NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2018

GEOGRAPHY P2
MARKING GUIDELINE

MARKS: 75

This marking guideline consists of 13 pages.

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1 : 50 000 topographic map (2926AB MASELSPOORT), as well as the orthophoto map (2926 AB 6 MASELSPOORT) of a part of the mapped area. Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) in the block next to each question.

1.1   The map index/reference of the topographic map to the south-east of Maselspoort is …

        A   2926 AC.
        B   2926 AD.
        C   2926 BC.
        D   2826 DC.

        C

1.2   Ground water is used around Maselspoort for agricultural purposes. One piece of evidence to prove the use of ground water is the presence of ...

        A   windpumps.
        B   dams.
        C   rivers.
        D   taps.

        A

1.3   The railway line (block **A5)** passes through a …

        A   saddle.
        B   ravine.
        C   gap.
        D   gorge.

        C

1.4   The direction of flow of the Bloemspruit/Bloem River in block **H3** is …

        A   south.
        B   east-northeast.
        C   north-east.
        D   south-northwest.

        B

1.5   The contour interval on the orthophoto map is ... metres.

        A   5
        B   10
        C   15
        D   20

        A

1.6   The landform labelled **B** (block **C2**) on the topographic map is a …

    A   plateau.
    B   cuesta.
    C   mesa.
    D   conical hill.

> **D**

1.7   The approximate time the orthophoto was taken would be …

    A   between 08:00–10:00
    B   between 11:00–13:00
    C   between 14:00–17:00
    D   between 17:00–19:00

> **B**

1.8   The feature labelled **C** in block **F3** is a …

    A   windpump.
    B   communication tower.
    C   grave.
    D   monument.

> **B**

1.9   The human-made feature at **1** on the orthophoto map is a …

    A   school.
    B   cemetery.
    C   golf course.
    D   hospital.

> **A**

1.10   The landform between **9** and **10** on the orthophoto map is a …

    A   gap.
    B   spur.
    C   gorge.
    D   valley.

> **D**

1.11   The location (co-ordinates) of the De Bloem station labelled **D (**block **E1)** is …

    A   29°05'00"S 26°02'12"E / 29°05,0'S 26°02,2'E.
    B   26°15'52"E 29°04'45"S / 26°15,9'E 29°04,8'S.
    C   29°04'45"E 26°28'36"S / 29°04,8'E 26°28,6'S.
    D   29°04'45"S 26°15'52"E / 29°04,8'S 26°15,9'E.

> **D**

1.12   The true bearing of spot height 1402 in block **D2** from trigonometrical station 171 in block **F5** is …

    A   129°.
    B   309°.
    C   38°.
    D   116°.

> **B**

1.13   The scale of the orthophoto map is … than that of the topographic map.

     A   5 times smaller
     B   5 times larger
     C   40 times larger
     D   40 times smaller

B

1.14   Maselspoort is … from Bloemfontein.

     A   5 km
     B   13 km
     C   23 km
     D   40 km

C

1.15   The railway line labelled **F** on the topographic map from De Bloem station **D** (block **E1**) to Glen passes under … bridges.
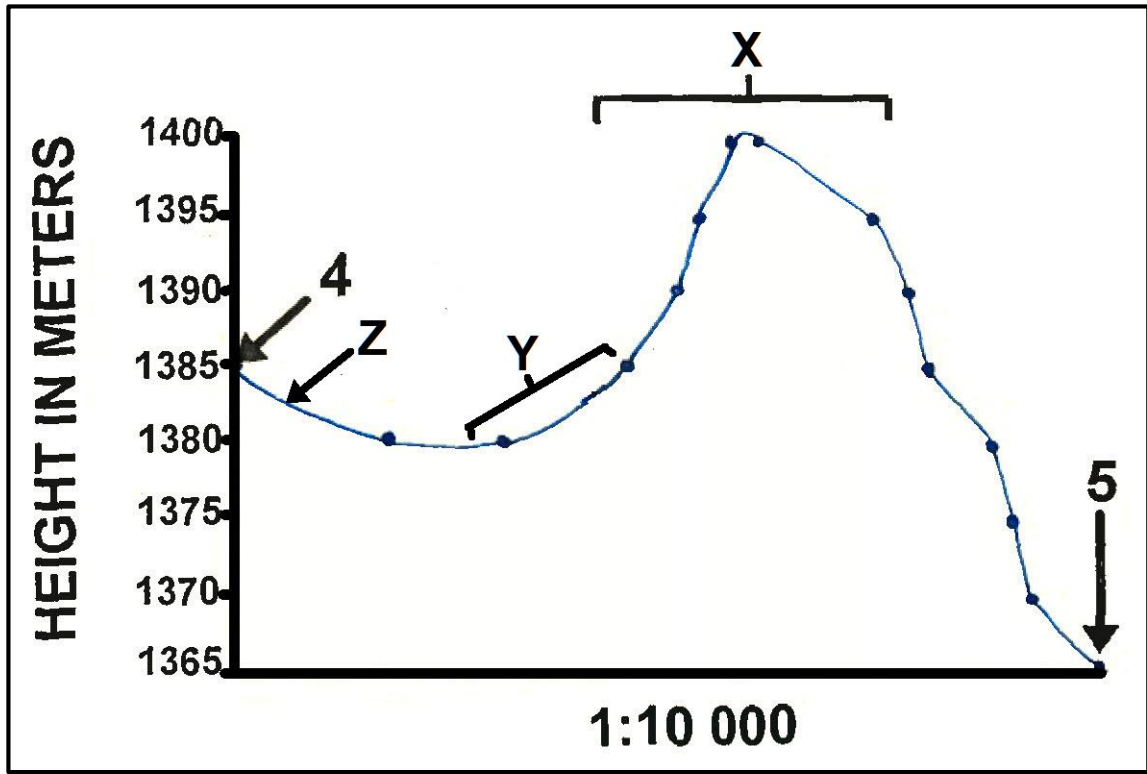
     A   0
     B   1
     C   2
     D   3

D

(15 x 1)   (15)
[15]

Please turn over

QUESTION 2: MAPWORK CALCULATIONS AND TECHNIQUES

2.1   Refer to the cross-section below from **4** to **5** on the orthophoto map and answer the questions that follow. The vertical scale for the cross-section is 1 cm represents 5 m.

[Source: Examiners extract]

2.1.1   Name the landform **X** on the cross-section above.

Conical hill ✓

(1 x 1)   (1)

2.1.2   (a)   Identify the slope type labelled **Y** on the cross-section above.

Concave ✓

(1 x 1)   (1)

(b)   Refer to orthophoto map evidence to motivate your answer to QUESTION 2.1.2 (a).

Contour lines wide apart at bottom and narrow towards top ✓

(1 x 1)   (1)

2.1.3   (a)   Name the man-made feature **Z** between points **4** and **5**.

R30/arterial road ✓

(1 x 1)   (1)

(b)   The height at which the feature identified in QUESTION 2.1.3
(a) is located/found ...

1 382 (m) to 1 383 (m) ✓

(1 x 1)   (1)

2.1.4   Calculate the vertical exaggeration of the cross-section. Show ALL
calculations. Marks will be awarded for calculations.

Formula: VE = $\frac{Vertical\ scale}{Horizontal\ scale}$

VS = *1cm   = 5 m (therefore 5 m = 5 x 100 = 500 cm)*

1/500 or 1 : 500 ✓

HS = *1 : 10 000* ✓

VE = *1/500 ÷ 1/ (10 000)* ✓   [Mark for substitution of formula]

= 1/500 × (10 000)/1

= 100/5
= 20 times ✓

(4 x 1)   (4)

2.2   Refer to the area demarcated in RED on the topographic map, which
represents the area covered by the orthophoto map.

2.2.1   Calculate the above area in km². Show ALL calculations. Marks will be
awarded for calculations.

Formula: **Area = Length x Breadth**

= (9,5 cm ✓ x 0,5) km x (11,0 cm ✓ x 0,5)

= 4,75 km ✓ x 5,5 km ✓   (4,7 km to 4,8 km x 5,45 km to 5,56 km)

= 26,13 km² ✓   (Range is 25,64 km² to 26,64 km²)

NOTE: [Final answer in km²]
                    Range: (9,4 cm to 9,6 cm/94 mm to 96 mm)
                        (10,9 cm to 11,1 cm/109 mm to 111 mm)
                                    [Accept any units]

(5 x 1)   (5)

2.2.2   What would the area be in metres?

Range 25 620 000 m² / 26 640 000 m² ✓

(1 x 1)   (1)

Please turn over

2.3 Calculate the average gradient between the trigonometric station **11** (1428) to spot height **12** (1409) on the orthophoto map.
Show ALL calculations. Marks will be awarded for calculations.

Formula: Gradient = $\dfrac{Vertical\ interval\ (VI)}{Horizontal\ equivalent\ (HE)}$ ✓

VI = 1 428 m – 1409 m	VI = 1 428 m – 1 409 m
= 19 m ✓	= 19 m ✓

HE = 9,4 cm x 100   **OR**   HE = $\dfrac{9,4\ cm\ x\ 10\ 000}{100}$
            [Range 9,3 – 9,5]

  = 940 m ✓   = 940 m ✓
            [Range 930 – 950]

G = $\dfrac{19}{940}$ ✓   G = $\dfrac{526,2}{3750}$ ✓

[Mark allocated for substitution]

= $\dfrac{1}{49,5}$ = $\dfrac{1}{49,5}$

= 1 : 49,5 / 1 in 49,5 ✓   = 1 : 49,5 / 1 in 49,5 ✓
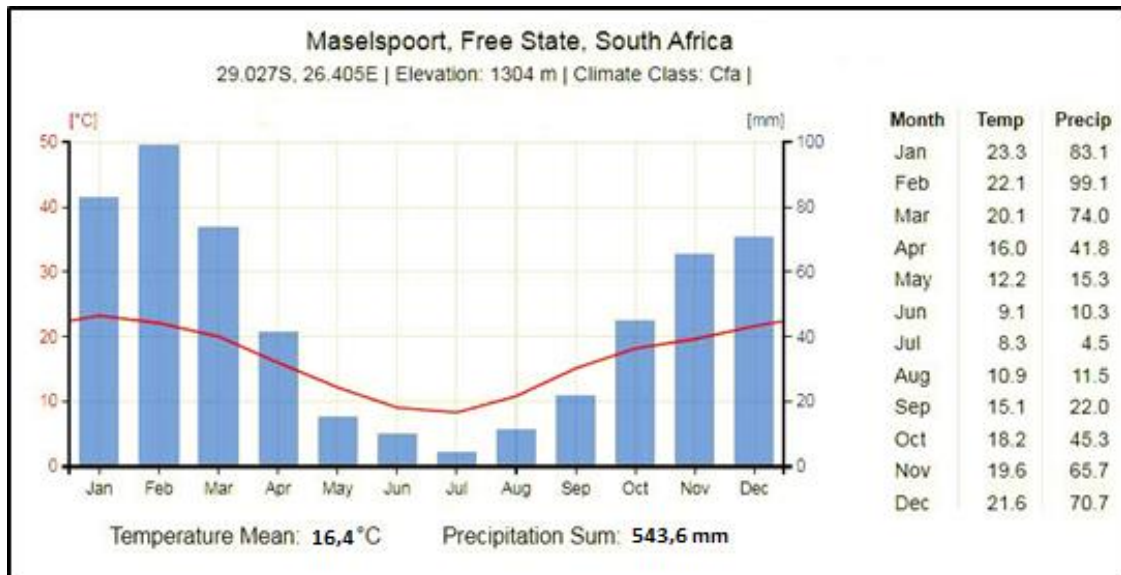
            [Range 1 : 48,9 – 1 : 50,0]

(5 x 1)   (5)
[20]

QUESTION 3: APPLICATION AND INTERPRETATION

3.1 Refer to the graph below, the information on page 2 and the topographic map to answer the questions that follow.

Maselspoort, Free State, South Africa
29.027S, 26.405E | Elevation: 1304 m | Climate Class: Cfa |

Month	Temp	Precip
Jan	23.3	83.1
Feb	22.1	99.1
Mar	20.1	74.0
Apr	16.0	41.8
May	12.2	15.3
Jun	9.1	10.3
Jul	8.3	4.5
Aug	10.9	11.5
Sep	15.1	22.0
Oct	18.2	45.3
Nov	19.6	65.7
Dec	21.6	70.7

Temperature Mean: **16,4°C**   Precipitation Sum: **543,6 mm**

3.1.1 Does Maselspoort receive *summer* or *winter* rainfall?

Summer ✓

(1 x 1)   (1)

3.1.2 Give TWO points of evidence from the graph to support your answer to QUESTION 3.1.1.

Graph:
1. *Highest rainfall during summer months (November–March)* ✓
    Lowest rainfall in the winter months (May–September) ✓
                                                      [Any ONE]

2. *Highest temperatures during summer months (November–March)*
    Lowest temperature in the winter months (May–September) ✓
                                                      [Any ONE]
                                                      (2 x 1)   (2)

3.2 Refer to number **3** on the orthophoto map. Study it together with the topographic map and answer the questions that follow.

3.2.1 Identify any ONE type of mass wasting that could possibly affect the small farming settlements at the base of Olive Hill at **8** on the orthophoto map.

Rockfalls ✓
Mudflows ✓
Soil creep ✓   [Any ONE]
                                                      (1 x 1)   (1)

3.2.2 Explain the negative impact of mass wasting identified in QUESTION 3.2.1 on the surrounding farming community.

Cause land/water/ground water pollution – effects soil quality ✓✓
Destruction of natural vegetation – increases soil failure ✓✓
Destroys farmland/scars the land ✓✓
Destruction of property ✓✓
Mine waste creates steep-sided slopes – mass wasting ✓✓
Mine blasting triggers off slope failure ✓✓
Unhealthy environment due to mining activity ✓✓   [Any TWO]
                                                      (2 x 2)   (4)

3.3   Study the photograph of the Maselspoort Resort (block **B10**) along the side of the Modder River and answer the following questions.

[Source: Google earth]

3.3.1   Is this a *high oblique* or a *low oblique* photograph?

Low oblique photograph ✓

(1 x 1)   (1)

3.3.2   (a)   In what direction do you think the camera is pointing?

North west/NW ✓

(1 x 1)   (1)

(b)   Give a reason for the answer to QUESTION 3.3.2 (a).

The image looks bigger in the foreground than the background. ✓
The image is bigger than the focal point than the background. ✓
[Any ONE]

(1 x 1)   (1)

3.3.3   Identify the feature at **X**?

Purification plant ✓

(1 x 1)   (1)

3.3.4   Refer to the topographic map in block **B10**.

(a)   What direction is the Modder River flowing?

North/North West ✓ / *North North West*

(1 x 1)   (1)

(b)   Provide TWO reasons evident from the photograph and topographic map to support your answer to QUESTION 3.3.4 (a).

Weir – water on the south side of wall ✓
Tributaries joining at acute angles ✓

(2 x 2)   (4)

3.4 Maselspoort generally receives low rainfall. Mention ONE measure evident on the topographic map that farmers have adopted to overcome water shortages.

    3.4.1 *Presence of furrows* ✓
           Presence of dams ✓
           Presence of windpumps ✓
           Presence of reservoirs ✓
           Water towers ✓   [ANY ONE]

                                      (1 x 1) (1)

    3.4.2 Identify the environmental problem labelled **H** (block **C6**).

           Soil erosion ✓

                                        (1 x 1) (1)

    3.4.3 Explain any TWO management strategies to prevent and control the environmental problem identified in QUESTION 3.4.2.

           Construct cement barriers along the slopes/retaining walls ✓✓
           Reduce deforestation ✓✓
           Plant natural vegetation ✓✓
           Donga rehabilitation ✓✓   [ANY TWO]

                                      (2 x 2) (4)

3.5 Refer to block **D6/7** on the topographic map.

    (a)   Identify feature **G.**

           Cultivated lands ✓

                                      (1 x 1) (1)

    (b)   What method is used to bring in the water for this area?

           Furrow ✓

                                        (1 x 1) (1)

                                              [25]

QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS).

4.1   State THREE processes when working with GIS.

Data input ✓
Data storing ✓
Data manipulation ✓
Data analysis ✓
Data information ✓
Data management ✓
Data application ✓   [Any THREE – Accept other]

                                                              (3 x 1)   (3)

4.2   Classify the following data as *spatial data* **or** *attribute data*.

    4.2.1   A map showing lay-out of residential area.

        Attribute data ✓

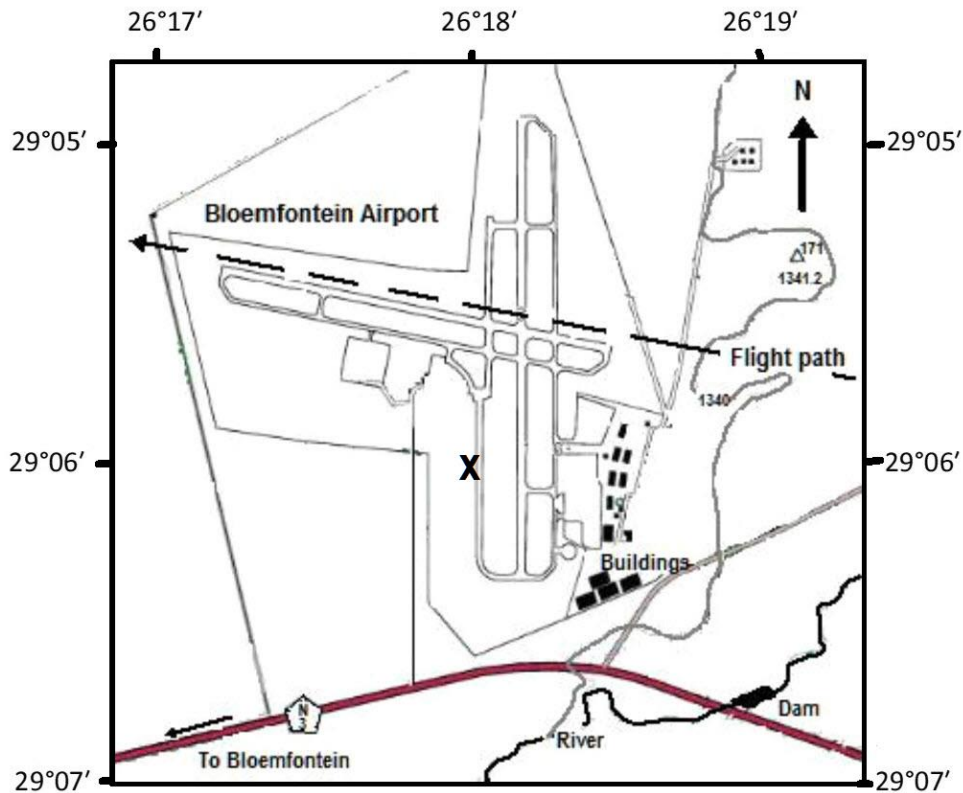   (1 x 1)   (1)

    4.2.2   The shape of a marsh and vlei.

        Spatial data ✓

                                                              (1 x 1)   (1)

Please turn over

4.3   Study the map extract below from the topographic map (blocks **F3/4** and **G3/4**), which is not drawn to scale.

[Source: topographic map extract Maselspoort]

4.3.1   (a)   Is the topographic map extract a *vector* or *raster* map?

Vector ✓

(1 x 1)   (1)

(b)   Give ONE reason for your answer to Question 4.3.1 (a).

The map is made up of points, lines and polygons ✓

(1 x 1)   (1)

4.3.2   Classify each of the following spatial objects from the topographic map extract:

(a)   Dam –   *Polygon (area)* ✓

(b)   Trignometric station 171 –   *Point* ✓

(2 x 1)   (2)

4.3.3   State the spatial referencing data for the airport marked **X** on the topographic map extract.

29°06'00"S ✓ *26°18'00"E* ✓

(2 x 1)   (2)

4.4   Differentiate between *spatial resolution* and *spectral resolution*.

Spatial resolution:

Level of detail of data we work with ✓
Descriptive term; local – more detail/global – less detail ✓   [Any ONE]
                                                              (1 x 1)   (1)

Spectral resolution:

Data captured by spectral sensor consisting of measurements at one or
more bands ✓
                                                              (1 x 1)   (1)

4.5   Explain in what situation a person would use a high resolution.

When one wishes to know the details of objects ✓✓   [Any ONE]
                                                              (1 x 2)   (2)
                                                                        [15]

                                                        TOTAL: 75