

QUESTION ONE

(20 MARKS)

ACCEPTABLE USE POLICY

Most businesses and institutions provide Wi-Fi and internet access to employees and students while they are at work or at school. While the intention is for the Internet to be used for work-related purposes, employees or students often find it easy to become distracted with other activities on the Internet, such as social media, checking personal email, or visiting unauthorized websites for entertainment.

These activities can degrade Internet access for others or lead to poor performance, as well as expose the company or institutions to malware viruses or other risks. Many businesses and institutions create an Acceptable Use Policy (AUP) that outlines how employees or students should use the Internet at work or at campuses. It also may outline consequences for unauthorized Internet use.

You are required to:

- 1.1** Locate two AUPs, one from the internet (published online) and the second one should be for your institution (Richfield Graduate Institute of Technology).

Compare the two policies and then create a policy you believe would be fair to you as a student of RGI. Include guidelines for Internet use during school hours, breaks, use of smartphones, and restrictions for using social media and unauthorized websites.

Compile your findings in a report format.

QUESTION TWO

(40 MARKS)

NB: You are required to answer the following two questions. Each question will carry equal certain marks and your answer for each question should be around 50 - 100 words minimum:

- What is deadlock? What is starvation? How do they differ from each other? (12)
- Describe **(4) FOUR** general strategies for dealing with deadlocks. (20)
- What are the **(4) FOUR** conditions required for deadlocks to occur? (08)

QUESTION THREE**(30 MARKS)****GREEN COMPUTING**

Green computing is the use of new technologies to reduce the amount of energy used by computers and to make it more efficient. The energy star program, which was created by the United States, is the best known example of computing. Green computing researches new ways to provide energy and also ways to improve existing technologies to become more energy efficient. They are researching the use of solar power, wind power, water power, sugar, chemicals and nanotechnology in an attempt to find better energy sources so that we reduce the amount of resources used and pollutants released when we use computers and other electronic devices.

Green computing also looks for ways to reduce the resources that are used in the process of making computers and other devices. They can do this through recycling old systems and using the materials to make newer more efficient computers and by recycling paper and reducing paper to use to prevent wasting resources while the computer can do all that.

1. Using practical examples, describe green computing. List and explain the steps that you can take to contribute to green computing. **(10)**
2. Is video conferencing really a viable green alternative to travel for most companies? Give reasons for your answer. **(10)**
3. How big of a role do green issues such as energy efficiency, carbon footprint, garbage, waste, water, space and transit play in the value proposition that you pitch to prospective customers when they are looking at upgrading their data centre? **(10)**

TOTAL MARKS: 100

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FACULTY OF INFORMATION TECHNOLOGY

NETWORKS 511

1ST SEMESTER ASSIGNMENT

Name & Surname: _____ ICAS No: _____

Qualification: _____ Semester: _____ Module Name: _____

Date Submitted: _____

ASSESSMENT CRITERIA	MARK ALLOCATION	EXAMINER MARKS	MODERATOR MARKS
MARKS FOR CONTENT			
QUESTION ONE	45		
QUESTION TWO	45		
TOTAL MARKS	90		
MARKS FOR TECHNICAL ASPECTS			
1. TABLE OF CONTENTS	2		
2. LAYOUT AND SPELLING	3		
3. REFERENCE	5		
TOTAL MARKS	10		
TOTAL MARKS FOR ASSIGNMENT	100		
Examiner's Comments:			
Moderator's Comments:			
Signature of Examiner:		Signature of Moderator:	

QUESTIONS**(90 MARKS)****QUESTION ONE****(45 MARKS)**

1.1 What do you understand by CSMA/CD protocol? Briefly explain its working. **(5)**

1.2 Explain the important characteristics of the following types of cables. Also, mention one application in which they are used: **(10)**

1.2.1 Coaxial Cable

1.2.2 Twisted pair cable

1.2.3 Optical fiber cable

1.3 Explain the functioning of user datagram protocol (UDP). Mention at least one application that is based on UDP protocol. **(10)**

1.4 Give some advantages and disadvantages of combining the session, presentation, and application layer in OSI model into one single application layer in the internet model. **(20)**

QUESTION TWO**(45 MARKS)**

Study the Table below and fill in the columns referring to the OSI model.

Layer	Protocol	What does the layer do	Which hardware used

TOTAL MARKS: 100

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FACULTY OF INFORMATION TECHNOLOGY

MATHEMATICS 511

1ST SEMESTER ASSIGNMENT

Name & Surname: _____ ICAS No: _____

Qualification: _____ Semester: _____ Module Name: _____

Date Submitted: _____

ASSESSMENT CRITERIA	MARK ALLOCATION	EXAMINER MARKS	MODERATOR MARKS
MARKS FOR CONTENT			
QUESTION ONE	90		
TOTAL MARKS	90		
MARKS FOR TECHNICAL ASPECTS			
1. TABLE OF CONTENTS Accurate numbering according to the numbering in text and page numbers.	2		
2. LAYOUT AND SPELLING Font – Calibri 12 Line Spacing – 1.0 Margin should be justified.	3		
3. REFERENCE According to the Harvard Method	5		
TOTAL MARKS	10		
TOTAL MARKS FOR ASSIGNMENT	100		
Examiner's Comments:			
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Signature of Examiner:		Signature of Moderator:	

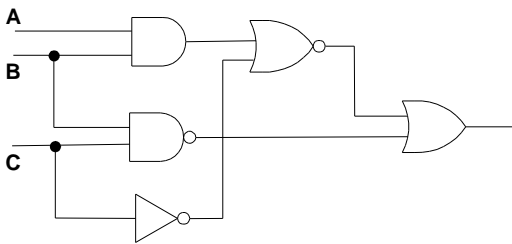
QUESTIONS**[90 MARKS]****QUESTION ONE****[90 MARKS]****1.1** Maximize $z = 3a + b + 2c$

- Subject to:
1. $a + b + 3c \leq 30$
 2. $2a + 2b + 5c \leq 24$
 3. $4a + b + 2c \leq 36$
 4. $a, b, c \geq 0$

NB : a= Computers b= Network devices c= IP cameras
Z= Performance

-Numbers are costs.

The problem above consist of maximizing the performance of our computer network by reducing the total cost. **(10)**

1.2 Show the behavior of the following circuit with a truth table:**(10)****1.3** Solve the following linear program using SIMPLEX algorithm:**(10)**

Minimize $z = a + b + c$

- Subject to:
1. $a - b - c \leq 0$
 2. $a + b + c \geq 4$
 3. $a + b - c = 2$
 4. $a, b \geq 0$

1.4 Given the constraints

(10)

$$A+B+C \leq 24, B+C \geq 8 \text{ and } A \geq 0, B \geq 0, C \geq 0.$$

Maximize $24-A-B-C$

A: amount of time spent on school work

B: amount of time spent on fun

C: amount of time spent on pay work

1.5 Solve the following system of linear equations using (a) matrix inversion, and (b) rule.

Cramer's
(10)

$$\begin{bmatrix} 1 & 3 & 0 \\ 0 & 0.5 & 1 \\ 0.5 & 0 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 4 \\ 1 \\ 3 \end{bmatrix}$$

1.6 Use Cramer's rule to find x in the equation systems below and simulate your result by using any programming language. **(10)**

$$y - z = 2$$

$$3x + 2y + z = 4$$

$$5x + 4y = 1$$

1.7 Solve the following system of linear equations by using the inverse matrix method:

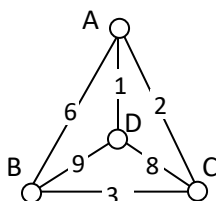
(10)

$$x + y + z = 4$$

$$-2x - y + 3z = 1$$

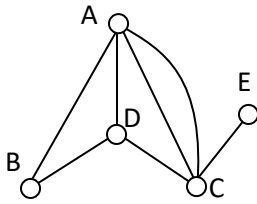
$$y + 5z = 9$$

1.8 Apply the Brute force algorithm to find the minimum cost Hamiltonian circuit on the graph below. **(10)**



1.9 Does a Hamiltonian path or circuit exist on the graph below?

(10)



1.10

Given: $A = \begin{bmatrix} 1 & 1 & -1 \\ 2 & 2 & 3 \\ 4 & 0 & 0 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 1 & -1 \\ 2 & 2 & 3 \\ 4 & 0 & 0 \end{bmatrix}$

Find: a) $-A^{-1} + 3B^T$ b) $B^{-1} + (A^T + A^{-1})$

(10)

TOTAL MARKS: 100

RICHFIELD

FACULTY OF INFORMATION TECHNOLOGY

PROGRAMMING 511

1ST SEMESTER ASSIGNMENT

Name & Surname: _____ ICAS No: _____

Qualification: _____ Semester: _____ Module Name: _____

Date Submitted: _____

ASSESSMENT CRITERIA	MARK ALLOCATION	EXAMINER MARKS	MODERATOR MARKS
MARKS FOR CONTENT			
QUESTION ONE	30		
QUESTION TWO	30		
QUESTION TWO	30		
TOTAL MARKS	90		
MARKS FOR TECHNICAL ASPECTS			
1. TABLE OF CONTENTS	2		
2. LAYOUT AND SPELLING	3		
3. REFERENCE	5		
TOTAL MARKS	10		
TOTAL MARKS FOR ASSIGNMENT	100		
Examiner's Comments:			
Moderator's Comments:			
Signature of Examiner:		Signature of Moderator:	

QUESTION ONE**(30 MARKS)**

1. Design a Windows application named Wallpaper App to calculate the number of single rolls of wallpaper required to cover a room.
2. Create an interface as shown in Figure 1. There are four combo boxes having a drop down style. Display the range of values for the room's length, width and height from 10 to 35 in the combo boxes while the value in the combo box for the roll coverage should range from 40 to 50 with an increment of 0.5.
3. The calculate button's click event procedure should calculate and display the number of single rolls of wallpaper required to cover a room. Use a Sub procedure to make the calculation. The number of the single roll should be displayed as an integer. (i.e the number of single roll having a decimal point should be rounded off to the next highest integer).
4. The number of roll should be cleared when changes are made on any of the combo boxes.
5. Save and test the application. (For example, if the roll coverage is 45.5 sqFt and the length, width and height of the room are 15, 18 and 20 respectively, the number of single roll will be 30).

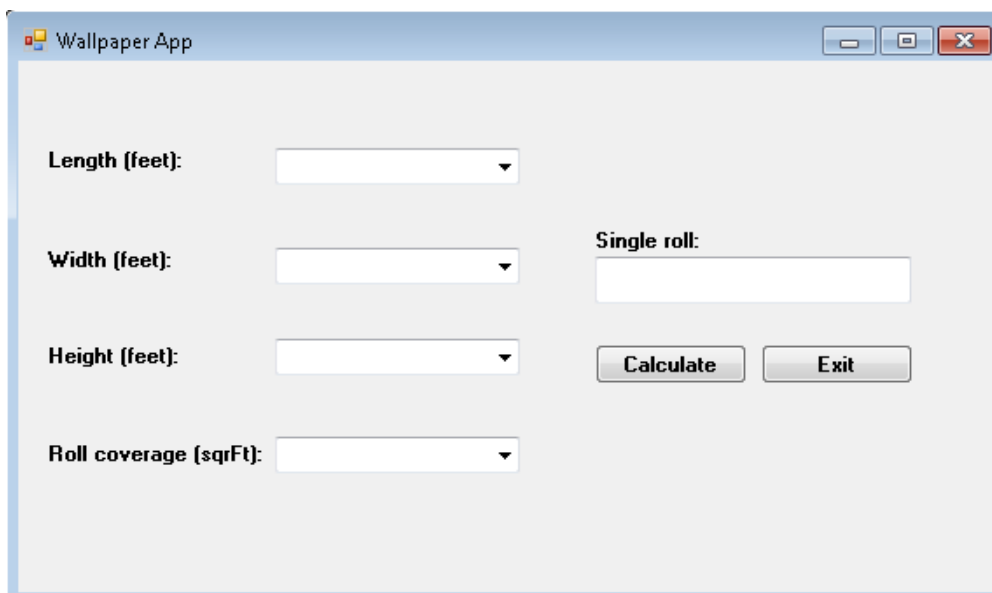


Figure 1: Wallpaper App interface

QUESTION TWO**(30 MARKS)**

The Financial officer at RGIT wants you to develop an application that will evaluate the company's asset's annual depreciation using the double-declining balance and sum-of-the years' digit method. The Financial officer will enter the asset's cost, useful life (in years), and salvage value (which is the value of the asset at the end of its useful life). The sample of the application can be seen in Figure 2. The interface provides text boxes for entering the asset cost and salvage value. It also provides a list

box for selecting the useful life, which ranges from 3 to 20 years. The depreciation amounts are displayed in the list boxes. (You can use the DDB and SYD functions in Microsoft Excel to verify the amounts shown in Figure 2 are correct). Create a windows form application using the name **RGIT annual asset depreciation App**. You can use the visual basic's Financial.DDB method to calculate the double-declining balance depreciation and use its Financial.SYD method to calculate the sum-of-the-years' digit depreciation. The Financial.DDB method syntax is Financial.DDB (cost, salvage, life, period). The Financial.SYD method syntax is Financial.SYD (cost, salvage, life, period). In both syntaxes, the cost, salvage and life arguments are the asset's cost, salvage value and useful life respectively. The period argument is the period for which you want the depreciation amount calculated. Both methods return the depreciation amount as double number. Code the application, save the solution and run the application

Asset cost: 5000

Salvage value: 100

Useful life: 5

Display depreciation schedules

Exit

Depreciation schedules

Year	Depreciation
1	2,000.00
2	1,200.00
3	720.00
4	432.00
5	259.20

Year	Depreciation
1	1,633.33
2	1,306.67
3	980.00
4	653.33
5	326.67

Figure 2: Interface for RGIT annual asset depreciation App

QUESTION THREE

(30 MARKS)

The sales manager at ITI Hub has asked you to design and implement a Windows application that will display the total sales made in there three regions in South Africa: Kwazulu-Natal, Gauteng and Western cape. The application should display the total sales of the company as well as the percentage that each region contributed to the total sales. Display the sales amounts with a Rand sign and no decimal places. Display the percentages with a percent symbol with no decimal places. The sales amounts for six months are shown in Figure 3. Create a windows application form for this project using the name **ITI Hub regional sales**. Store the sales amount in a two-dimensional array. Create a suitable interface with an image for the project and run the application.

Month	Kwazulu-Natal sales (R)	Gauteng sales (R)	Western cape sales (R)
1	120,000	90,000	65,000
2	190,000	85,000	64,000
3	175,000	80,000	71,000
4	188,000	83,000	67,000
5	125,000	87,000	65,000
6	163,000	80,000	64,000

Figure 3: ITI Hub sales amount

TOTAL MARKS: 100

RICHFIELD

FACULTY OF INFORMATION TECHNOLOGY

WEB TECHNOLOGY 511

1ST SEMESTER ASSIGNMENT

Name & Surname: _____ ICAS No: _____

Qualification: _____ Semester: _____ Module Name: _____

Date Submitted: _____

ASSESSMENT CRITERIA	MARK ALLOCATION	EXAMINER MARKS	MODERATOR MARKS
MARKS FOR CONTENT			
QUESTION ONE	20		
QUESTION TWO	20		
QUESTION THREE	15		
QUESTION FOUR	15		
QUESTION FIVE	20		
TOTAL MARKS	90		
MARKS FOR TECHNICAL ASPECTS			
1. TABLE OF CONTENTS	2		
2. LAYOUT AND SPELLING	3		
3. REFERENCE	5		
TOTAL MARKS	10		
TOTAL MARKS FOR ASSIGNMENT	100		
Examiner's Comments:			
Moderator's Comments:			
Signature of Examiner: _____ Signature of Moderator: _____			

Read from the concept of web development process and reference from your research the below points:

- What do you need to develop the below website
- What can you add as a missing part on the below website - How the process of upgrading this website can be done.

Project Overview

Nokur Technologies has landed a new contract to develop a website for Richfield Graduate Institute of Technology. The lead developer has divided the project so that the company can deliver the completed project in **5 working days** you have assigned to work on the following five pages

- **Home Page**
- **Media**
- **Payment methods**
- **Programmes**
- **Apply now**

Important: You have been provided with all images and text to you in the web design. Every page must contain the logo, menu bar and a footer.

QUESTION ONE

(20 MARKS)

Home Page: Your Page should be as follows



Partnerships & Affiliations

In the current economic situation, it becomes mandatory for institutions to increase their networking opportunities through affiliations and partnerships. When partnerships are implemented correctly, the private sector can increase efficiency and choice, and expand access to education services, particularly for households that tend to be poorly served by traditional delivery methods.

Richfield's relations with the private sector, encompass cooperation with business corporations, small and medium enterprises, professional and economic associations as well as other organizations of the business community, individuals, communities, parents and families.

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Richfield recognizes that when we collaborate with some of the most ambitious organizations, we can multiply our impact in areas from education to economic development to poverty alleviation because of our ISO 9001:2015 accreditation status! We have enduring partnerships and affiliations with a number of like-minded organizations and leaders who are eager to help drive global change and deliver true results.

These affiliations and collaborations assist the Institution in inter alia :

- Availability of exclusive and current online resources
- Access to a variety of databases
- Conferences and seminars that staff can attend or participate in
- Networking
- Updating on latest cutting edge technology
- Placement of Students for Work Integrated Learning(WIL)
- Industry and Academic Experts as External Moderators, members of DACUM Panel and Senate
- Programme design, development, improvement and review

Text for question one

Partnerships & Affiliations

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- Programme design, development, improvement and review

QUESTION TWO

(20 MARKS)

Media Page: Your Page should be as follows



Use HTML5 video element to insert any video clip as well as social media icons (vectors)

QUESTION THREE

(15 MARKS)

Payment Methods: Your Page should be as follows



Payment Methods

Edgars or Jet Card:

Visit any of our Campuses that accept Debit and Credit Cards, and you can also pay with your Edgars or Jet Card! Please note that your Edgars or Jet Thank U Card along with the Card Holder must be present for the transaction. Proof of ID will be required.



Debit or Credit Card:

A cardholder begins a credit card transaction by presenting his or her card to a merchant as payment for goods or services. The merchant uses their credit card machine, software or gateway to transmit the cardholder's information and the details of the transaction to their acquiring bank, or the bank's processor.



Snapscan:

Download the Snapscan App to your Mobile Phone or Tablet Device. Open the SnapScan app, tap on "Scan" and scan the SnapCode displayed at the shop. This identifies the shop and prompts you to enter the amount you wish to pay. Enter your PIN to secure and complete the transaction. Richfield will receive a notification containing a confirmation of payment from SnapScan and your account will be updated accordingly.



Electronic Funds Transfer (or CDI):

Name of Bank: Standard Bank of South Africa

Name of Account: Richfield Graduate Institute of Technology (PTY) Ltd.

USE YOUR ICAS NUMBER, INITIALS AND SURNAME AS REFERENCE

@Website designed by (Your student number)™ (Your Qualification) 2018 ©All Rights Resrvd.

Text for payment methods

Payment Methods

Edgars or Jet Card:

Visit any of our Campuses that accept Debit and Credit Cards, and you can also pay with your Edgars or Jet Card! Please note that your Edgars or Jet Thank U Card along with the Card Holder must be present for the transaction. Proof of ID will be required.

Debit or Credit Card:

A cardholder begins a credit card transaction by presenting his or her card to a merchant as payment for goods or services. The merchant uses their credit card machine, software or gateway to transmit the cardholder's information and the details of the transaction to their acquiring bank, or the bank's processor.

Snapscan:

Download the Snapscan App to your Mobile Phone or Tablet Device. Open the SnapScan app, tap on "Scan" and scan the SnapCode displayed at the shop. This identifies the shop and prompts you to enter the amount you wish to pay. Enter your PIN to secure and complete the transaction. Richfield will receive a notification containing a confirmation of payment from SnapScan and your account will be updated accordingly.

Standard Bank M65 Cash Payment:

Direct Cash Deposits can be made at any branch of Standard Bank using the M65 form which can be obtained from your nearest Campus. This form can only be used at Standard Bank branches. Don't forget to ensure that your name AND student number are on both sections of the form.

Electronic Funds Transfer (or CDI):

Name of Bank: Standard Bank of South Africa

Name of Account: Richfield Graduate Institute of Technology (PTY) Ltd.

USE YOUR ICAS NUMBER, INITIALS AND SURNAME AS REFERENCE

QUESTION FOUR

(15 MARKS)

Programmes: Your Page should be as follows

You are to design a drop down menu bar using your CSS knowledge. The menu bar should be in all pages.




Home Page	Payment Methods	Media	Campuses	Study With US	Programs	Appy Now
					HET	
					FET	
					TVET	
					Skills	

QUESTION FIVE (20 MARKS)

(20 MARKS)

Apply Now: Your Page should be as follows

In this page you are supposed to design a form which will retrieve user information. The form should look as follows.

Home Page	Payment Methods	Media	Campuses	Study With US	Programs	Appy Now
<div>First Name</div> <div>Last Name</div> <div>email address</div> <div>Cell Number</div> <div>ID Number</div> <div>Date of birth </div> <div> <div>Course</div> <div>-</div> <div>▼</div> </div> <div> <div>Highest Education Level</div> <div>-</div> <div>▼</div> </div> <div> <div>Identification Type</div> <div> <input type="radio"/> Passport Number <input type="radio"/> ID Number </div> </div> <div> <div>Gender</div> <div> <input type="radio"/> Male <input type="radio"/> Female </div> </div> <div> <div>Population Group</div> <div>-</div> <div>▼</div> </div> <div>Nationality</div> <div>Address</div> <div>Send Button</div>						

The form should collect the following information

1. First name ---- text field
2. Last name ---- text field
3. Email address---- text field

4. Cell Number ---- text field
5. ID Type ----- radio button
6. ID Number -----drop down menu
7. Course-----drop down menu
8. Gender -----radio buttons
9. Population Group -----dropdown menu
10. Nationality
11. Address ---- text area

Additional marks if u use form validation

*****NB Every page must contain the menu bar and a footer.***

TOTAL MARKS: 100