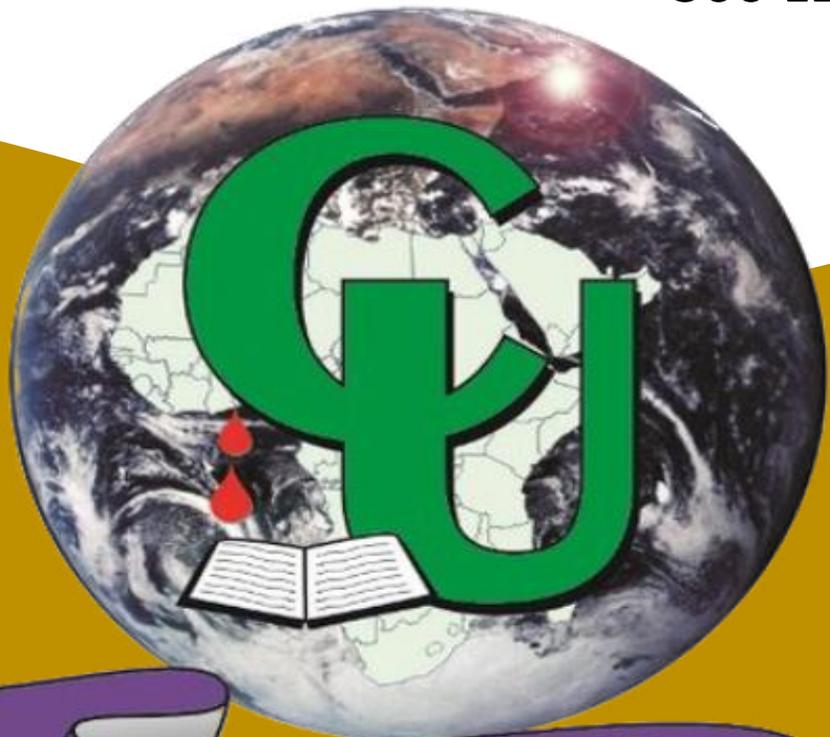


# COVENANT UNIVERSITY

OMEGA SEMESTER TUTORIAL KIT  
(VOL. 2)

PROGRAMME: ESTATE MGT.  
300 LEVEL



*Raising A New Generation Of Leaders*

## **DISCLAIMER**

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## **LIST OF COURSES**

- ESM321: Principles of Valuation II
- ESM322: Principles of Town and Country Planning II
- \*ESM324: Elements of Land Law II
- \*ESM325: Property Marketing
- ESM326: Building Services and Maintenance II
- ESM327: Environmental Challenges
- \*ESM328: Building Economics II

**\*Not included**



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CANAANLAND, KM 10, IDIROKO ROAD  
P.M.B 1023, OTA, OGUN STATE, NIGERIA

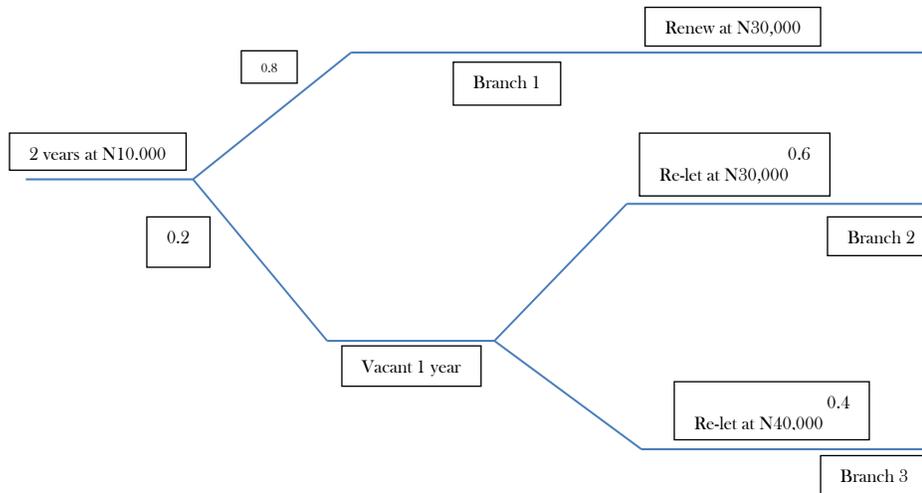
**TITLE OF EXAMINATION:** B.Sc EXAMINATION  
**COLLEGE:** SCIENCE AND TECHNOLOGY  
**DEPARTMENT:** ESTATE MANAGEMENT  
**SESSION:** 2015/2016 EXAM **SEMESTER:** OMEGA  
**COURSE CODE:** ESM 321 **CREDIT UNIT:** 2  
**COURSE TITLE:** PRINCIPLES OF VALUATION II  
**INSTRUCTION:** ANSWER 3 (THREE) QUESTIONS IN ALL. ANSWER ONLY 1 (ONE) QUESTION IN SECTION A AND 2 (TWO) QUESTIONS IN SECTION B.

**TIME: TWO HOURS**

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## SECTION A

1. (a) What is Downside Risk? **(5 marks)**  
(b) Write short but concise notes on any five (5) types of downside risk as it affects investment valuation. **(5 marks)**  
(c) Going by best current estimates, a recently let freehold shop property has an estimated gross full rental value of N50,000. Outgoings are 10% of this sum, and expected initial yield is 5%. Determine the capital value and then determine the effect on capital value of 10% downside variations in gross rental value, outgoings, and yield. Using the Sensitivity Analysis method of Downside Risk-Adjustment, calculate the capital value. **(15 marks)**  
(d) List any ten (10) characteristics of a good valuation report. **(5 marks)**
  
2. (a) What is Downside Risk? **(5 marks)**  
(b) Write short but concise notes on any five (5) types of downside risk as it affects investment valuation. **(5 marks)**  
(c) A property is currently let for 2 years at N10,000. The position sequel to this is subject to various possibilities based on what market trend and the economy suggest to the valuer. First, he considers that there is an 80% probability that it could be immediately renewed at N30,000. Alternatively, there is a 20% probability that it could be vacant for a year, after which it could be re-let at either N30,000 or N40,000 with respective probabilities of 60% or 40%. Use an 8% initial yield for the reversionary calculations. The above expectations could be represented diagrammatically (in form of a decision tree) as follows:



Using the Stochastic Decision Tree method of Downside Risk-Adjustment, Calculate for the probability weighted capital value. **(15 marks)**

(d) Enumerate (list) the essential constituents of a good valuation report **(5 marks)**

### SECTION B

3. Value for **Fire Insurance** a 7-bedroom detached house along Faith Avenue Covenant University, Ota sitting on 1250m<sup>2</sup> land area (50mx25m). The property was developed about 15years ago and has been maintained in a good tenatable condition. It is of very high standard in terms of finishing and commands a current FRV of N1500000/m<sup>2</sup> PA. It is fenced on all sides and provided with a vehicular/pedestrian gate at the front. The areas between the wall and the building is paved with interlocking paving stone. The building has a GFA of 550m<sup>2</sup> on the ground floor and 650m<sup>2</sup> on the upper floor. The Quantity Surveyor consultant has the following cost for similar construction.

Main building=N120,000/m<sup>2</sup> as a result of high standard of finish.

Paved area=N10,000/m<sup>2</sup>;

Fence=N22500/m run.

The Federal Office of Statistics has provided you with the inflation rate of 15% per annum. There is a well within the premises which is supplied with a 1500 litre plastic overhead water storage tank supported on steel props.

While the repair construction is ongoing, there is a consequential loss for a period of 2½years at N3,000,000 per annum. Depreciation at 20% and Professional fees at 10%.

Cost for well is estimated at N200,000; tank and support at N400,000; pumps at N80,000, vehicular pedestrian gate at N500,000 demolition and carting away at N5,000,000.

Value the property on the basis of **Full Reinstatement**. **(20 marks)**

4. A couple intend to take a mortgage loan of N25,000,000 at an annual repayment of (N3,500,000 from the husband and N1,500,000 from the wife) from a mortgage institution at 12% for the 1<sup>st</sup> 5 years, 13% for the next 5years, 14% for the next 5years and ½% increase every 5years in that manner.

Using a mortgage instalment table,

- i. What will be the outstanding capital on the 5<sup>th</sup> year?
- ii. What will be the outstanding capital after the 5<sup>th</sup> year?
- iii. What will be the amount on interest on the 8<sup>th</sup> year?
- iv. How long will it take for the couple to complete the repayment?
- v. What will be the take home balance of the couple after payment on the final year?

(20 marks)

5. (a) Value a freehold interest in a property just let at its rental value of N300,000.00 per annum on a 5-year review pattern for 15years. A similar property was recently sold for N3,750,000.00. You may assume that all risks yield (k) is 8%, gilt security currently yield at 8% and an additional 2% is to be assumed for risk premium. Using only the **Crosby's Real Value** model in conventional format, value the freehold investment. (13 marks)

(b) State the formula for:

- i. Syke's Rational Model; (2 marks)

(c) Write concise but short notes on:

- i. Equated yield (e) (1 mark)
- ii. All risks yield (k) (1 mark)
- iii. Inflation Risk Free Yield (i) (1 mark)
- iv. Rent review pattern (t) (1 mark)
- v. Growth rate (g) (1 mark)



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**TIME: TWO HOURS**

## MARKING GUIDE

### SECTION A

3. (a) What is Downside Risk? (5marks)
- Downside risk refers to the probability that the variables in the investment valuation may not turn out as favorably as expected. For example, the expected full rental value figure may not be fully realized (that is, the full rental value may be lower than expected). Downside risk could also refer to the prospect that the rent at future reviews may not meet up to calculated growth rates. Similarly it could refer to the prospect that investors' expected initial yield, calculated from the relationship between the rental value and the market value may turn out to be inferior (higher) than that presently suggested by the market.
- (b) Write short but concise notes on any five (5) types of downside risk as it affects investment valuation. (5marks)

There are eight types of downside risk that can affect property investment – market risk, financial risk, capital market risk, inflation risk, liquidity risk, environmental risk, legislative risk and management risk. Students are expected to briefly discuss these.

Market risk  
Financial risk  
Capital market risk  
Inflation risk  
Liquidity risk  
Environmental risk  
Legislative risk  
Management risk

(c) Going by best current estimates, a recently let freehold shop property has an estimated gross full rental value of N50,000. Outgoings are 10% of this sum, and expected initial yield is 5%. Determine the capital value and then determine the effect on capital value of 10% downside variations in gross rental value, outgoings, and yield. Using the Sensitivity Analysis method of Downside Risk-Adjustment, calculate the capital value. (15marks)

	N
Gross rental value	50,000
Less outgoings @ 10%	<u>5,000</u>
Net rental value	45,000
YP perp. @ 5%	<u>20</u>
Capital value	<b><u>900,000</u></b>

To test the sensitivity of this capital value estimate to a 10 per cent decrease in gross rental value

	N
Gross rental value	45,000
Less outgoings @ 10%	<u>4,500</u>
Net rental value	40,500
YP perp. @ 5%	<u>20</u>
Capital value	<b><u>810,000</u></b>

To test the sensitivity of the capital value estimate to a 10 per cent increase in outgoings,

	N
Gross rental value	50,000
Less outgoings @ 11%	<u>5,500</u>
Net rental value	44,500
YP perp. @ 5%	<u>20</u>
Capital value	<b><u>890,000</u></b>

To test the sensitivity of the capital value estimate to a 10 per cent increase in initial yield,

	N
Gross rental value	50,000
Less outgoings @ 10%	<u>5,000</u>
Net rental value	45,000
YP perp. @ 5.5%	<u>18.18</u>
Capital value	<b><u>818,100</u></b>

(d) List any ten (10) characteristics of a good valuation report. (5marks)

1. Valuation report must be prepared in a way to satisfy minimum professional and legal requirements.
2. Valuation report must sufficiently convey to the reader a clear understanding of the opinion being expressed by the valuer including the basis of valuation used and the assumptions and information on which it is based.
3. VR is expected to meet very high standard in appearance - carefully typed, compiled and bound.
4. Must avoid unfamiliar technical expression and peculiar professional jargons.
5. The report should exhibit logical organization and sound reasoning which is enhances by good grammar composition, a fluid writing style, clear expressions; succinct writing that is without redundancies.
6. Facts and descriptive data should come up in the early section of the report so that subsequent analysis and interpretations could make reference to them easily and conveniently.

7. The appearance of the report must be formal, neat, preferably prepared on a computer, printed in a good grade paper, well-trimmed and bound in durable cover.
8. A good VR should be divided into sections and subheads.
9. It should exhibit such as plans, drawings, picture or inventory of plants and machinery etc; and these are to be relegated to the appendix and not interfere with free flow of the reporting. They should also be kept to the minimum essential to support the valuer's analysis and conclusions.
10. The size and type of characters and the typing must be attractive and readable.
11. The style of headings should be appropriate to the subject matter and also appropriately numbered or designated.

4. (a) What is Downside Risk?

**(5marks)**

Downside risk refers to the probability that the variables in the investment valuation may not turn out as favorably as expected. For example, the expected full rental value figure may not be fully realized (that is, the full rental value may be lower than expected). Downside risk could also refer to the prospect that the rent at future reviews may not meet up to calculated growth rates. Similarly it could refer to the prospect that investors' expected initial yield, calculated from the relationship between the rental value and the market value may turn out to be inferior (higher) than that presently suggested by the market.

(b) Write short but concise notes on any five (5) types of downside risk as it affects investment valuation.

**(5marks)**

There are eight types of downside risk that can affect property investment – market risk, financial risk, capital market risk, inflation risk, liquidity risk, environmental risk, legislative risk and management risk. Students are expected to briefly discuss these.

Market risk

Financial risk

Capital market risk

Inflation risk

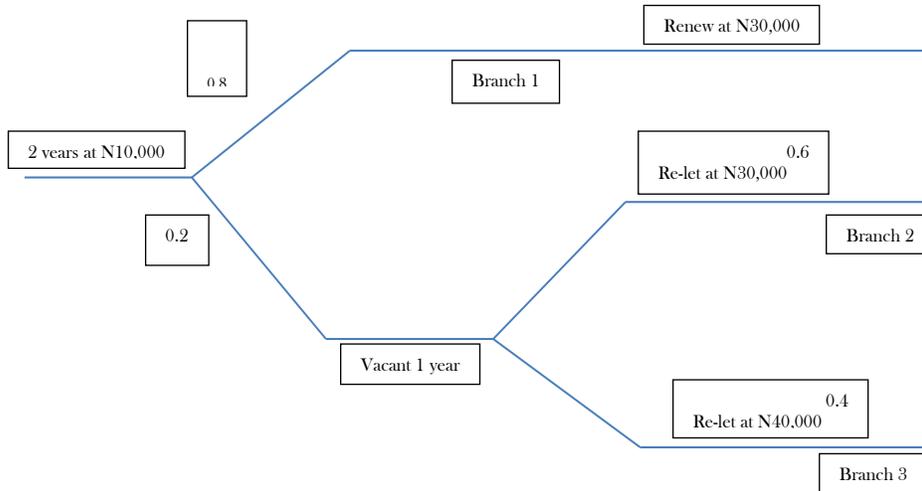
Liquidity risk

Environmental risk

Legislative risk

Management risk

(c) A property is currently let for 2 years at N10000. The position sequel to this is subject to various possibilities based on what market trends and the economy suggest to the valuer. First, he considers that there is an 80% probability that it could be immediately renewed at N30,000. Alternatively, there is a 20% probability that it could be vacant for a year, after which it could be re-let at either N30,000 or N40,000 with respective probabilities of 60% or 40%. Use an 8% initial yield for the reversionary calculations. The above expectations could be represented diagrammatically (in form of a decision tree) as follows:



Using the Stochastic Decision Tree method of Downside Risk-Adjustment, Calculate for the probability weighted capital value. (15marks)

**Valuation**

<b>Branch 1</b>	<b>N</b>	<b>N</b>
Fixed rent for 2 years	10,000.00	
YP 2 years @ 7%	<u>1.8080.00</u>	
		N 18,080.00
Reversion	30,000.00	
YP in perp. @ 8% = 12.5		
PV 2yrs @ 8% = 0.8573	<u>10.71625</u>	
		<u>N321,487.50</u>
CV (Branch 1)		<u><b>N339,567.50</b></u>
<b>Branch 2</b>		
Fixed rent for 2 years	10,000.00	
YP 2 years @ 7%	<u>1.8080.00</u>	
		N 18,080.00
Reversion	30,000.00	
YP in perp. @ 8% = 12.5		
PV 3yrs @ 8% = 0.7938	<u>9.9225</u>	
		<u>N297,675.00</u>
CV (Branch 2)		<u><b>N315,755.00</b></u>
<b>Branch 3</b>		
Fixed rent for 2 years	10,000.00	
YP 2 years @ 7%	<u>1.8080.00</u>	
		N 18,080.00
Reversion	40,000.00	
YP in perp. @ 8% = 12.5		
PV 3yrs @ 8% = 0.7938	<u>9.9225</u>	
		<u>N396,900.00</u>
CV (Branch 3)		<u><b>N414,980.00</b></u>

From the above calculations, this investment has a present value at 80% of N339,567.50, or (20x60)% of N315,755.00, or (20x40)% N414,980.00. Allowing for the probabilities and conditional probabilities, we have:

	N
N339,567.50 x 0.8 =	271,654.00
N315,755.00 x 0.2 x 0.6 =	37,890.60
N414,980.00 x 0.2 x 0.4 =	<u>33,198.40</u>
	<b><u>342,743.00</u></b>

The probability weighted capital value is therefore N342,743.00

- (d) Enumerate (list) the essential constituents of a good valuation report (5marks)

**PART 1 - Introduction**

- 1.1 Instruction
- 1.2 Purpose of Valuation
- 1.3 Scope of Valuation
- 1.4 Date and Extent of Inspection
- 1.5 Effective Date of Valuation
- 1.6 Assumption and Contingent Conditions

**PART 2 - The Property**

- 2.1 Location
- 2.2 Accessibility
- 2.3 Site Characteristics
- 2.4 Neighbourhood Characteristics
- 2.5 Development on Site
- 2.6 Construction Details
- 2.7 Accommodation Details
- 2.8 Offsite facilities and Services
- 2.9 State of Repairs
- 2.10 Highest and Best Use Analysis
- 2.11 Tenure and Title

**PART 3 - The Valuation**

- 3.1 Basis of Valuation
- 3.2 Method of Valuation
- 3.3 Analysis of Market Data
- 3.4 Reconciliation of Value
- 3.5 Valuation Opinion

**PART 4 - The Certification**

- 4.1 Caveat
- 4.2 Certification and Signature of Valuer
- 4.3 Stamp and Seal of Valuation Firm
- 4.4 Addenda and Supporting Materials such as Pictures, Layout Drawings etc.

**SECTION B**

3. (a) Value for fire insurance a 7bedroom detached house along Faith Avenue Covenant University, Ota sitting on 1250m<sup>2</sup> land area (50mx25m). The property was developed about 15years ago and has

been maintained in a good tenable condition. It is of very high standard in terms of finishing and commands a current FRV of N1500000/m<sup>2</sup> PA. It is fenced on all sides and provided with a vehicular/pedestrian gate at the front. The areas between the wall and the building is paved with interlocking paving stone. The building has a GFA of 550m<sup>2</sup> on the ground floor and 650m<sup>2</sup> on the upper floor. The Quantity Surveyor consultant has the following cost for similar construction.

Main building=N120,000/m<sup>2</sup> as a result of high standard of finish.

Paved area=N10,000/m<sup>2</sup>;

Fence=N22500/m run.

The Federal Office of Statistics has provided you with the inflation rate of 15% per annum. There is a well within the premises which is supplied with a 1500litre plastic overhead water storage tank supported on steel props.

While the repair construction is ongoing, there is a consequential loss for a period of 2½years at N3,000,000 per annum. Depreciation at 20% and Professional fees at 10%.

Cost for well is estimated at N200,000; tank and support at N400,000; pumps at N80,000, vehicular pedestrian gate at N500,000, demolition and carting away at N5,000,000.

Value the property on the basis of **Full Reinstatement**.

**(20marks)**

### **Analysis**

7 bedroom detached house developed about 15years ago, with high standard of finish, in a good and tenable condition

Land area = 1250 (50x25)

FRV = N1,500,000/m<sup>2</sup>

GFA on the ground floor = 550 m<sup>2</sup>

GFA on the upper floor = 650 m<sup>2</sup>

Main building = N120,000/ m<sup>2</sup>

Paved area = N10,000/ m<sup>2</sup>

Fence = N22500/m run

Inflation rate = 15% per annum

Consequential loss of 2½years a N3,000,000 per annum

Depreciation at 20%

Professional fees @ 10%

Well = N200,000

Tank & support = N400,000

Pumps = N80,000

Vehicular pedestrian gate = N500,000

### **Preliminary calculation**

Areas:

Main building = (550+650) = 1200m<sup>2</sup>

Fence = 2(L+B)

$$2(50+25) = 2(75)$$

$$= 150m$$

Paved area = Land area - Ground floor

$$1250 - 550$$

$$700 m^2$$

**Main Valuation for Reinstatement**

**N**

Main building =	1200m <sup>2</sup> @ N120000/ m <sup>2</sup>	144,000,000
Fence =	150m @ N22500/m run	3,375,000
Paved area =	700m <sup>2</sup> @ N10,000/ m <sup>2</sup>	7,000,000
Well =		200,000
Tank and support		400,000
Pumps		80,000
Vehicular/pedestrian gate		<u>500,000</u>
Building construction/replacement cost		155,555,000
Add professional fees @ 10% of Archi, QS, Engrs.		<u>15,555,500</u>
		171,110,500
Add cost of demolition and carting away at		<u>5,000,000</u>
		176,110,500
Add for consequential loss @ N3,000,000/annum		
For 2½years = N3million x 2.5years		<u>7,500,000</u>
		183,610,500
Add for inflation rate @ 15%		<u>27,541,575</u>
<b>Reinstatement cost/value</b>		<b><u>N211,152,075</u></b>

4. (a) A couple intend to take a mortgage loan of N25,000,000 at an annual repayment of (N3,500,000 from the husband and N1,500,000 from the wife) from a mortgage institution at 12% for the 1<sup>st</sup> 5 years, 13% for the next 5years, 14% for the next 5years and ½% increase every 5years in that manner. Using a mortgage instalment table,
- vi. What will be the outstanding capital on the 5<sup>th</sup> year?
  - vii. What will be the outstanding capital after the 5<sup>th</sup> year?
  - viii. What will be the amount on interest on the 8<sup>th</sup> year?
  - ix. How long will it take for the couple to complete the repayment?
  - x. What will be the take home balance of the couple after payment on the final year?
- (20marks)**

Interest rates	Year	Capital outstanding	Repayment	Interest on capital	Return of capital
12%	1	25000000	5000000	3000000	2000000
12%	2	23000000	5000000	2760000	2240000
12%	3	20760000	5000000	2491200	2508800
12%	4	18251200	5000000	2190144	2809856
12%	5	15441344	5000000	1852961	3147039
13%	6	12294305	5000000	1598260	3401740
13%	7	8892565	5000000	1156033	3843967
13%	8	5048598	5000000	656318	4343682
13%	9	704916	5000000	91639	4908361
13%	10		5000000		

- i. What will be the outstanding capital on the 5<sup>th</sup> year? = N15441344
- ii. What will be the outstanding capital after the 5<sup>th</sup> year? = N12294305

- iii. What will be the amount on interest on the 8<sup>th</sup> year? = N656318
- iv. How long will it take for the couple to complete the repayment? = 9 years
- v. What will be the take home balance of the couple after payment on the final year?  
= N4908361 - N704916 = N4,203,445

5. (a) Value a freehold interest in a property just let at its rental value of N300,000.00 per annum on a 5-year review pattern for 15 years. A similar property was recently sold for N3,750,000.00. You may assume that all risks yield (k) is 8%, gilt security currently yield at 8% and an additional 2% is to be assumed for risk premium. Using only the **Crosby's Real Value** model in conventional format, value the freehold investment. **(13marks)**

Answer

FRV = N300000

n = 15 years

t = 5 years

k = 8%

e = gilt securities + risk

g = ?

e = 8 + 2 = 10%

Sale price of comparable property = N3750000

$$g = (1 + g)^t = \frac{\text{YP perp @ k} - \text{YP t years @ e\%}}{\text{YP perp @ k} \times \text{PV t years @ e\%}}$$

$$(1 + g)^t = \frac{\text{YP perp @ k} (1/.08) - \text{YP t years @ e\%} (1 - (1/(1.1)^5)) / .1}{\text{YP perp @ k} (1/.08) \times \text{PV t years @ e\%} (1/(1.1)^5)}$$

$$\frac{12.5 - 3.7908}{12.5 \times 0.6209} = \frac{8.7092}{7.7613}$$

$$(1 + g)^t = 1.1221$$

$$(1 + g) = (1.1221)^{1/5}$$

$$1 + g = 1.0233$$

$$g = 1.0233 - 1$$

$$g = .0233 \times 100\%$$

$$g = 2.33\%$$

$$i = \frac{1+e}{1+g} - 1$$

$$\frac{1+1}{1+0.0233} - 1$$

$$\frac{1.1}{1.0233} - 1 = 1.0750 - 1$$

$$i = .0750 \times 100\%$$

$$i = 7.50\%$$

#### Main Valuation

1 <sup>st</sup> term (1-5 years)	N	N
RR	300,000	
YP(sr) for 5 yrs @ e% (10%)	<u>3.7908</u>	
		1137240
Review patterns/periods		
2 <sup>nd</sup> term (6-10 years)		
RR	300,000	
YP(sr) for 5 yrs @ e% (10%)	3.7908	
PV 5 yrs @ IRFY (7.50%)	<u>0.6966</u>	

			<u>2,6407</u>	792210
3 <sup>rd</sup> term (11-15years)				
	RR		300,000	
	YP(sr) for 5yrs @ e% (10%)	3.7908		
	PV 10yrs @ IRFY (7.50%)	<u>0.4852</u>		
			<u>1,8393</u>	551790
	Reversion (15years +)			
	FRV (RR)		300,000	
	YP perp @ k% (5%)	12.5		
	PV 15yrs @ IRFY (7.50%)	<u>0.3380</u>		
			<u>4,2250</u>	<u>1267500</u>
				<u><b>N3,748,740</b></u>

(b) State the formula for:

Syke's Rational Model;

**(2marks)**

$$CV = \left[ \frac{r}{e} - \frac{r}{e(1+e)^t} \right] + \frac{FRV(1+g)^t}{k(1+e)^t}$$

(c) Write concise but short notes on:

vi. Equated yield (e)

**(1mark)**

This is defined as the discount rate which is applied to the projected income so that the summation of all incomes discounted at this equated yield rate equates with the capital outlay. It could also be defined as the opportunity cost of money.

vii. All risks yield (k)

**(1mark)**

This yield is generally described as the profit/return from an investment ie the annual income provided by an investment.

viii. Inflation Risk Free Yield (i)

**(1mark)**

This is defined as the rate which is used to defer the implied rental growth in order to obtain inflation proof, ie the real value of income as opposed to the monetary value of same/income.

ix. Rent review pattern (t)

**(1mark)**

This is the number of years it takes to review any existing lease term. It has to do with the number of years taken to increase a leaseholder's rent.

x. Growth rate (g)

**(1mark)**

This is the rate of increase in the amount paid as rent. It is usually applied to the current rent to arrive at the new reviewed rent to be paid by a leaseholder.



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**TITLE OF EXAMINATION: B.Sc EXAMINATION**

**COLLEGE: SCIENCE AND TECHNOLOGY**

**DEPARTMENT: ESTATE MANAGEMENT**

**SESSION: 2015/2016**

**SEMESTER: OMEGA**

**COURSE CODE: ESM 323**

**CREDIT UNIT: 02**

**COURSE TITLE: Principles of Town and Country Planning II**

**INSTRUCTION:** Answer one Question from Section I and any two Questions from Section II. You are to answer three Questions in all

**TIME: 2 HOURS**

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## SECTION ONE

1. Your client, Chevron Nigeria Limited wants to diversify into residential real estate development. It desires to develop its large parcel of land, 85,000 square metres in size in a neighborhood of Ajah, Lagos State into both low and medium density housing estate on equal basis. The town planning regulation for Ibeju-Lekki Local Government stipulates densities of 18.36 dwellings/hectare and 10.08 dwellings/hectare for medium and low density residential developments respectively. This client now needs your advice for approval and feasibility purposes in the following areas:
  - a) Determination of the number of medium-density housing units and low-density housing units to build.
  - b) The name, description and sketches of the housing typologies you will recommend under each category.
  - c) Calculation of the average site area per dwelling (site density) in each case?  
...(30 marks).

**Note:** Do NOT consider areas taken up by local access roads and non-residential uses and facilities.

2. a) A family of nine (9) comprising; the husband aged 51, the wife aged 47, five children aged 18, 15, 8, 4 and less than 1 respectively, a grandma aged 87 and a female house-help aged 13 live in a 5-bedroom detached house in Ogun State Housing Estate, Ota, Ogun State. The house consists of; a main lounge on the ground floor, a family lounge on the first floor, a dining room, 5 bedrooms (all ensuite), a kitchen, a store, a guest toilet and a laundry. Using the assumed Occupancy Ratios' Table below, assess the living condition of the family. - 20 marks

Assumed Table of Nigerian Living Condition

Occupancy Ratio	<0.8	Btw 0.8 and 1	Btw 1 and 1.2	Btw 1.2 and 1.5	Above 1.5
Living Condition	Very Comfortable	Comfortable	Slightly Crowded	Crowded	Overcrowded

- b) What is zoning and its importance as a tool of land use planning?  
(10 Marks).

## SECTION TWO

3. a) Homer Hoyt in 1939 developed the Sector theory of urban land use growth to describe the pattern of physical development in an American city. With the aid of annotated diagrams, describe your understanding of the model and its major grounds for criticism? (10 Marks)
- b) What do you understand by the term 'Land Use Planning'? Identify and explain the major urban land uses that compete for urban space. (10 marks)
4. a) Name and discuss the two broad categories of direct action by which a municipality can shape its land use pattern (10 marks).
- b) Discuss the three broad factors to consider if a good and successful land subdivision is to be achieved ..... (10 marks)
5. a) Explain the technical details of the Neighbourhood Unit Concept of designing residential areas as put forward by Clarence Perry. ..(10 marks)
- b) What are the global general characteristics of city centres? Which features are peculiar to Nigerian city centres?



# COVENANT UNIVERSITY, OTA

CANAANLAND, KM 10, IDIROKO ROAD  
P.M.B 1023, OTA, OGUN STATE, NIGERIA.

TITLE OF EXAMINATION: B.Sc EXAMINATION

COLLEGE: SCIENCE AND TECHNOLOGY

DEPARTMENT: ESTATE MANAGEMENT

SESSION: 2015/2016

SEMESTER: OMEGA

COURSE CODE: ESM 323

CREDIT UNIT: 02

COURSE TITLE: PRINCIPLES OF TOWN AND COUNTRY PLANNING II

COURSE COORDINATOR:

COURSE LECTURERS: 1) ONI, ABIODUN SAMSON (MAIN)

2) XXXX

## MARKING GUIDE

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### SECTION ONE

1. a) Urban Planning Control and Concept of Residential Density.
- b) Residential density, the formula, average site area, housing typologies.
- c) 1a) Analyse the facts of the question..... 2 marks  
Res. Density formula .....2 marks  
Correct calculation and answer, which is **78 medium density dwellings** .... 2 marks  
Correct formula to get for low density development .... 2 marks  
Correct calculation and answer, which is **43 low density dwellings** .... 2 marks  
1b) Three Housing typologies for medium density developments out of:
  - i) Semi-detached houses; name, explain, sketch .....2 marks
  - ii) Duplex; name, explain, sketch .....2 marks
  - iii) Terrace or town houses; name, explain, sketch .....2 marks
  - iv) Row houses; name, explain, sketch .....2 marksHousing typologies for medium density developments are:
  - i) Bungalows; name, explain, sketch .....2 marks

2. a) Residential density and land use control
- b) Occupancy Ratio and Housing condition, Zoning as a land use control tool.
- c) 2a) Analysis of the demographics of the family and the housing accommodation.....2 marks  
 Occupancy Ratio Formula:  
 Occupancy Ratio = Number of persons / Number of Habitable rooms.....5 marks
- Calculation of number of persons, which equals 7 persons .....3 marks  
 Calculation of number of Habitable rooms, which equals 8 .....3 marks  
 Occupancy Ratio is **0.875** .....3 marks
- Assessment of living condition: Since the occupancy ratio (0.875) is between 0.8 and 1, the living condition of the family is **Comfortable**. .....4 marks.
- 2b) Zoning - Definition ..... 4 marks
- Its importance as a tool of land use planning:
- i) Indicates suitable land use
  - ii) Deters non-conforming uses.
  - iii) An instrument of development and control such as the Zoning ordinance in the US
- .....6 marks

## SECTION TWO

3. a) Theories of urban land use growth / pattern and Land use Planning
- b) Models of urban land use pattern and their criticisms
- c) 3a) The discussion of the Sector theory. ....5 marks
- The sketch (well annotated). ....2 marks
- Criticisms. ....3 marks
- 3b) Definition and Explanation of Land use Planning.....2.5 marks
- Major land uses that compete for urban land: at least five,  
 Identify.....0.5 mark; Explain.....1 mark x 5 = 7.5 marks

4. a) Urban land development and land use control
  - b) Factors influencing development and land use pattern, and Sub-division as a land use control tool.
  - c) 4a) Two broad ways of direct action by which a municipality change its land use pattern:
    - i) Public Capital Investments and - Name...1 mark, Discuss.....4 marks
    - ii) Land-use Controls - Name.....1 mark, Discuss.....4 marks

4b) Three factors for a good and successful sub-division:  
Introduction.....1 mark

    - i) Consider the range of Housing Types required - Name...1 mark, Explain...2 marks
    - ii) Consider the Site Context (natural features and cultural features) - Name...1 mark, Explain...2 marks
    - iii) Consider Procedure, Regulations and Bye-Laws - Name...1 mark, Explain...2 marks.
5. a) Design Concepts in planning residential areas. City centre concept
  - b) The Neighbourhood Unit Concept and characteristics of city centers.
  - c) 5a) Introduction.....1 mark  
Technical details:
    - i) Population.....1 mark
    - ii) Land area.....1 mark
    - iii) The elementary school .....1 mark
    - iv) Radius and walking distance of pupils.....1 mark
    - v) Street layout.....1 mark
    - vi) Location of facilities and amenities.....1 mark
    - vii) Treatment of traffic.....1 mark
 Any explanatory sketch.....2 marks
  - 5b) Global general characteristics of city centres, among others (at least 6):
    - i) Overcrowding
    - ii) Traffic congestion
    - iii) Parking challenge
    - iv) High land values
    - v) Hub of commercial activities
    - vi) Cosmopolitanism
    - vii) Social vices (or malady)
    - viii) High density developments, hence high rise buildings

.....1 mark each (6 marks in all)

The peculiar features in Nigerian cities (at least 4):

- i) Old and dilapidating buildings;
- ii) Narrow streets and in some places inaccessibility;
- iii) Lack of, or broken down infrastructure like roads, drains, sanitary, sewage or refuse disposal facilities;
- iv) Slum development;
- v) Existence of the above side by side with modern structures.

.....1 mark each (4 marks in all)



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**TITLE OF EXAMINATION:** B.Sc. EXAMINATION  
**COLLEGE:** SCIENCE AND TECHNOLOGY  
**DEPARTMENT:** ESTATE MANAGEMENT  
**SESSION:** 2015/2016 **SEMESTER:** OMEGA  
**COURSE CODE:** ESM 326 **CREDIT UNIT:** 2  
**COURSE TITLE:** BUILDING SERVICES AND MAINTENANCE II  
**INSTRUCTION:** Answer Three (3) Questions in ALL. One Question from Section A and Two from section B. Each question must commence on a new page.  
**TIME:** 2 Hours

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## Section A

1. Deterioration within the building environment has been identified to be a summation of all external and internal influences and conditions that affect the building. Identify 5 factors **each** that have contributed to the following
  - i. Building deterioration due to Design and Construction (15 marks)
  - ii. Building deterioration due to environmental factors (15 marks)
  
2. (a)Based on your recent appointment as the Director of the Maintenance Management Department of Covenant University, you are required to forward to the office of the Vice Chancellor a detailed write-up on your goals (5 marks), objectives (5 marks) and the various maintenance management activities of your department (10 marks). (Total 20 marks)  
(b) Enumerate the factors militating against effective maintenance activities in most Organizations (10 marks)

## Section B

3. With the aid of annotated diagrams where necessary, describe the following elements in a building, stating their functions, mode of maintenance and, specifically the maintenance problems associated with them.
  - i. Skirting Board (4 marks)
  - ii. Roofs (4 marks)
  - iii. Doors (4 marks)
  - iv. Dadoo Rail (4 marks)
  - v. Staircase (4 marks)

4. (a) In carrying out effective maintenance activities, planning becomes very imperative, (a) Draw and discuss the cycle of a typical maintenance activity (10 marks)  
(b) Discuss planning under maintenance management, enumerating its various types (10 marks)

5. Discuss the relevance of the following in building maintenance

- i. Breakdown/Emergency Maintenance **(2 marks)**
- ii. Rectification **(2 marks)**
- iii. Schedule of dilapidation **(2 marks)**
- iv. Schedule of Condition **(2 marks)**
- v. Planned preventive maintenance **(2 marks)**

(b) Discuss the term “Rising damp” and two remedial actions that can be used to correct this defect **(10 marks)**



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**COLLEGE:** SCIENCE AND TECHNOLOGY  
**SCHOOL:** ENVIRONMENTAL SCIENCES  
**DEPARTMENT:** ESTATE MANAGEMENT  
**SESSION:** 2015/2016 **SEMESTER:** OMEGA  
**COURSE CODE:** ESM 326 **CREDIT UNIT:** 2  
**COURSE TITLE:** BUILDING SERVICES AND MAINTENANCE II  
**COURSE LECTURER:** MRS. A.O. OLUWATOBI  
**MARKING GUIDE**

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## Section A

6. Deterioration within the building environment has been identified to be a summation of all external and internal influences and conditions that affect the building. Identify 5 factors **each** that have contributed to the following
- iii. Building deterioration due to Design and Construction (15 marks)
  - iv. Building deterioration due to environmental factors (15 marks)

(a) Building Deterioration Agents

(b) Agents due to design and construction, Agents due to environmental factors

(c) Students are expected to identify 5 factors each under the given sub-headings and write concise notes under each of the points. (3 marks each for a total of 10 points = (30 marks)

- 2 Based on your recent appointment as the Director of the Maintenance Management Department of Covenant University, you are required to forward to the office of the Vice Chancellor a detailed write-up on your goals (5 marks), objectives (5 marks) and the various maintenance management activities of your department (8 marks). (Total 20 marks)

(a) Maintenance Management

(b) Goals, Objectives and Activities involved

(c) Students are expected to discuss the term “maintenance management” (2 marks), stating its goals (5 marks) and objectives, (5 marks) and also explaining how these goals can be achieved, (8marks)

Enumerate the factors militating against effective maintenance activities in most Organizations (10 marks)

(a) Maintenance Management

- (b) Factors that affect effective maintenance management
- (c) Students are expected to highlight at least 10 factors that affect effective maintenance activities in most organizations (1 mark each)

## Section B

3. With the aid of annotated diagrams where necessary, describe the following elements in a building, stating their functions, mode of maintenance and, specifically the maintenance problems associated with them.

- i. Skirting Board (4 marks)
- ii. Roofs (4 marks)
- iii. Doors (4 marks)
- iv. Dado Rail (4 marks)
- v. Staircase (4 marks)

- (a) Maintenance of building elements
- (b) Functions, mode of cleaning, servicing, repairs
- (c) Students are expected to state the functions, the mode of maintenance and the maintenance problems associated with the above listed building elements and support it with clearly labelled diagrams.

4. In carrying out effective maintenance activities, planning becomes very imperative, (a) Draw and discuss the cycle of a typical maintenance activity (10 marks)

Discuss planning under maintenance management, enumerating its various types (10 marks)

(a) Maintenance Management

(b) Students are expected to draw the maintenance activity cycle (2 marks), and explain each of the procedures (8 marks)

(c) Students are expected to discuss planning under maintenance management (2 marks), enumerating the 4 various types (2 marks each)

5. Discuss the relevance of the following in building maintenance

- vi. Breakdown/Emergency Maintenance (2 marks)
- vii. Rectification (2 marks)
- viii. Schedule of dilapidation (2 marks)
- ix. Schedule of Condition (2 marks)
- x. Planned preventive maintenance (2 marks)

(b) Discuss the term “Rising damp” and two remedial actions that can be used to correct this defect (10 marks)

1. It is commonly observed that buildings begin to deteriorate as soon as they are completed and many factors have been identified to be responsible for this either individually or collectively. Discuss in details the following:
- (i) the pre-completion agents of deterioration **(15 marks)**
  - (ii) the post-completion agents of deterioration **(15 marks)**

(a) Building Deterioration Agents

(b) Agents due to design and construction, Agents due to environmental factors

(c) Students are expected to identify 5 factors each under the given sub-headings and write concise notes under each of the points. (3 marks each for a total of 10 points = (30 marks)

- (i) Building deterioration due to Design and Construction:

The factors are:

- Materials specification
- Detailing of working drawings
- Maintainability
- Construction supervision
- Cash flow analysis

- (ii) Building deterioration due to environmental factors

The factors are:

- Solar radiation
- Moisture
- Wind
- Frost
- Soil conditions
- Biological agencies

## **Section B**

2. (i) Discuss the relevance of the following in building maintenance

- Conversion
- Rectification
- Replacement Strategy
- Repairs Strategy
- Planned preventive maintenance
- Alteration

**(2 marks each)**

- (ii) Discuss the term “Rising damp” and two remedial actions that can be used to correct this defect **(8 marks)**

(ai) Terminologies in Building Maintenance

(bi) Change in use, change in design, demolition e.t.c.

(ci) Students are expected to discuss in brief the relevance of the concepts to building maintenance. (2 marks each for the concepts explained) (Total of 12 marks)

(aii) Dampness in buildings

(bii) Ground water, physical DPC, Chemical DPC

(cii) Students are expected to discuss the term rising damp and state the two remedial actions that can be used to correct the defect. It is a natural phenomenon caused by capillary actions where ground water is drawn vertically upwards through fine pores in a material. The remedial actions to be taken are : Through the use of Chemical DPC and Physical DPC (2 marks for explaining the concept and 3 marks each for explaining the remedial actions) (Total of 8 marks)

3. (i) Kenny, one of your classmates was not in class when the course lecturer delivered the lecture on maintenance management. Explain to him in details the relevance of maintenance management to building maintenance with emphasis on

- Its goals (4 marks)
- Its objectives (5 marks)
- The management activities involved (6 marks)

(a) Maintenance Management

(b) Economy in terms of money, material and time resources, Planned and co-ordinated maintenance programmes, User Satisfaction, Efficiency of the facilities

(c) Students are expected to discuss the term “maintenance management”, stating its goals (4 marks), objectives, (5 marks) and also explain the maintenance activities involved (6 marks)

(ii) Explain briefly to Mr. Chidi, a tenant in one of your management properties, the concept of dampness and the effects it has on a building. (5 marks)

(a) Dampness in buildings

(b) Dampness in buildings is generally defined as unwanted water or moisture in a building.

(c) Students are explain their understanding of the concept with emphasis on its causes (3marks) and effects (2 marks).

4. (i) What do you understand by the terms “Schedule of dilapidation” and “Schedule of condition” (6 marks)

(a) Schedule of dilapidation and condition

- (b) Interim schedule, Terminal schedule and Final schedule
- (c) Students are expected to explain their understanding of the concepts “Schedule of dilapidation and Schedule of condition” (3 marks for each of the concepts)



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**DEPARTMENT:** ESTATE MANAGEMENT  
**SESSION:** 2015/2016 **SEMESTER:** OMEGA  
**COURSE CODE:** ESM 327 **CREDIT UNIT:** 2

**COURSE TITLE:** ENVIRONMENTAL CHALLENGES **TIME:** 2 HRS

**INSTRUCTION:** Answer ONE (1) question from Section A and any TWO (2) from Section B. Start each question on a new page.

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## SECTION A

1. Climate change is a new reality of changes in weather patterns that can have serious repercussions on lives and properties including the eco-system. Discuss the economic implication of climate change on five (5) areas/ sectors of our nation, Nigeria.
  - (i) Itemize possible ways to address the challenges related to climate change
  - (ii) Explain the term Ozone Layer and its depletion making reference to some ozone depleting substances (ODS) you know.
  - (iii) Mention at least three (3) of the health effects of ozone depletion. **(30 marks)**
  
2. Desertification is another problem of the environment. Environmental experts are of the opinion that it will require a worldwide campaign and a change in the attitude of the people and of the government for there to be improvement in the current situation.
  - (i) What is Desertification (ii) Discuss the possible causes of desertification.
  - (ii) Discuss some of the effects of desertification.
  - (iii) Mention 6 (six) measures to prevent desertification **(30 marks)**

## SECTION B

3. (i) Differentiate between Sustainable Development and Economic Development  
(ii) Briefly explain some (at least four) of the barriers to sustainable development  
(iii) Discuss how to restore balance between economic growth and sustainability making reference to the three pillars of sustainability **(20 marks)**
4. Atmospheric pollution is gradually becoming a serious menace in Nigerian cities. (i) What are the possible causes of air pollution? Explain them to a layman. (ii) Discuss 4 (four) effect of air pollution, and (iii) Mention possible solutions to the problem of air pollution. **(20 marks)**
5. Watershed destruction can greatly hamper the food supply and the peaceful existence of the natural environment. Discuss some of the causes of watershed destruction. (i) Itemize at least five (5) possible ways to manage watershed.
- 5b. What is drought and what are its various types? (ii) Mention at least three (3) consequences of drought **(20 marks)**



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COLLEGE: SCIENCE AND TECHNOLOGY  
SCHOOL: ENVIRONMENTAL SCIENCES  
DEPARTMENT: ESTATE MANAGEMENT  
SESSION: 2015/2016 SEMESTER: OMEGA  
COURSE CODE: ESM 327 CREDIT UNIT: 2

COURSE TITLE: ENVIRONMENTAL CHALLENGES TIME: 2 HRS

COURSE COORDINATOR: PROF. S. A. OLOYEDE  
COURSE LECTURER: MRS PETER, N. J.

## MARKING GUIDE

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### SECTION A

2. Climate change is a new reality of changes in weather patterns that can have serious repercussions on lives and properties including the eco-system. Discuss the economic implication of climate change in Nigeria on at least five (5) aspects in the nation.
  - (iv) Itemize possible ways to address the challenges related to climate change
  - (v) Explain the term Ozone Layer and its depletion making reference to some ozone depleting substances (ODS) you know.
  - (vi) Mention at least three (3) of the health effects of ozone depletion. **(30 marks)**

### Climate Change and Its Implication on the Economy:

Climate change refers to a change in weather condition that is attributed directly or indirectly to human activities.

The economic implication of climate change on the Nigeria economy are discussed below:

- a) **Agriculture, Forestry and Fisheries:** climate change reduces the potentials for irrigation, results in low soil moisture and depletes soil fertility.
- b) **Coastal areas and rising sea levels:** the global climate change and the concomitant rise in sea level is adversely affecting the coastal zones. It results in increase in the salinity of fresh water thereby affecting aquatic life.
- c) **Human Settlement:** as in the case of the northern parts of the country where desertification is a major threat resulting in unfavorable living conditions and displacement of human settlements.
- d) **Health:** increased temperature in the various regions could result in high incidence of malaria and other diseases that affect human due to high temperature.
- e) **Financial service sector**
- f) **Industry and manufacturing**

**Ways to address the challenges of climate change :**

- Encourage environmental friendly behaviours
- Provision of funds for capacity building on adaptation to climate change
- The maintenance of national food reserves to provide against any eventuality of food shortage, etc

**Ozone Layer and its Depletion:**

The ozone layer or ozone shield refers to a region of earth's stratosphere that absorbs most of the sun's ultraviolet (UV) radiation. Ozone layer depletion is caused by reduction of the amount of the ozone present in the stratosphere. Some of the gases that can aid the depletion of the ozone layer are chlorofluorocarbons (CFC) and hydro- fluorocarbons, etc.

3. Desertification is another problem of the environment. Environmental experts are of the opinion that it will require a worldwide campaign and a change in the attitude of the people and of the government for there to be improvement in the current situation.
  - (iv) What is Desertification (ii) Discuss the possible causes of desertification.
  - (v) Discuss some of the effects of desertification.
  - (vi) Mention 6 (six) measures to prevent desertification **(30 marks)**

**Desertification:** this can be defined as land degradation in arid, semi-arid and humid areas resulting from various factors including climatic variations and human activities. Some of the causes are:

- Deforestation: this is the conversion of forested areas to no forest land. It is the large scale removal of forest.
- Extensive cultivation
- Overgrazing
- Bush burning
- Urbanization

### **Effects of Desertification:**

- Alteration of the eco-system
- It can impact on health through increased heat waves that can result in skin cancer
- Reduced agricultural productivity and food insecurity, etc.

### **Solution to desertification:**

- Awareness
- Protection of marginal land
- Planting and protection of indigenous trees and shrub species, etc.

## **SECTION B**

### 3. Differentiate between Sustainable Development and Economic Development

- Briefly explain some (at least four) of the barriers to sustainable development
- Discuss how to restore balance between economic growth and sustainability making reference to the three pillars of sustainability **(20 marks)**

### **Sustainable development and Economic development:**

Sustainable development is the pattern of resource use that aims at meeting human needs while preserving the environment and resources for the use of future generations. Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their needs.

Economic development is a policy intervention with the aim of economic and social well-being of people. Economic development implies changes in income, savings and investment along with progressive changes in socio-economic structure of country (institutional and technological changes).

### **Barriers to Sustainable Development:**

- Economic and financial barrier
- Social barriers
- Political barriers
- Poor monitoring and evaluation systems
- Institutional barriers, etc.

6. Atmospheric pollution is gradually becoming a serious menace in Nigerian cities. (i) What are the possible causes of air pollution? Explain them to a layman. (ii) Discuss 4 (four)

effect of air pollution, and (iii) Mention possible solutions to the problem of air pollution. (20 marks)

**Air pollution:** this is the introduction of particulates, biological molecules, or other harmful materials into the earth's atmosphere possibly causing disease, death to humans damage to other living organisms such as food crops or the natural or built environment.

**Common Causes of Air Pollution in Nigeria:**

- Refuse burning
- Traffic emissions
- Bush burning
- Gas flaring
- Pipeline explosion

Students are expected to explain in detail these points.

7. Watershed destruction can greatly hamper the food supply and the peaceful existence of the natural environment. Discuss some of the causes of watershed destruction. (i) Itemize at least five (5) possible ways to manage watershed.

**Watershed Destruction:**

Watershed degradation is the loss of value over time, including the productive potential of land and water, accompanied by marked changes in the hydrological behavior of a river system resulting in inferior quality, quantity and timing of water flow. The protection, improvement and rehabilitation of mountain and/or upland watersheds are of critical importance in the achievement of overall development goals. Recognizing this, many developing countries are turning increasing attention and resources to the field of watershed management.

**Causes of Watershed Destruction:**

- Deforestation and destruction of natural vegetation
- Overexploitation
- Overgrazing
- Unadjusted irrigation technique
- Socio-economic and political causes

- 5b. Drought is not an everyday occurrence but whenever it occurs, it is of particular concern to certain group of people. What is drought and what are its types? (ii) Mention at least three (3) consequences of drought (20 marks)

## **Drought:**

This is an extended period when a region receives a deficiency in its water supply, whether atmospheric surface or ground water. A drought can last for months or years, or may declare after as few as 15 days. Generally, this occurs when a region receives consistently below average precipitation.

### **Types of Drought:**

- a) **Hydrological Drought:** this occurs when the water reserves available in sources such as aquifers, lakes and reservoirs fall below the statistical average.
- b) **Meteorological Drought:** this occurs when there is a prolonged period with less than average precipitation
- c) **Agricultural Drought:** are droughts that affect crop production or the ecology of the range. This condition can also arise independently from any change in precipitation levels when soil condition and erosion triggered by poorly planned agricultural endeavours cause a shortfall in water available to the crops.

### **Consequences of Drought:**

- Reduction in water quality
- Diminished crop growth or yield production and carrying capacity for livestock
- Deforestation
- Dust bowls
- Dust storms
- Famine due to lack of water irrigation
- Malnutrition, dehydration and related diseases
- Mass migration, resulting in internal displacement and international refugees, etc.