



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

**FACULTY OF NATURAL RESOURCES AND SPATIAL SCIENCES
DEPARTMENT OF ARCHITECTURE AND SPATIAL PLANNING**

QUALIFICATION: BACHELOR OF TOWN AND REGIONAL PLANNING	
QUALIFICATION CODE: O7BTAR	LEVEL: 7
COURSE CODE: SSP720S	COURSE NAME: SUSTAINABLE SETTLEMENT PLANNING
SESSION: NOVEMBER 2019	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Ms. G.B van Rooi gvanrooi@nust.na / 2072359
MODERATOR:	Ms. H. Kevanhu hkevanhu@swkmun.com.na

NOTES
<ul style="list-style-type: none">• The question paper consists of 4 pages (Including this front page)• Read the entire question paper before answering the questions• Ensure you number your answers correctly• Please write clearly and legibly• You must answer all questions <p>Make sure your Student Number is on the Examination Book(s)</p>

QUESTION 1

- (a) Discuss the interaction between land use patterns, transport and the environment. (5)

It is widely acknowledged that urban density affects travel activity.

- (b) Discuss the above statement. (5)

[10]

QUESTION 2

As opposed to conventional economic pursuit, sustainability advocates argue in favour of engaging in the Green and Blue Economies.

- (a) Discuss the concept of the Blue Economy. (5)

Marine Spatial Planning is a novel concept in Namibia. However, without such the Blue Economy will suffer greatly.

- (b) Discuss how Marine Spatial Planning is defined in Namibia. (5)

[10]

QUESTION 3

The objectives of the Namibian Urban and Regional Planning Act, Act No. 5 of 2018 inter alia states that (planning) ought to pursue sustainable and efficient use of land.

Pursuant to this, and in line with what Urban Theorists believe Namibian planners thus ought to plan compact cities.

- (a) What are the characteristics of a compact city? (5)

Compact City development is generally coupled with Mixed Land Use and Social Diversity as a number of theorists are of the opinion that these concepts are indivisible.

- (b) Discuss the concept of Mixed Land Use and Social Diversity. (5)

A focus group discussion about the amendment of the Windhoek Town Planning Scheme at the City of Windhoek, which you attended, made brief reference to Form Based Codes as an alternative to conventional zoning applied in the city. Planners were generally positive as it could aid in building a better city.

- (c) Provide a brief discussion about Form Based Codes. (5)

[15]

QUESTION 4

- (a) Provide a detailed understanding of what an “ecological footprint” is. (5)

Nations with a decidedly large environmental footprint, like the UK for example is regarded as an ecological debtor, whereas Namibia is an ecological creditor as it has a small environmental footprint.

- (b) Discuss this statement. (10)

[15]

QUESTION 5

The United Nations Inter-Governmental Panel on Climate Change assessment report for 2018 confirmed that the gradual warming of the earth over the last three decades is projected at 2 degrees Celsius, leading to serious implications for southern African countries. The report singled out Namibia and Botswana, as two countries that will face severe water stress as a result of this impact.

- (a) Provide an explanation of what Climate Change is. (5)

- (b) The City of Windhoek has formulated an Integrated Climate Change Strategy and Action Plan to address climate change. Provide a brief recollection of aspects that is covered in the strategy and action plan. (5)

- (c) Should you take a position as an urban planner at the City of Windhoek, what would be your role to help address Climate Change? (5)

Climate Change is exacerbating biodiversity loss which result in compromised delivery of ecosystem services.

- (d) Discuss the above statement. (5)

[20]

QUESTION 6

Melbourne, Australia is one the world's most liveable cities. However, the city is faced by the risk of extreme heat; water shortages and flash floods because of climate change. The city has also adopted effective measures to respond to these threats by adopting the Green Infrastructure planning approach.

- (a) Discuss the concept of 'urban forests' which the city adopted to address the threat of extreme heat and a host of other environmental concerns. (5)

The 'extreme heat' large cities face could be attributed to the urban heat island effect.

- (b) Discuss urban heat island concept in brief. (5)

[10]

QUESTION 7

New Urbanist's firmly belief that urban sprawl is one of the major threats to sustainable city building initiatives. This was recognized by the City of Cape Town and it prompted the formulation of a Densification Policy to counter such.

- (a) Discuss the methods of densification the City of Cape Town is pursuing. (7)

- (b) A brief survey of student perceptions about densification revealed that the majority of the SSP720S class of 2019 would not want to live in a densely built up urban area. Provide reasons for your reluctance to fully embrace densification. (3)

[10]

QUESTION 8

Parts of Windhoek's Central Business District (CBD) is falling into disrepair and thus the area is becoming increasingly blighted.

- (a) Discuss the concept of urban blight. (5)

As a future urban and regional planner, you are tasked to regenerate the Windhoek CBD.

- (b) Indicate how you will go about to implement a regeneration plan for the area. (5)

[10]

TOTAL = 100



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FIRST OPPORTUNITY EXAMINATION MEMORANDUM	
EXAMINER(S)	Ms. G.B van Rooi gvanrooi@nust.na / 2072359
MODERATOR:	Ms. H. Kevanhu hkevanhu@swkmun.com.na

NOTES
<ul style="list-style-type: none">• The Memorandum consists of 9 pages (including this front page).• The model answers are used as guidelines only.• The information presented by the students will be evaluated on merit.

* Q 7(b) - p.8

QUESTION 1

- (a) Discuss the interaction between land use patterns, transport and the environment. (5)

The spatial distribution of housing, working, shopping, leisure ✓ and other activities determines average trip distances ✓ in urban transport. High population density, ✓ as well as a mixture of land use ✓ for various social and economic activities, maintain low distances between origins and destinations ✓ of urban trips. Conversely, low density development and large road areas increase trip lengths ✓ and lead to higher share of automobile trips. ✓

By influencing the spatial structure of locations ✓ in the urban environment, land use planning can contribute to a minimisation of kilometres driven ✓ and support a high transit share. ✓ Dense and mixed-use developments help to keep walking and cycling attractive. ✓ These are the most environmentally friendly transport modes. ✓ Given the high emissions per km of motor vehicles, the amount of traffic generated by unfavourable spatial structures directly affects air quality. ✓ Oil consumption and greenhouse gas emissions will inevitably ✓ increase rapidly if transport and land use policies in developing countries follow the kind of spatial transformation the highly motorised counties have undergone, i.e. sprawl. ✓

There are thus serious concerns for the local environment, ✓ in addition to air pollution, loss of soil functions ✓ and loss of bio-diversity. ✓ Added thereto are the concerns of over dependency on non-renewable energy sources ✓ which lead to increased greenhouse gas emissions, which contribute to climate change. ✓

(Any five (5) of these points will score a mark)

It is widely acknowledged that urban density affects travel activity.

- (b) Discuss the above statement. (5)

- *Increased proximity is ensured through a land use mix, ✓ thus ensuring ease of geographic accessibility ✓*
- *Mobility options. Increased density tends to increase the cost efficiency of sidewalks, paths, public transit services, resulting in more and better transport options. Better transport options (better walking, cycling, public transit and taxi services) ✓*
- *Density is positively linked to Social acceptability of non-automobile modes. As more community residents rely on walking, cycling and public transit the social acceptability increases. ✓*
- *Reduced automobile travel speeds and convenience. Increased density tends to increase traffic friction (interactions among road users) which reduces traffic speeds, ✓ and higher land costs reduce parking supply and increase parking pricing. ✓*

(Any five (5) of these points will score a mark)

[10]

QUESTION 2

As opposed to conventional economic pursuit, sustainability advocates argue in favour of engaging in the Green and Blue Economies.

- (a) Discuss the concept of the Blue Economy. (5)

The blue economy refers to a sustainable ocean based economic model; ✓ one that employs environmentally sound and innovative infrastructure, ✓ technologies, and practices, ✓ including institutional and financing arrangements, for meeting the goals of: (a) sustainable and inclusive development; (b) protecting our coasts and oceans ✓ and reducing environmental risks ✓ and ecological scarcities; ✓ (c) addressing water, energy and food security; ✓ (d) protecting the health, livelihoods and welfare of the people in the coastal zone; ✓ and (e) fostering ecosystem-based climate change mitigation and adaptation measures. ✓

(Any five (5) points will score a mark)

Marine Spatial Planning is a novel concept in Namibia. However, without such the Blue Economy will suffer greatly.

- (b) Discuss how Marine Spatial Planning is defined in Namibia. (5)

Namibia defines Marine Spatial Planning as: a participative action ✓ that guides where ✓ and when ✓ human activities ✓ occur in marine spaces, ✓ providing for comprehensive, integrated and complementary planning ✓ and management across all sectors and for all ocean uses in order to enable sustainable ocean development. ✓

(Any five (5) points will score a mark)

[10]

QUESTION 3

The objectives of the Namibian Urban and Regional Planning Act, Act No. 5 of 2018 inter alia states that (planning) ought to pursue sustainable and efficient use of land.

Pursuant to this, and in line with what Urban Theorists believe; Namibian planners thus ought to plan compact cities.

- (a) What are the characteristics of a compact city? (5)

Urban compaction involves the promotion of urban regeneration ✓, the revitalisation of town centres ✓, restraint on development in rural areas ✓, higher density development ✓, mixed-use development ✓, promotion of public transport ✓ and the concentration of urban development at public transport nodes. ✓

(Any five (5) points will score a mark)

Compact City development is generally coupled with Mixed Land Use and Social Diversity as a number of theorists are of the opinion that these concepts are indivisible.

- (b) Discuss the concept of Mixed Land Use and Social Diversity. (5)

A mix of shops, offices, apartments, and homes on site. ✓ Mixed-use within neighbourhoods, within blocks, ✓ and within buildings. ✓ Diversity of people ✓ - of ages, income levels, cultures, and races. ✓

A focus group discussion about the amendment of the Windhoek Town Planning Scheme at the City of Windhoek, which you attended, made brief reference to Form Based Codes as an alternative to conventional zoning applied in the city. Planners were generally positive as it could aide in building a better city.

- (c) Provide a brief discussion about Form Based Codes. (5)

Form-based codes address the relationship between building facades and the public realm, ✓ the form and mass of buildings in relation to one another, ✓ and the scale and types of streets and blocks. ✓ The regulations and standards in form-based codes are presented in both words and clearly drawn diagrams and other visuals. ✓ They are keyed to a regulating plan ✓ that designates the appropriate form and scale (and therefore, character) ✓ of development, rather than only distinctions in land-use types. ✓

OR

A form-based code is a land development regulation ✓ that fosters predictable built results ✓ and a high-quality public realm ✓ by using physical form ✓, rather than separation of uses ✓ as the organizing principle for the code. A form-based code is a regulation ✓, not a mere guideline, adopted into city, town, or county law. A form-based code offers a powerful alternative to conventional zoning regulation.

(Any five (5) points of either option will score a mark)

[15]

QUESTION 4

- (a) Provide a detailed understanding of what an “ecological footprint” is. (5)

The impact of human activities ✓ measured in terms of the area of biologically productive land ✓ and water needed ✓ to produce the goods consumed ✓ and to assimilate the wastes generated. ✓ More simply, it is the amount of the environment necessary ✓ to produce the goods and services ✓ necessary to support a lifestyle. ✓

(Any five (5) of these points will score a mark)

Nations with a decidedly large environmental footprint, like the UK for example is regarded as an ecological debtor, whereas Namibia is an ecological creditor as it has a small environmental footprint.

- (b) Discuss this statement. (10)

Ecological Creditors: Residents of ecological creditor countries use less ecological services ✓ than are available within their national borders, ✓ and therefore are endowed with a reserve of natural assets. ✓ This reserve, in an increasingly resource-constrained world, give those countries an economic advantage ✓ and strengthens their strategic positions. ✓

Ecological Debtors: In contrast, countries with biocapacity deficits depend on net imports of such resources ✓ or overuse of their own domestic ecological assets ✓ (meaning liquidating them), or use of global commons (atmosphere, international fisheries). ✓ The first two are an economic drain on the countries, ✓ and a political risk that could become an economic cost. ✓

[15]

QUESTION 5

The United Nations Inter-Governmental Panel on Climate Change assessment report for 2018 confirmed that the gradual warming of the earth over the last three decades is projected at 2 degrees Celsius, leading to serious implications for southern African countries. The report singled out Namibia and Botswana, as two countries that will face severe water stress as a result of this impact.

- (a) Provide an explanation of what Climate Change is. (5)

“Climate change” means the alteration of the world’s climate ✓ that can be attributed to direct or indirect human activity ✓, through fossil fuel burning ✓, clearing forests and other practices that increase the concentration of greenhouse gases in the atmosphere. ✓ Changes can also be ascribed to natural climate variability ✓ observed over comparable time periods.

- (b) The City of Windhoek has formulated an Integrated Climate Change Strategy and Action Plan to address climate change. Provide a brief recollection of aspects that is covered in the strategy and action plan. (5)

The strategy will address issues of water security and efficiency, ✓ biodiversity and ecosystems, ✓ human settlement, ✓ community health ✓ and disaster preparedness. ✓ The strategy will focus on sustainable energy ✓ and low carbon emission, ✓ and the development of a sustainable transport system ✓ leading to lower carbon emissions. ✓ The strategy will address cross-cutting issues in public awareness ✓ about climate change and capacity building. ✓

(Any five (5) of these points will score a mark)

- (c) Should you take a position as an urban planner at the City of Windhoek, what would be your role to help address climate change? (5)

In general, layout planning should be guided by a thorough environmental assessment ✓ which must identify the potential risks ✓; planning should thus respond to this. Areas that are susceptible to heat waves should employ solar passive design ✓ in their layouts and general house orientation. Should flooding be a threat, layout planning and zoning management should respond thereto, yet again by ensuring vulnerable areas are designed as "Conservation" or "Open Space" zones. ✓ Flood lines should thus be considered ✓ when determining the urban layout and adequate planning responses to be introduced to ensure effective storm water management. ✓ Anti-Sprawl ✓ design guidelines and policies could be adopted to protect natural landscapes and minimize the reliance on the automobile with the resultant decrease in fossil fuel burning and resultant lowering in harmful emissions.

Strict Building Regulations and design guidelines ✓ should be imposed and such should respond to the risk the area face. In addition to zonings for flood areas and open spaces, the zoning scheme should contain the necessary regulations to promote health, safety, order, and general welfare ✓ of the inhabitants of an area.

(Any five (5) logically construed points will score a mark)

Climate change is exacerbating biodiversity loss which result in compromised delivery of ecosystem services.

- (d) Discuss the above statement. (5)

Biodiversity loss describes the decline in the number, ✓ genetic variability, ✓ and variety ✓ of species, and the biological communities in a given area. ✓ The loss in the variety of life can lead to a breakdown in the functioning of the ecosystem ✓ where decline has happened. Ecosystem services are benefits people obtain from the ecosystem ✓ and are often integral to the provisioning of clean drinking water, ✓ the decomposition of wastes, ✓ and the natural pollination of crops and other plants. ✓

(Any five (5) points will score a mark)

[20]

QUESTION 6

Melbourne, Australia is one the world's most liveable cities. However, the city is faced by the risk of extreme heat; water shortages and flash floods because of climate change. The city has also adopted effective measures to respond to these threats by adopting the Green Infrastructure planning approach.

- (a) Discuss the concept of 'urban forests' which the city adopted to address the threat of extreme heat and a host of other environmental concerns. (5)

Urban forests play a key role in ecology of human habitats in many ways: they filter air, water, sunlight, ✓ supply shelter to animals ✓ and recreational area for people. ✓ They moderate local climate, ✓ slowing wind and stormwater, ✓ and shading homes and businesses to conserve energy. ✓ They are critical in cooling the urban heat island effect, ✓ thus potentially reducing the number of unhealthy ozone days ✓ that plague major cities in peak summer months.

The 'extreme heat' large cities face could be attributed to the urban heat island effect.

- (b) Discuss urban heat island concept in brief. (5)

Buildings, roads, and other infrastructure ✓ replace open land and vegetation. ✓ Surfaces that were once permeable ✓ and moist generally become impermeable and dry. ✓ The changes in radiative and thermal properties of urban infrastructure leads thereto that urban regions experience warmer temperatures ✓ than their rural surroundings. ✓

[10]

QUESTION 7

New Urbanist's firmly belief that urban sprawl is one of the major threats to sustainable city building initiatives. This was recognized by the City of Cape Town and it prompted the formulation of a Densification Policy to counter such.

(a) Discuss the methods of densification the City of Cape Town is pursuing. (7)

- Construction of attached/detached second dwellings including the changing of non-residential buildings, or parts of buildings, to residential buildings (e.g. garages). ✓
- Increasing the existing bulk rights through the extension of the building or adding on of floors to accommodate an increased number of units. ✓
- Block consolidation of erven with redevelopment at higher densities. ✓
- Subdivision of land and redevelopment at higher densities. ✓
- Consolidation with re-development at higher densities including the demolition and integration of existing structures. ✓
- Higher density infill on vacant and under-utilised land throughout the built area of the City. ✓
- Consolidation of sites within a street block to create a single larger parcel for redevelopment into multi-storey units. ✓

(b) A brief survey of student perceptions about densification revealed that the majority of the SSP720S class of 2019 would not want to live in a densely built up urban area. Provide reasons for your reluctance to fully embrace densification. (3)

Open ended answer is expected.

* Consider survey results as example answers. [10]

QUESTION 8

Parts of Windhoek's Central Business District (CBD) is falling into disrepair and thus the area is becoming increasingly blighted.

(a) Discuss the concept of urban blight. (5)

Urban blight (also known as urban rot and urban decay) is the process by which a previously functioning city, or part of a city, falls into disrepair and decrepitude ✓. It may feature deindustrialization ✓, depopulation or deurbanization ✓, economic restructuring ✓, abandoned buildings and infrastructure ✓, high local unemployment ✓, fragmented families, ✓ political disenfranchisement ✓, crime ✓, and a desolate cityscape ✓, known as grey field or urban prairie.

(Any five (5) of these points will score a mark)

As a future urban and regional planner, you are tasked to regenerate the Windhoek CBD.

- (b) Indicate how you will go about to implement a regeneration plan for the area. (5)

Plan should work at improving the physical structure ✓ and more importantly the economy ✓ of BLIGHTED areas. It will be ensured that public money ✓ is used as an attempt to pump prime private investment ✓ into an area. The community and business sector ✓ shall be involved to ensure the sustainability of regeneration efforts. The participation of the private sector ✓ shall be pursued as it is a determining factor in success of regeneration of underutilized urban land.

(Any five (5) of these points will score a mark)

[10]

TOTAL = 100

November 2019

SSP720S

Sustainable Settlement Planning

Included:

Moderator's report

1st Opportunity question paper

1st Opportunity Memorandum