NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

## FACULTY OF NATURAL RESOURCES AND SPATIAL SCIENCES

### DEPARTMENT OF GEO-SPATIAL SCIENCES AND TECHNOLOGY

| | |
|---|---|
| **QUALIFICATIONS:** BACHELOR OF GEOMATICS, DIPLOMA IN GEOMATICS | |
| **QUALIFICATIONS CODES:** 06DGEM, 07BGEM | **LEVEL: 5** |
| **COURSE CODE:** CAS520S | **COURSE NAME:** CADASTRAL SURVEYING 1 |
| **SESSION:** JANUARY 2020 | **PAPER:** THEORY |
| **DURATION:** 3 HOURS | **MARKS:** 100 |

| SUPPLEMENTARY/SECOND OPPORTUNITY EXAMINATION QUESTION PAPER | |
|---|---|
| **EXAMINER** | **Mr T. Makaza** |
| **MODERATOR** | **Mr J.C. Lewis** |

| INSTRUCTIONS |
|---|
| 1. Answer ALL the questions.<br>2. Write clearly and neatly.<br>3. Number the answers clearly. |

## PERMISSIBLE MATERIALS

Calculator, ruler, pencil and eraser

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

## QUESTION 1

1.1 Define land surveyor in terms of Act 33 of 1993. (2)

1.2 Explain how the current Cadastral Systems around the world tend to resemble the Ancient Egyptian Cadastral System. (2)

1.3 "Because the cadastral system in Egypt developed around the definition of arable land, the system became also quite important in re-establishing the delineated boundaries after the annual floods of the Nile River washed away the evidence of land boundaries." Describe how these boundaries were re-established after the annual floods. (2)

1.4 In many other countries where there was a settled population, there was also an abundance of natural and cultural (artificial) features that could be used as boundaries.
In other countries like South Africa and Namibia, where natural and cultural features are few and far apart , describe a practical method of demarcating properties. (2)

1.5 Describe the **four (4)** duties of a Land Surveyor as per the Land Survey Act. (8)

1.6 State **any six (6)** powers and duties of the Surveyor General. (6)

**[22]**

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## QUESTION 2

2.1 What is the purpose of demarcation? (2)

2.2 Describe the following types of demarcation;

(a) Sectional title (2)

(b) Farm surveys . (2)

2.3 Explain any **two (2)** situations that may necessitate a beacon relocation and replacement. (4)

2.4 What **three (3)** conditions must be satisfied before a consent for consolidation is approved? (3)

2.5 Mention the **two (2)** methods that can be used to perform a consolidation. Which method is cheaper? (3)

2.6 Describe the following steps to follow in the performance of a cadastral survey e.g. a subdivision:

(a) Reconnaissance (2)

(b) Searching for survey information in the Surveyor General's Office (trigs, reference marks, working stations, existing beacons). (3)

**[21]**

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**QUESTION 3**

3.1 Mention the **four (4)** units of the cadastral section of the Directorate of Survey and Mapping. (4)

3.2 When preparing a subdivision sketch for approval by the local authority and Townships Board it is necessary to survey and indicate all information that may have a bearing on the proposed subdivision. State **any eight (8)** examples of such information. (8)

3.3 Mention **five (5)** examples of essential information contained in each of the following documents;

(a) A subdivision diagram (5)

(b) Farm index card (5)

**[22]**

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**QUESTION 4**

4.1 Say the owner of Erf 822 Rocky Crest Extension 2 needs to buy a piece of a public open space behind his erf and consolidate it with his current erf. Briefly explain the process, starting from

identifying the open space that he will follow up to the registration of the consolidation. Indicate the main role players in this process. (4)

4.2 What is the importance of the subdivision sketch during examination at the Surveyor General's office? (2)

4.3 If you are to subdivide an erf with a Total Station; explain how you would bring control points close enough to the erf if existing control points are far from the site of your survey. (2)

4.4 Mention the **three (3)** copies of the same diagram, e.g. subdivision diagram, that the Surveyor General approves. (6)

4.5 Describe the following records that must be included in the survey records:

(a) Survey report (2)

(b) Regulation 57(1)k certificate (2)

(c) Calculations. (2)

**[20]**

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**QUESTION 5**

5.1 Mention all options of beaconing a servitude of uniform/defined width. (3)

5.2 How shall you preserve the corner point of a piece of land if the corner point falls in an inaccessible position? (2)

5.3 If the calculated position of a beacon falls very close to a building corner, what option does a land surveyor have in order to have this beacon placed? (2)

5.4 Mention **four (4)** examples of the contents/headings of the coordinate list. (4)

5.5 Mention the symbols and colour (you may use sketches) used for the following on a working plan:

(a) Boundary (1)

(b) Calculated point (1)

(c) Marked working station (1)

(d) Reference mark (1)

**[15]**

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| SUPPLEMENTARY/SECOND OPPORTUNITY MEMORANDUM | |
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| **EXAMINER** | **Mr T. Makaza** |
| **MODERATOR** | **Mr J.C. Lewis** |

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|---|
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| 3. Reasonable,in-depth or innovative correct answers/solutions provided by the students should be allocated marks even though not provided in this memorandum. |

**THIS MEMORANDUM CONSISTS OF 9 PAGES** (including this front page)

**QUESTION 1**

1.1 Define land surveyor in the in terms of Act 33 of 1993. (2)

*A person whose name is entered as a professional land surveyor ✓in the register of practitioners ✓as per Professional Land Surveyors', Technical Surveyors' and Survey Technicians' Act. ✓*

1.2 Explain how the current Cadastral Systems around the world tend to resemble the Ancient Egyptian Cadastral System. (2)

*Properties were surveyed✓ and ownership was recorded in a public register✓*

1.3 "Because the cadastral system in Egypt developed around the definition of arable land, the system became also quite important in re-establishing the delineated boundaries after the annual floods of the Nile River washed away the evidence of land boundaries." Describe how these boundaries were re-established after the annual floods. (2)

*The corner beacons of the plots were set out or recovered by measuring from permanent markers✓ above the flood line✓*

1.4 In many other countries where there was a settled population, there was also an abundance of natural and cultural (artificial) features that could be used as boundaries.
In other countries like South Africa and Namibia, where natural and cultural features are few and far apart, describe a practical method of demarcating properties. (2)

*Using beaconed corner points✓ joined, with few exceptions, by imaginary straight line boundaries✓*

1.5 Describe the **four (4)** duties of a Land Surveyor as per the Land Survey Act. (8)

- *To carry out surveys in accordance with the Land Survey Act, ✓and in a manner that will ensure accurate results; ✓*
- *To be responsible to the Surveyor-General for the correctness of every survey carried out by him/her✓or under his/her supervision, and of every general plan or diagram which bears his/her signature; ✓*
- *To lodge with the Surveyor-General for the purpose of examination and filing in the Surveyor-General's office✓such records as may be prescribed in respect of any cadastral survey carried out by him/her, ✓*

- *when required by the Surveyor-General, to correct without delay, ✓any error in any survey carried out by him/her and take steps that are necessary to correct any errors on any diagram, general plan and title deed caused by his/her error.* ✓

1.6 State **any six (6)** powers and duties of the Surveyor General. (6)

- *The Surveyor General shall exercise the powers and perform the duties assigned to him/her by the Land Survey Act or any other law.* ✓
- *The Surveyor-General is in charge of the geodetic, topographical and cadastral surveying in Namibia as the Minister may direct and subject to the Land Survey Act.* ✓
- *He/she must promote and control all matters connected with geodetic, topographical and cadastral surveys and services.* ✓
- *He/she must supervise and control the survey and charting (diagrammatic) representation of land for the purposes of registration in the deeds registry.* ✓
- *He/she must conduct trigonometrical, topographical, geodetic, cadastral, level, tide and other relevant survey operations that may be required or appoint a private land surveyor to perform such survey operations.* ✓
- *He/she must prepare, compile and amend maps, diagrams, plans and other documents as may be required or in accordance with the provisions of any law.* ✓
- *The Surveyor General is in charge of and must preserve all records pertaining to surveys of land that are filed and kept in the Surveyor-General's office as records of that office.* ✓
- *He/she must examine and grant approval or provisional approval of all general plans and diagrams which have been prepared in accordance with the Land Survey Act and also in accordance with any statutory consent in so far as the layout is concerned, before registration in the deeds registry is done.* ✓
- *On the diagram of any piece of land:* ✓
    - *define the geometrical figure representing any portion of that land, the transfer of which has been registered in the deeds registry, and deduct the numerical extent of that portion;* ✓
    - *define the geometrical figure representing any portion thereof for which a certificate of township title or registered title has been issued under the law relating to the registration of deeds, and deduct the numerical extent of that portion;* ✓
    - *define the geometrical figure and make the necessary endorsements in respect of any servitude or lease over or on that land which has been surveyed in terms of the Land Survey Act and registered in the deeds registry.*
- *The Surveyor General must, on request of any person and on payment of such fees as prescribed, prepare, certify and issue copies of diagrams, general plans and other documents*✓

**[20]**

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**QUESTION 2**

2.1 What is the purpose of demarcation? (2)

*To provide a physical awareness of the boundary on the ground✓by means of boundary monuments/markers called beacons. ✓*

2.2 Describe the following types of demarcation

(a) Sectional title (2)

*division of buildings into sections and common property✓in order to allow acquisition of separate ownership✓of those sections and undivided shares.*

(b) Farm surveys (2)

*A survey involving subdividing a farm into two or more parts*

2.3 Explain any **two (2)** situations that may necessitate a beacon relocation and replacement. (2)

*To solve a boundary dispute ,determine encroachment or to guide the fencing or construction of boundary walls*

2.4 What **three (3)** conditions must be satisfied before a consent for consolidation is approved (3)

- *The properties must be situated in the same registration division, ✓*
- *They must be adjacent to each other, ✓*
- *They must be owned by the same person/entity. ✓*

2.5 Mention the **two (2)** methods that can be used to perform a consolidation. Which method is cheaper? (3)

- *Consolidation by survey✓*
- *Consolidation by compilation. ✓*
- *Consolidation by compilation is cheaper because it does not involve fieldwork✓*

2.6 Describe the following steps to follow in the performance of a cadastral survey e.g. a subdivision:

(a) Reconnaissance (2)

- *This is a visit to site of the survey in order to familiarise oneself with the site, ✓*
- *This visit helps the surveyor to have an idea of which control point s/he is going to base her/his survey on depending on the visibility of the property to be surveyed and the trigs that are likely to be seen from that location. ✓*
- *This helps in deciding what coordinate data is to be loaded in the instrument, and*
- *also to help the surveyor in deciding which control points, existing beacons are going to be put on the setting out sheets for orientation and checking.*

(b) Searching for survey information in the Surveyor General's Office (trigs, reference marks, working stations, existing beacons); (3)

- *All information a surveyor requires to perform the job will be obtained from the Surveyor-General's Office: ✓✓*
- *Diagrams, General Plans, Noting plans,*
- *Topographic Maps,*
- *Survey records including previous working plans, coordinate lists of working stations, reference marks, existing beacons, trig. beacons, etc.*

**[21]**

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**QUESTION 3**

3.1 Mention the **four (4)** units of the cadastral section of the Directorate of Survey and Mapping. (4)

- *Examination unit✓*
- *Field unit✓*
- *Data capturing unit✓*
- *Drafting unit ✓*

3.2 When preparing a subdivision sketch for approval by the local authority and Townships Board it is necessary to survey and indicate all information that may a bearing on the proposed subdivision. State **any eight (8)** examples of such information. (8)

*Fence lines ✓*

*Telephone poles✓*

*Powerlines and poles✓*

*Taps✓*

*Garden features and trees, especially indigenous✓*

*Manholes✓*

*Driveways✓*

*Paths✓*

*Roads including curb and channel and/or tar road✓*

*Note on type of road surface✓*

*Building positions✓*

*Approximate dimension of the land and subdivision✓*

*Contours✓*

3.3 Mention **five (5)** examples of essential information contained in each of the following documents;

(a) A subdivision diagram (5)

- *The unique designation of the property.*
- *An illustration depicting the property.*
- *The figure of a diagram shall be accurately plotted to one of the following scales: 1/1000, 1/1250, 1/1500, 1/2000, 1/2500, 1/3000, 1/4000, 1/5000, 1/6000, 1/7000 or to any of these scales in which the denominator is multiplied or divided by ten to any integral power but the size of the figure shall not be less than six square centimetres except in the case of a servitude diagram or as permitted by the Surveyor-General.*
- *The boundary description listing the corner beacons and the details of any curvilinear boundary must be indicated.*
- *Descriptions of the corner beacons must be given.*
- *The diagram must contain a table listing the numerical data of the boundaries: length of the sides, the directions, point number, point co-ordinates, the designation of the point and the information of the control used (trigonometrical beacons, town survey marks or reference marks).*
- *Adjoining properties and streets.*
- *Servitude notes*
- *True north must be indicated.*
- *The area of the property.*
- *The registration division.*
- *The local authority, if situated within a local authority.*
- *The date when the survey was carried out.*
- *The signature of the land surveyor.*

- *The Surveyor General gives each diagram a unique reference number. This must be indicated at the top right hand side, for example A 1123/2003.*

(b) Farm index card (5)

- *includes the erf size,*
- *the noting plan number*
- *the title deed number,*
- *the E-records(survey-record) number,*
- *the diagram number,*
- *Registration division*
- *the Nampab or Agricultural consent number,*
- *the new erf numbers if subdivide or consolidated, the reference to the townships board item number and the correspondence file number.*

**[22]**

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**QUESTION 4**

4.1 Say the owner of Erf 822 Rocky Crest Extension 2 needs to buy a piece of a public open space behind his erf and consolidate with his current erf. Briefly explain the process, that he will follow starting from identifying the open space up to the registration of the consolidation. Indicate the main role players in this process. (4)

- *Submit application to the local authority✓*
- *Upon approval by local authority submit application to Townships Board✓*
- *Appoint a land surveyor to do subdivision✓*
- *Consolidate subdivision with erf 822✓*

4.2 What is the importance of the subdivision sketch during examination at the Surveyor General's office? (2)

*At examination, the survey examiners at the Surveyor-General's Office will check if the survey conforms to the subdivision plan✓; the figure on the subdivision sketch will be compared to the one on the diagram✓ and the area on the subdivision plan will be checked against the area on the diagram✓ to see if it is within limits.*

4.3 If you are to subdivide an erf with a Total Station; explain how you would bring control points close enough to the erf if existing control points are far from the site of your survey. (2)

*Run a traverse✓ between control points to establish new control points near the site of the survey✓*

4.4 Mention the **three (3)** copies of the same diagram, e.g. subdivision diagram, that the Surveyor General approves. (6)

- *the SG copy, ✓*
- *the copy that is attached to the Deeds Registry copy of the title deed ✓*
- *the copy that is attached to the owner's copy of the title deed✓*

4.5 Describe the following records that must be included in the survey records:

(a) Survey report (2)

*Here the surveyor reports on the various issues of the survey✓ such as purpose of the survey assistants, found and placed beacons, statutory consent, etc*

(b) Regulation 57(1)k certificate (2)

*with this document the surveyor assures the Surveyor-General that he calculated the data consistency check correctly✓ and also that he ensured that the information put on the diagram was double checked with the source documents. ✓*

( c) Calculations. (2)

*These are the records where calculations of coordinates that appear on the coordinate list are done. ✓✓The check for the goodness of the placing and checking is also done here.*

**[20]**

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**QUESTION 5**

5.1 Mention all options of beaconing a servitude of uniform/defined width. (3)

- *Beaconing one side of the servitude, ✓*
- *Beaconing the centreline ✓*
- *Beaconing all corner points✓*

5.2 How shall you preserve the corner point of a piece of land if the corner point falls in an inaccessible position? (2)

*By means of indicatory beacons*

5.3 If the calculated position of s beacon falls very close to a building corner, what option does a land surveyor have in order to have this beacon placed? (2)

*Fixing the building corner as a beacon of the property*

5.4 Mention **four (4)** examples of the contents/headings of the coordinate list. (4)

- *Trigonometrical beacons*
- *Working stations* ✓
- *Beacons adopted but not surveyed*
- *Beacons found and adopted* ✓
- *Beacons found and rejected*

5.5 Mention the symbols and colour (you may use sketches) used for the following on a working plan:

(a) Boundary (1)

*Solid black line*

(b) Calculated point (1)

*Single green circle*

(c) Marked working station (1)

*Double red circle*

(d ) Reference mark (1)

*Black circle with a cross inside*

**[15]**

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| **QUALIFICATION CODE:** 07BGEM ,06DGEM | **LEVEL: 5** |
| **COURSE CODE:** CAS520S | **COURSE NAME:** CADASTRAL SURVEYING 1 |
| **SESSION:** NOVEMBER 2019 | **PAPER:** THEORY |
| **DURATION:** 3 HOURS | **MARKS:** 100 |

| FIRST OPPORTUNITY EXAMINATION QUESTION PAPER | |
|---|---|
| **EXAMINER** | **Mr T. Makaza** |
| **MODERATOR** | **Mr J C. Lewis** |

| INSTRUCTIONS |
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| 1. Answer ALL the questions.<br>2. Write clearly and neatly.<br>3. Number the answers clearly. |

## PERMISSIBLE MATERIALS

Calculator, ruler, pencil and eraser

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

## QUESTION 1

1.1 Define cadastral surveying. (4)

1.2 Describe the purpose of the Land Survey Act 33 of 1993. (1)

1.3 Explain how current cadastral systems around the world tend to resemble the Ancient Egyptian Cadastral system. (2)

1.4 Name and explain the **two (2)** types of cadastral boundaries used by countries around the world. Which type is used in Namibia? (5)

1.5 Outline the **four (4)** duties of a Land Surveyor as per the Land Survey Act 33 of 1993. (8)

**[20]**

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## QUESTION 2

2.1 Describe the following **four (4)** types of demarcation:

(a) Beacon relocation (2)

(b) Subdivision (2)

(c) Consolidation (2)

(d) 'Servitude'. Indicate the terms given to the two properties that are the subjects of a servitude. (4)

(e) In what way does *a* personal servitude differ from a praedial servitude? (2)

2.2 Describe the following procedures that a land surveyor follows when preparing to go and perform a cadastral survey.

(a) Liaising with property owners (2)

(b) Searching for survey information in the Surveyor General's Office (2)

2.3 Mention the **six (6)** members of the Namibia Council of Professional, Technical Surveyors and Survey Technicians. (6)

**[22]**

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**QUESTION 3**

3.1 Define parent diagram. (2)

3.2 State **two (2)** typical scenarios that can assist a land surveyor in identifying the correct noting plan when searching for information in the Surveyor General's office prior to commencing field work. (2)

3.3 For the purpose of Deeds registration Namibia is divided into partitions. What name is given to these partitions? (1)

3.4 Give a brief description of each of the following **four (4)** sections that comprise the Division of Survey and Land Information;

*(a)* Section of Cadastral Surveys (2)

(b) Section of Geodetic Surveys (2)

(c) Section of Survey Examinations. (2)

3.5 Mention any **five (5)** kinds of information that you find on a farm index card. (5)

3.6 Describe any **two (2)** characteristics of Noting Plans. (4)

**[20]**

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## QUESTION 4

4.1 What is the importance of the subdivision sketch during examination at the Surveyor General's Office? (2)

4.2 Mention **two (2)** possible ways by which you can obtain the coordinates of new subdivision points. (2)

4.3 If you are demarcating a property using a Total Station, explain how you would place subdivision beacons if control points are far from the site of the survey. (2)

4.4 Describe the following records that must be included in the survey records:

*(a)* Survey report. (2)

(b) Regulation 57(1)k certificate. (2)

(c ) Working plan. (2)

4.5 In the case of a servitude diagram explain why it is ideal to have a minimum number of four copies of the same diagram approved by the Surveyor General . (4)

**[16]**

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## QUESTION 5

5.1 Define the following:

(a) Accurately determined. (1

(b) An arc of observations. (1)

5.2 Name the different classes of accuracy of survey and give **one (1)** example of each class. (6)

5.3 Mention the prescribed minimum size and erection manner for:

(a) A beacon for land situate in a township. (2)

(b) A beacon for rural land. (2)

5.4 Mention any **three (3)** circumstances when it shall not be necessary to define a corner point by a beacon. (6)

5.5 Mention the symbols (you may use sketches) used for the following:

(a) Beacon placed (1)

(b) Beacon found (1)

(c) Trigonometrical beacon (1)

(d) Line indicating adjacent properties. (1)

**[22]**

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**QUESTION 1**

1.1 Define cadastral surveying. (4)

*Surveying of land parcels (erven, farms) ✓performed by a Professional Land Surveyor✓ in (order to register mainly in the Deeds Office land rights✓) and preserve thence aiding land taxation. ✓*

1.2 Describe the purpose of the Land Survey Act 33 of 1993. (1)

*To regulate the survey of land✓ and to provide for matters connected therewith.*

1.3 Explain how current cadastral systems around the world tend to resemble the Ancient Egyptian Cadastral system. (2)

*Properties were surveyed✓ and ownership was recorded in a public register✓*

1.4 Name and explain the **two (2)** types of cadastral boundaries used by countries around the world. Which type is used in Namibia? (5)

- *Fixed boundaries- a boundary type that consists of beacons that are accurately surveyed*
- *General boundaries- No precise survey of boundary but neighbours agree on a boundary that is shown on a map. The boundary may consist of a hedge or wall between two properties*

*Namibia uses fixed boundaries*

1.5 Outline the **four (4)** duties of a Land Surveyor as per the Land Survey Act 33 of 1993. (8)

- *To carry out surveys✓ in accordance with the Land Survey Act✓, and in a manner that will ensure accurate results;*
- *To be responsible to the Surveyor General ✓for the correctness of every survey carried out by him/her ✓or under his/her supervision, and of every general plan or diagram which bears his/her signature;*
- *To lodge with the Surveyor General for the purpose of examination and filing✓ in the Surveyor General's office such records✓ as may be prescribed in respect of any cadastral survey carried out by him/her,*
- *when required by the Surveyor General, to correct without delay✓, any error in any survey carried out by him/her ✓and take steps that are necessary to correct any errors on any diagram, general plan and title deed caused by his/her error.*

**[20]**

**QUESTION 2**

2.1 Describe the following **four (4)** types of demarcation:

(a) Beacon relocation (2)

*Searching, replacing or finding existing (found) beacons✓ and verifying their positions. ✓*

(b) Subdivision (2)

*Refers to cutting a piece✓ of land from another✓*

(c) Consolidation (2)

*When two or more adjoining properties✓ are joined together to form one property✓*

(d) 'Servitude. Indicate the terms given to two properties that are the subjects of a servitude. (4)

*A servitude is a right that vests in an individual✓ to derive some advantage ✓from the property of another. ✓*

*Servient tenement is the property that suffers the burden of the servitude*

*Dominant tenement is the property that benefits from the servitude*

(e) In what way does a *personal servitude* differ from a *praedial servitude*. (2)

*A personal servitude is attached to a particular person whilst a praedial servitude is attached to the land parcel itself .*

2.2 Describe the following procedures that a land surveyor follows when preparing to go and perform a cadastral survey.

(a) *Liaising with property owners* (2)

- *Ensuring access to all properties of interest. ✓*
- *Particularly for farm surveys, access to necessary farms is vital. Trig beacons (control points) that surround the land under survey are on the surrounding farms. ✓A lot of gates will be found locked with serious warnings that is private property and access is restricted.*
- *Land Survey Act gives a surveyor the right to have access to private property at reasonable hours for the performance of his work*

*(b) Searching for survey information in the Surveyor General's Office.* *(2)*

- *All information a surveyor requires to perform the job will be obtained from the Surveyor General's Office: ✓✓*
- *Diagrams, General Plans, Noting plans,*
- *Topographic Maps, survey records including previous working plans, coordinate lists of working stations, reference marks, existing beacons, trig. beacons, etc*

2.3 Mention the **six (6)** members of the Namibian Council for Professional Land Surveyors, Technical Surveyors and Survey Technicians. (6)

- *The Surveyor General of Namibia✓*
- *One full time professional land surveyor*
- *Two professional land surveyors nominated by the approved society for professional surveyors*
- *One technical surveyor nominated by the approved society for technical surveyors*
- *One survey technician nominated by the approved society for technicians.*

**[20]**

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**QUESTION 3**

3.1 Define parent diagram. (2)

*Diagram for the property that is being subdivided.*

3.2 State **two (2)** typical scenarios that can assist a land surveyor in identifying the correct noting plan in an urban area when searching for information in the Surveyor General's office prior to commencing field work. (2)

*Only street name is available*

*Erf number and township name available*

3.3 For the purpose of Deeds registration Namibia is divided into partitions. What name is given to these partitions? (1)

*Registration divisions*

3.4 Give a brief description of each of the following four sections that comprise the Division of Survey and Land Information

(a) Section of Cadastral Surveys (2)

*This is the section that does cadastral surveys ✓for the state. ✓*

(b) Section of Geodetic Surveys (2)

*This is the section responsible for large scale national surveys✓ like establishment of the national control network. ✓*

(c) Section of Survey Examinations (2)

*Survey records prepared by private land surveyors ✓are submitted to the Examinations section for examinations (checking whether the survey is acceptable or not) and approval.*

3.5 Mention any **five (5)** kinds of information that you find in the Erf register. (5)

- *erf size, ✓*
- *the noting plan number, ✓*
- *the title deed number, ✓*
- *the E-records (survey-records) number, ✓*
- *the diagram number, ✓*
- *general plan number, ✓*
- *the former designation of the erf, ✓*
- *the new erf numbers if subdivided or consolidated, ✓*
- *a reference to the townships board item number✓*
- *file number. ✓*

3.6 Describe any **two (2)** characteristics of Noting Plans. (4)

- *It is updated every time there is a creation of a real right ✓✓– subdivision, consolidation, lease, servitude, etc*
- *it gives the cadastral description ✓ (number) of all surrounding properties✓.*
- *It does not show dimensions✓, but provides other useful information. ✓*
- *If the noting plan is in an urban area, it must show the positions town survey marks and reference marks✓, and if it is in a rural area it will show the positions trigonometrical beacons. ✓This assists the land surveyor to pre-plan his/her control for the survey.*
- *Noting plans for urban areas are prepared at scales of 1: 1000✓ (Katutura – Erven 300m² and smaller) and 1: 2500 (Khomasdal – Erven 300m² and bigger). ✓*

– *Noting Plans for rural areas are prepared at scales of 1: 100 000; 1: 50 000; 1: 25 000 and 1: 12 500. ✓✓*

*(Any two of the above)*

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**QUESTION 4**

4.1 What is the importance of the subdivision sketch during examination at the Surveyor General's Office? (2)

– *At examination, the survey examiners at the Surveyor General's Office will check if the survey conforms to the subdivision plan✓; the figure on the subdivision sketch will be compared to the one on the diagram✓ and the area on the subdivision plan will be checked against the area on the diagram to see if it is within limits.*

4.2 Mention **two (2)** possible ways by which you can obtain the coordinates of new subdivision points? (2)

*CAD*

*Polars*

4.3 If you are demarcating a property using a Total Station, explain how you would place subdivision beacons if control points are far from the site of the survey. (2)

*Establish control points near the site using a traverse*

4.4 Describe the following records that must be included in the survey records:

(a) Survey report (2)

*Here the surveyor reports on the various issues of the survey✓ such as purpose of the survey, assistants, found and placed beacons, statutory consent, etc✓*

(b) Regulation 57(1)k certificate (2)

*With this document the surveyor assures the Surveyor-General that he calculated the data consistency check correctly✓ and also that he ensured that the information put on the diagram was double checked with the source documents. ✓*

(c) Working plan. (2)

*It shows how the survey was done and with an indication of the control points used, placed , found beacons and working stations*

4.5 In the case of a servitude diagram explain why it is ideal to have a minimum number of **four** copies of the same diagram approved by the Surveyor General. (4)

*Four diagrams are need as follows;*

*One for the Surveyor General*

*One for the Registrar of Deeds*

*Two diagrams for the parties to the servitude*

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**QUESTION 5**

5.1 Define the following:

(a) Accurately determined (1)

*Determined with a standard of accuracy conforming with that specified in regulation 9.* ✓

(b) Arc of observations. (1)

*The mean of two rounds of observation to surrounding stations and beacons, one being taken in a clockwise direction and the other with the telescope transited taken an anti-clockwise direction.* ✓

5.2 Name the different classes of accuracy of survey and give **one (1)** example of each class. (6)

*Class A-survey of reference marks*

*Class B- survey of townships and mining titles for precious stones*

*Class C- survey of farms*

5.3 Mention the prescribed minimum size and erection manner for:

(a) A beacon for land situate in a township (2)

*16mm by 400mm iron peg to be driven vertically into the ground and flash with the ground*

(b) A beacon for rural land (2)

*20mm by 600mm iron peg to be driven vertically into the ground and flash with the ground*

5.4 Mention any **three (3)** circumstances when it shall not be necessary to define a corner point by a beacon. (6)

- *Where the corner point coincides with the corner of a permanent building* ✓*which shall in that case be adopted as a beacon,* ✓

- *Where the corner point is in such close proximity to the corner of a building ✓that a beacon cannot be conveniently placed in position in which case the position of the corner of the building shall be accurately determined for use as an indicatory beacon, ✓*
- *Where the area affected by a servitude is of defined width ✓and in that case it shall be necessary to place beacons along one side of the area or on a convenient line indicatory to that side, ✓*
- *At the ends at the straight of a railway line ✓forming a boundary, ✓*
- *When the purpose of the beacon will fall away ✓by consolidation of title, ✓*

5.5 Mention the symbols (you may use sketches) used for the following:

(a) Beacon placed (1)

Black single circle

(b) Beacon found (1)

*Black double circle*

(c) Trigonometrical beacon (1)

*Black triangle*

(d) Line indicating adjacent properties. (1)

*Black dashed line*

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