



**NAMIIBIA 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: 07BTAR	LEVEL: 6
COURSE CODE: PLP621S	COURSE NAME: Principles and Guidelines for Layout Planning
SESSION: November 2019	PAPER: THEORY
DURATION: 3 HOURS	MARKS: TOTAL 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER

EXAMINER(S)	Mr. Jacques Korrubel / 207 2683 / jkorrubel@nust.na
MODERATOR:	Ms. Kristy Asino / 207 2244 / kasino@nust.na

INSTRUCTIONS

1. Answer ALL the questions.
2. Write clearly and neatly.
3. Number the answers clearly.
4. The addition of sketches to answers is recommended

PERMISSIBLE MATERIALS

1. Calculator, ruler, pencil and eraser

THIS QUESTION PAPER CONSISTS OF 5 PAGES (Including this front page)

Question 1

The picture below illustrates one of the generic forms of Hard Open Spaces within urban settlements.



- (a) Name this generic form of Hard Open Spaces. (1)
 - (b) List the categories of qualitative and quantitative design guidelines that could be used to improve the design of this generic form of Hard Open Spaces. (5)
- [6]**

Question 2

In order to compile a base map of an area that will be subjected to the planning and designs of layouts, certain land use planning control and management documents must be consulted.

- (a) Name these land use planning control and management documents. (3)
 - (b) Highlight the information contained in these documents that will assist planners in the design and planning of layouts. (10)
- [13]**

Question 3

The configuration of junctions within movement networks results in certain networks being classified as either “open” or “closed” movement networks.

- (a) List the generic movement networks from the most open network to the one that is seen as a totally closed network. (5)
 - (b) Provide sketches of the movement networks listed in 3.(a) above to illustrate their level of openness or closeness. (5)
- [10]**
-

Question 4

The placement of public institutions and recreational facilities inside or in between neighbourhoods are guided by the structural design principle of “accommodating sameness and diversity”. In what way would you apply this structural design principle in your neighbourhood design?

[6]

Question 5

When land is subdivided town planners can use various generic street block subdivision options.

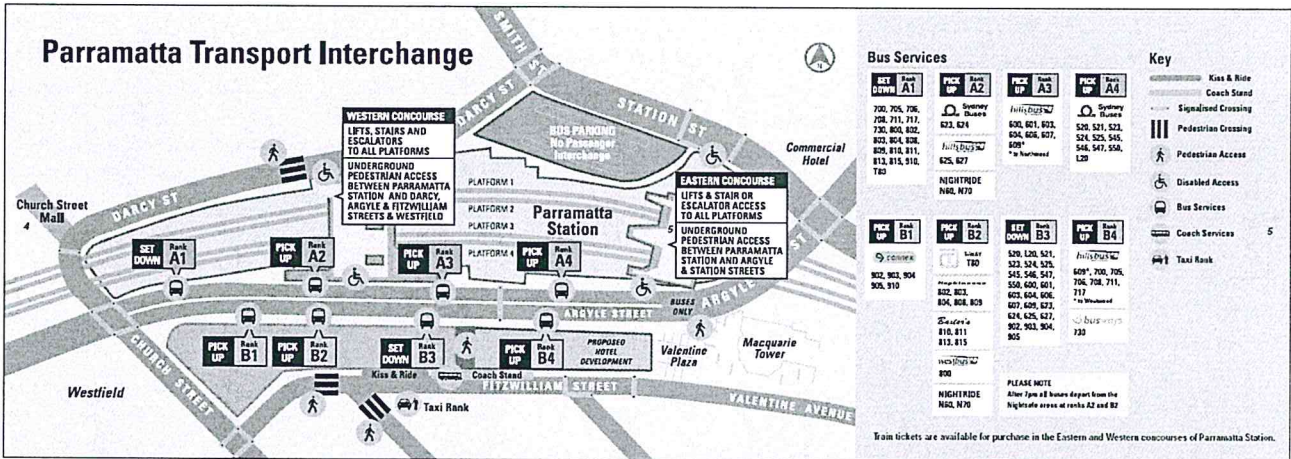
- (a) Provide a detailed sketch of the Looped street block option. (2)
 - (b) Provide a detailed sketch of the Woon Erf street block option. (3)
 - (c) Compare the positive and negative design aspects of the 2 options mentioned above. (10)
- [15]**
-

Question 6

The installation of a sewer network is critical for the safeguarding of residential developments in a settlement. Describe what layout implications a storm water management service will have on the design of a settlement.

[8]

Question 7



The illustration above depicts a public transport interchange. The locality of such a transport interchange is guided by certain structural principles of settlement design.

- (a) Identify the specific structural principle. (1)
 - (b) Provide a sketch, inclusive of a proper legend, illustrating this structural principle. (6)
 - (c) Explain the theory / methodology behind this structural principle to achieve structure and order within human settlements. (6)
- [13]**

Question 8

Specific locational guidelines / rules exist for the planning and design of soft open spaces. Provide the specific locational guidelines for the following generic forms of soft open spaces:

- (a) Formal parks (3)
 - (b) Sport fields (3)
 - (c) Urban agriculture (4)
- [10]**

Question 9

In order to compile a base map of an area that will be subjected to the planning and designs of layouts, certain cadastral information documents must be consulted which focus purely on the physical characteristics of an area. List the information contained in following documents that could assist a planner with their layout designs.

- | | |
|------------------------------|-------------|
| (a) Topographical maps | (5) |
| (b) Aerial photos | (3) |
| (c) Orthophotos | (3) |
| (d) Geographical survey maps | (3) |
| | [14] |
-

Question 10

If an urban settlement is monitored and evaluated in terms of its performance qualities and it seems to promote higher population densities which foster specialisation and diversification of economic activities, it can be concluded that one of the performance qualities are well established.

- | | |
|--|------------|
| (a) Name the specific performance quality described above. | (1) |
| (b) Provide evidence of other outcomes of applying this performance quality in the design of urban settlements | (4) |
| | [5] |
-

END**Total [100]**



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FIRST OPPORTUNITY EXAMINATION MEMORANDUM	
EXAMINER(S)	Mr. Jacques Korrubel / 207 2683 / jkorrubel@nust.na
MODERATOR:	Ms. Kristy Asino / 207 2244 / kasino@nust.na

INSTRUCTIONS
<ol style="list-style-type: none">1. The model answers are used as guidelines only.2. The information presented by the students will be evaluated on merit.

THIS MEMORANDUM CONSISTS OF 10 PAGES (Including this front page)

- (a) Name these land use planning control and management documents. (3)
- (b) Highlight the information contained in these documents that will assist planners in the design and planning of layouts. (10)
- [13]

Answer Question 2:

(a)

*Policy Areas and Policy Plans ✓**Town Planning Schemes ✓**Structure Plans ✓*

(3)

(b)

Policy Areas and Policy Plans○ *Future land use changes ✓*○ *Land use and building restrictions in certain areas ✓**Town Planning Schemes*○ *Land use and building control measures and regulations ✓*○ *Erf zonings and building lines ✓*○ *Movement network reserves ✓*○ *Demarcation of policy areas ✓**Structure Plans*○ *Long term development direction and scenarios ✓*○ *Major new land uses and developments expected ✓*○ *Future bulk infrastructure developments ✓*○ *Locality of new park, open spaces & recreational areas ✓*

(10)

[13]

Question 3

The configuration of junctions within movement networks results in certain networks being classified as either “open” or “closed” movement networks.

- (a) List the generic movement networks from the most open network to the one that is seen as a totally closed network. (5)
- (b) Provide sketches of the movement networks listed in 3.(a) above to illustrate their level of openness or closeness. (5)
- [10]

Answer Question 3

(a) (must be in correct order)

- *Rectangular, multidirectional grid network ✓*
- *Distorted rectangular, multidirectional grid network ✓*
- *Radial multi directional network ✓*
- *Looped, hierarchical network ✓*
- *Branched hierarchical network ✓*

(5)

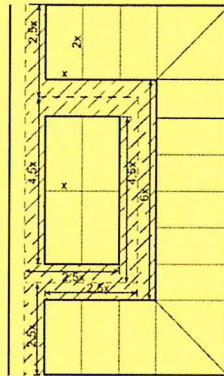
(c) Compare the positive and negative design aspects of the 2 options mentioned above.

(10)
[15]

Answer Question 5

(a)

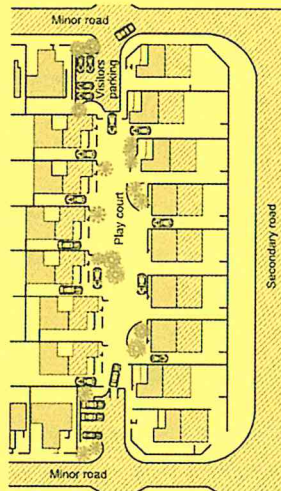
Loop subdivision layout



v/v

(b)

Woonerf subdivision layout



v/v

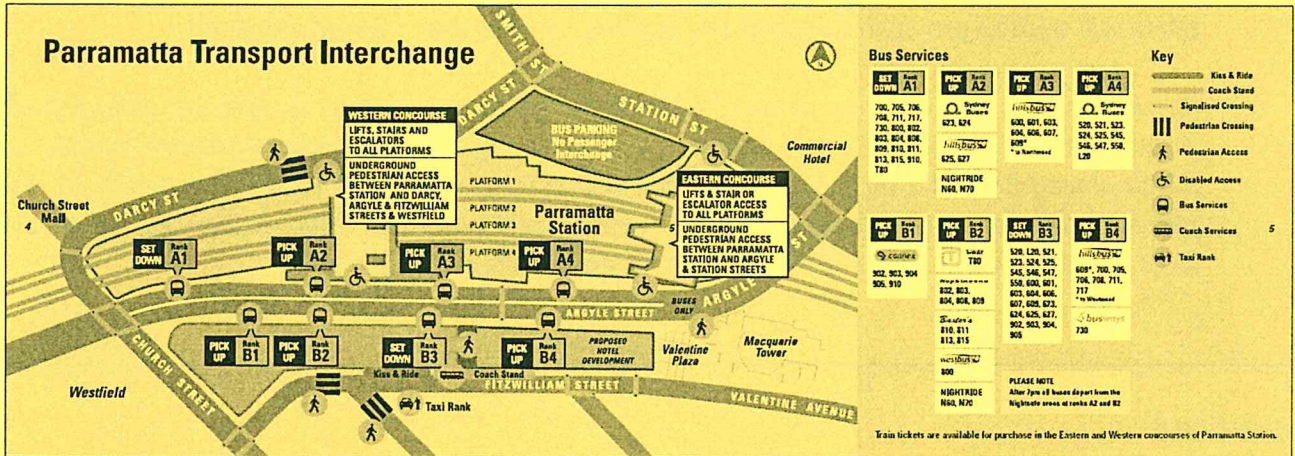
(d) 1 mark per bullet

LOOPED STREET BLOCK

Positive aspects

- Loop layouts is a common form of access street. ✓
- The loop type layout provides greater efficiency in terms of network length: area ratios, network length: dwelling unit ratios, and residential densities, than the grid subdivision pattern. ✓

Question 7

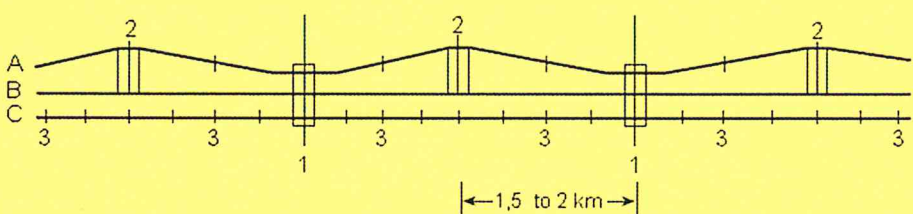


The illustration above depicts a public transport interchange. The locality of such a transport interchange is guided by certain structural principles of settlement design.

- (a) Identify the specific structural principle. (1)
 - (b) Provide a sketch, inclusive of a proper legend, illustrating this structural principle. (6)
 - (c) Explain the theory / methodology behind this structural principle to achieve structure and order within human settlements. (6)
- [13]**

Answer Question 7

- (a) The structural principle of reinforcement v (1)



LEGEND

- A. Road-based public transport and private vehicles on high order limited-access routes: bus, taxi and private vehicles.
- B. Heavy rail-based public transport: train.
- C. Light rail-based and road-based public transport as well as private vehicles: tram, bus, taxi, private vehicles.
 - 1. First order centre. All modes of transportation.
 - 2. Second order centre. Mixed transportation: train, bus, taxi, private vehicle, walk.
 - 3. Local order centre. Local transportation: taxi, private vehicle, bicycle, walk.

(b)

(c) 1 mark per bullet

- Located next to sources of irrigation water, in the form of rivers, storm water retention ponds and oxidation ponds ✓
- Located close to low income residential area to limit travel expenses ✓
- Located close to local markets ✓
- Located within under-utilized land such as servitudes ✓

(4)

[10]

Question 9

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| (c) Orthophotos | (3) |
| (d) Geographical survey maps | (3) |
| | [14] |

Answer Question 9:

- | | |
|---|-----|
| (a) Topographical maps | (5) |
| <i>Bulk infrastructure and public facilities ✓</i> | |
| <i>Natural features and land marks ✓</i> | |
| <i>Contours ✓</i> | |
| <i>LO or UTM coordinate system & trig beacons ✓</i> | |
| <i>Data to calculate gradient and conduct a slope analysis ✓</i> | |
| (b) Aerial photos | (3) |
| <i>Image of real life, up to date picture of physical developments ✓</i> | |
| <i>Provides for stereoscopic analysis of terrain ✓</i> | |
| <i>Identifiable land uses and structures and land use & density surveys ✓</i> | |
| (c) Orthophotos | (3) |
| <i>Provides scale correct mosaic of aerial photos ✓</i> | |
| <i>Contour lines ✓</i> | |
| <i>Baseline information for draft conceptual designs ✓</i> | |
| (d) Geographical survey maps | (3) |
| <i>Geological conditions and classifications ✓</i> | |
| <i>Soil and mineral classifications ✓</i> | |

November 2019

PLP621S

Principles and Guidelines for Layout Planning

Included:

Moderator's report

1st Opportunity question paper

1st Opportunity Memorandum