



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

**FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT
DEPARTMENT OF ARCHITECTURE, PLANNING AND CONSTRUCTION**

QUALIFICATION: BACHELOR OF REGIONAL AND RURAL DEVELOPMENT			
QUALIFICATION CODE: 07BRAR	LEVEL: 7	CREDITS: 12	
COURSE CODE: NRS711S	COURSE NAME:	NATURAL RESOURCES MANAGEMENT AND SUSTAINABLE DEVELOPMENT	
DATE: JUNE 2023	PAPER:	THEORY	
DURATION: 3 HOURS	MARKS:	100	

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
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INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL the questions.2. Read the entire question paper before answering the questions.3. Questions may be answered in any sequence, provided that they are numbered clearly and correctly.4. Write clearly and legibly.

PERMISSIBLE MATERIALS

Pen, ruler, pencil and eraser

THIS QUESTION PAPER CONSISTS OF 10 QUESTIONS AND 7 PAGES (including this front page)

Question 1:

Select the single *CORRECT* answer to each of the following questions. Just write down the number, e.g. (a) D.

- (a) The Great Acceleration refers to:
A the increasing rate of extinction of species
B unsustainably fast growth in resource use since the Industrial Revolution
C an exponential increase in the human population over the last century
D all of the above
E none of the above (1)
- (b) The first 'Rio Conference' in 1992 resulted in the adoption of ...
A the UN Convention on Biological Diversity
B the Vienna Convention and Montreal Protocol
C the Paris Agreement
D the UN Agenda 2030
E the Helsinki Rules (1)
- (c) The Sustainable Development Goals are:
A a framework for development for the entire 21st century
B a precursor to the Millennium Development Goals
C a legally binding treaty to address climate change
D the objectives of the 2030 Agenda for Sustainable Development
E a set of 8 goals to reach by 2050 (1)
- (d) Small Island Developing States receive special consideration in SDG 13 (Climate Action) because they ...
A are particularly vulnerable to tectonic forces
B are in imminent danger due to sea level rise
C are the poorest of the least developed countries
D possess rare earth elements that are essential for renewable energy technologies
E offer great possibilities for carbon sequestration (1)
- (e) Zoonoses are diseases that ...
A are likely responsible for diabetes in humans
B are endemic to animal populations and are transmitted from animals to humans
C are only found in overcrowded zoos
D circulate within the human population and can jump species to animals
E are endemic to the human population (1)

- (f) The role of NamPower in the Namibian electricity supply industry is to ...
- A make policies
 - B regulate the industry
 - C generate, transmit, and distribute electricity
 - D issue generation licenses to independent power producers
 - E distribute electricity to individual households in towns (1)
- (g) Which one is *not* a target of SDG 6 (Clean Water and Sanitation)?
- A integrated water resources management
 - B affordable drinking water for all
 - C ending all forms of poverty
 - D reduction in water pollution
 - E sustainable water withdrawals (1)
- (h) Nationally Determined Contributions is a term to describe
- A compulsory emission reduction commitments under the Kyoto Protocol
 - B in-kind contributions from developing countries to leverage adaptation funding
 - C financial commitments by developed countries to the Green Climate Fund
 - D voluntary commitments, identified by countries themselves, to reduce their activities that contribute to climate change
 - E the greenhouse gasses emitted by each country, as a percentage of total global emissions (1)
- (i) Namibia's coastline and adjacent desert ecosystems are protected by the following national parks:
- A Kunene, Kuiseb, Tsauchab, Koichab
 - B Namib-Naukluft, Bwabwata, Skeleton Coast
 - C Richtersveld, Dorob, Nkasa Rupara
 - D Skeleton Coast, Dorob, Tsau ||Khaeb, Namib Naukluft
 - E Kunene, Erongo, Hardap, ||Kharas (1)
- (j) The Intergovernmental Panel on Climate Change ...
- A is a group of scientists employed by the World Meteorological Organisation
 - B extracts factual information on climate change from scientific publications to inform and advise policymakers
 - C drafts policies to be approved by the UNFCCC COP
 - D arranges climate financing for adaptation projects in developing countries
 - E serves as the Secretariat of the UNFCCC (1)

[10]

Question 2:

- (a) Global Change is a collective term for planetary-wide changes in the Earth System and its interconnected, interdependent subsystems, as well as related large-scale changes in human society. These changes have become most noticeable since the start of the Industrial Era and have been speeding up since the middle of the 20th Century. Reflect on Global Change in terms of the types of observed changes and their drivers (direct and root causes). (10)
- (b) Briefly explain the concept of Earth Overshoot Day. (2)

[12]

Question 3:

The Green Revolution refers to changes in agriculture during the 1950s to 1970s that increased global food production drastically, but also came with heavy environmental costs.

- (a) Describe some of the technologies, systems and approaches that led to the spectacular increases in agricultural production. (5)
- (b) Comment on the benefits of the Green Revolution. (2)
- (c) Mention some of the negative impacts of the Green Revolution. (5)

[12]

Question 4:

Explore the meaning of each of the following concepts and provide appropriate examples of how they are applied to achieve responsible consumption and production:

- (a) the circular economy, (3)
- (b) the lifecycle approach, and (3)
- (c) leapfrogging technologies, (3)

[9]

Question 5:

Deliberate on the typical characteristics of a sustainable city, with reference to transport.

[Write full sentences.]

(7)

[7]

Question 6:

(a) Discuss the health effects that extreme weather events, such as heatwaves or abnormally high rainfall, can have on humans. (5)

(b) Suggest six (6) measures that local authorities can implement to safeguard inhabitants of informal settlements against extreme heat. (6)

[11]

Question 7:

The MARISMA Programme deals with Marine Spatial Planning of the Benguela Current Large Marine Ecosystem.

(a) Which countries have territorial waters within the Benguela Current Large Marine Ecosystem? (3)

(b) What are the objectives of Marine Spatial Planning? Use specific examples to support your explanation. (6)

(c) In addition to ocean warming and sea level rise, what is the other major impact of carbon dioxide emissions on the oceans? (1)

(d) In what way does intensive agriculture affect marine ecosystems? (1)

[11]

Question 8:

Propose seven (7) strategies for Namibian hotels and lodges to achieve greater sustainability in tourism. (7)

[7]

Question 9:

- (a) "Namibians are already using renewable energy, namely hydro-, wind-, biomass- and solar energy." Elaborate on this statement. Use specific examples of power plants and/or explain how these energy sources are used locally.
[One mark per appropriate example for each energy source; 2 marks for clear, logical explanation] (6)

- (b) Discuss the advantages of Namibia becoming self-sufficient in the generation of electricity, especially if it is based on renewable energy technologies. (5)

[11]

Question 10

Match each *term* in Column 1 with the appropriate *description* in Column 2. Write down only the *capital letter* from Column 2 next to the *small letter* from Column 1, for example (a) D.

Column 1

- (a) Holocene
- (b) Lithosphere
- (c) Natality
- (d) Cryosphere
- (e) Limit to Growth theory
- (f) Great Acceleration
- (g) Gini Coefficient
- (h) Tragedy of the Commons theory
- (i) Biosphere
- (j) Fluxes

Column 2

- A Earth’s subsystem that involves its core, mantle, crust and soil
- B Communal resources are usually over-exploited, as everybody strives to maximise their own use
- C Earth’s subsystem that involves the upper mantle, crust and soil
- D The flows of energy and materials through Earth’s sub-systems
- E Communal land is a tragic legacy of colonialism
- F The geological period with stable environmental conditions since the end of the last ice age
- G Immigration rate of a population
- H Unlimited economic growth is impossible in a system with finite resources

- I The reservoirs of energy and materials in Earth's sub-systems
- J The variety of lifeforms on Earth
- K Measures income inequality
- L Exponential growth in resource use over the last century
- M The geological period during which dinosaurs lived
- N Earth's subsystem that involves its frozen lands
- O Measures multiple dimensions of poverty
- P Birth rate of a population
- Q Earth's biota, organic matter and the abiotic environment that supports living organisms
- R Technology and human ingenuity will conquer environmental limits to resource use
- S Phase of population growth after reaching the resource limit

[10]

TOTAL: 100