



PAMIBIA 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	NQF LEVEL: 7
COURSE CODE: NRS711S	COURSE NAME: NATURAL RESOURCES MANAGEMENT AND SUSTAINABLE DEVELOPMENT
DATE: JULY 2025	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

SECOND OPPORTUNITY/ SUPPLEMENTARY EXAMINATION PAPER

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INSTRUCTIONS

1. Read each question carefully and address all parts of the question.
2. Answer **ALL** the questions.
3. Answers may be written in any order but must be legibly numbered.
4. Please write clearly and legibly.
5. Ensure your Student Number is on the EXAMINATION BOOK(s).
6. The following materials are permissible during the examination: pen, pencil, ruler, eraser and calculator

THIS EXAM QUESTION PAPER CONSISTS OF 7 PAGES (Including this front page)

Question 1

Selects the single **CORRECT** answer to each of the following questions. Just write down the answer, e.g. **(1) (i)**.

1) Select the incorrect statement. Earth system processes..... (1)

- (i) Often involve energy fluxes between sub-systems
- (ii) Can take place at both very small and very large spatial scales
- (iii) Are too vast and powerful to be influenced by human activities
- (iv) Are responsible for maintaining natural equilibria
- (v) Conjunctive use of various water sources

2) The roots of plants break up rocks to increase their weathering rate is an example of: (1)

- (i) The geosphere interacting with the atmosphere
- (ii) The hydrosphere interacting with the atmosphere
- (iii) The geosphere interacting with the biosphere
- (iv) The biosphere interacting with the cryosphere
- (v) The biosphere interacting with hydrosphere

3) Earth Overshoot day is: (1)

- (i) The number of days before the Earth's System collapse
- (ii) The date when the global population passes 8 billion
- (iii) The number of days per year that mankind is in ecological deficit
- (iv) The date in a year when mankind's demand for ecological resources and services surpasses Earth's capacity to replace those resources and absorb those waste.
- (v) Earth's biocapacity minus mankind's ecological footprint (in global hectares)

4) Which International conference in 1992 led to the adoption of Agenda 21 and raised awareness about sustainable development (1)

- (i) Paris Agreement Summit
- (ii) Rio Earth Summit
- (iii) Montreal Conference on Protection of the Ozone Layer
- (iv) Copenhagen Climate Conference
- (v) Johannesburg Conference on Implementation of Sustainable Development

5) Small Island Developing States receive special consideration in SDG 13 (Climate Action) because they..... (1)

- (i) Have excellent tourism potential
- (ii) Are tax havens for ultrarich people in wealthy countries
- (iii) Are particularly vulnerable to earthquakes
- (iv) Offer great possibilities for carbon sequestration
- (v) Are in imminent danger due to sea level rise

6) Local horticultural production in Namibia is supported by ... (1)

- (i) Transport subsidies
- (ii) Import restrictions on some fruits and vegetables at certain times of the year when there is sufficient local supply
- (iii) Export subsidies
- (iv) Plans to dismantle the veterinary cordon fence ('Red Line')
- (v) infant-industry protection for the chicken industry

7) Zoonoses are diseases that ... (1)

- (i) Develop in humans due to unhealthy lifestyles
- (ii) Are only found in overcrowded zoos
- (iii) Circulate within animal populations and can infect humans
- (iv) Circulate within the human population and are transmitted from humans to animals
- (v) Are plant diseases that can cause allergies in humans

8) Intergovernmental Panel on Climate Change.... (1)

- (i) Is the governing body of the UN Framework Convention on Climate Change
- (ii) Produces annual national communications on climate change
- (iii) Prescribe to the UNFCCC Conference of Parties how they must implement the articles of the Convention
- (iv) Produces regular assessment reports on the science of climate change, impacts, vulnerability and adaptation, and mitigation
- (v) Is a secretariat of the UNFCCC that carries out its own research on climate change

9) The idea that a developing country can bypass outdated, inefficient or polluting technologies and move directly to efficient, cost-effective and green technologies is known as..... (1)

- (i) Sustainability
- (ii) The circular economy
- (iii) The lifecycle approach
- (iv) Leapfrogging
- (v) The Fourth Industrial Revolution

10) Delimitation of territorial waters, exclusive economic zones, continental shelves, etc., is under the authority of the (1)

- (i) MARPOL
- (ii) UN Deepsea Mining Authority
- (iii) UN Convention of the Law of the Sea
- (iv) International Seabed Authority
- (vi) Namibian Ministry of Fisheries, Agriculture and Land Reform

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Question 2

- (a) Compile your own comprehensive definition of sustainable development, including clear descriptions of its three pillars. (4)
- (b) 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). (6)

- (c) Explain the following concepts:
 - (i) Biocapacity (3)
 - (ii) Ecological footprint (3)
- (d) Discuss the impacts that infrastructure improvements, such as roads and electricity, have on poverty reduction in rural areas. (4)

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Question 3

- a) The United Nation Conference on Environment and Development (earth summit) took place at Rio de Janeiro, Brazil in 1992. Agenda 21 framework was among the several outcomes of the conference.

Based on lecture presentations and class discussions; In your own opinion, discuss what Agenda 21 Framework is all about. (10)

- b) Discuss the co-benefits that green public open spaces in a city have for both the environment and citizens. Be specific (4)
- c) What role do oceans play in regulating the Earth's climate? (3)
- d) Namibians are using solar energy in at least three (3) different ways as an energy source. Elaborate on this statement. (3)

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Question 4

- a) Specify four (4) stakeholders in the Namibian electricity supply industry and explain their respective roles. (4 marks for stakeholders, 4 marks for their roles) (8)
- b) In what ways does intensive agriculture affect marine ecosystems? (2)
- c) Why is reducing marine pollution crucial for sustainable development? (2)
- d) Discuss approaches (strategies) that would enhance sustainable consumption and production globally. (Hint: Use the targets of SDG 12 (Responsible Consumption and Production) as a point of departure) (6)
- e) What is the significance of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) for SDG 15? (2)

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Question 5

- a) Between the arid climate, urbanisation, industrialisation, population growth, and climate change, Namibia is becoming increasingly vulnerable to freshwater scarcity. If you were a senior official in the Ministry of Fisheries, Agriculture and Land Reform, what options would you pursue to augment the existing water sources and infrastructure? (5)
- b) What do you think are the features or characteristics of sustainable cities? Mention five (5), (For example: Fresh water is used sparingly, e.g. by planting 'water-wise' gardens). (5)
- c) What has Namibia done at policy and institutional level to prepare for climate change and to meet commitments under international agreements? (5)
- d) What is unique about the conservation status of the Namibian coastline? (2)
- e) Describe how the Namibian government is using social protection programmes to reduce poverty, and how can such be improved? (3)

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Question 6

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 (i.) D.

Column 1	Column 2
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i. Human Development Index	A Death rate of a population
ii. The Green Revolution	B Uses photovoltaic cells to convert light to electricity
iii. Natality	C An implementation plan for sustainable development; an outcome of the 2002 World Summit on Sustainable Development
iv. Carrying capacity	D The massive increase in food production during the 1950s to 1970s
v. UNEP	E Entities that generate electricity for themselves or for the national grid
vi. Non-Communicable Diseases	F Voluntary commitments, identified by countries themselves, to reduce their greenhouse gas emissions
vii. Concentrated Solar Power	H Birth rate of a population
viii. Ruacana	I Entities responsible for distribution of electricity within specific regions
ix. Conservation agriculture	J UN agency dealing with environmental issues
x. A non-renewable energy source	K Namibia's hydro-electric power station
	L The impact that a population has on the environment, in terms of the amount of land required to sustain its use of natural resources
	M A composite measure of life expectancy, education and gross national income
	N Infectious diseases passed from person to person
	O Nuclear power
	P Maximum number of individuals an environment can support indefinitely without negative impacts
	Q Populations growth that proceeds unchecked until an external disaster happens
	R Population growth regulated by density-independent factors

	S An approach to agriculture that maintains and improves soil health, water infiltration and retention, and soil organic matter
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TOTAL = 100