basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS

GEOGRAPHY P2

2018

MARKING GUIDELINES

MARKS: 75

These marking guidelines consist of 15 pages

RESOURCE MATERIAL

1. An extract from topographic map 3318BC MALMESBURY.

2. Orthophoto map 3318 BC 25 MALMESBURY.

3. **NOTE:** The resource material must be collected by schools for their own use.

INSTRUCTIONS AND INFORMATION

1. Write your EXAMINATION NUMBER and CENTRE NUMBER in the spaces provided on the cover page.

2. Answer ALL the questions in the spaces provided in this question paper.

3. You are provided with a 1 : 50 000 topographical map (3318BC MALMESBURY) and an orthophoto map (3318 BC 25 MALMESBURY) of a part of the mapped area.

4. You must hand the topographic map and the orthophoto map to the invigilator at the end of this examination session.

5. You may use the blank page at the end of this question paper for all rough work and calculations. Do NOT detach this page from the question paper.

6. Show ALL calculations and formulae, where applicable. Marks will be allocated for these.

7. Indicate the correct unit of measurement in the final answer for all calculations. No marks will be awarded for answers with no/incorrect units of measurement.

8. You may use a non-programmable calculator and a magnifying glass.

9. The area demarcated in RED on the topographic map represents the area covered by the orthophoto map.

10. The following English terms and their Afrikaans translations are shown on the topographic map:

ENGLISH	**AFRIKAANS**
Canal	Kanaal
Furrow	Voor
Golf Course	Gholfbaan
Prison	Tronk
Refuse Dump	Vullisstortingterrein
River	Rivier
Sewerage Works	Rioolwerke

GENERAL INFORMATION ON MALMESBURY

Malmesbury is a town of approximately 36 000 inhabitants, about 65 km north of Cape Town. The town has a moderate climate due to the influence of the Atlantic Ocean. Rainfall is seasonal, with the highest average rainfall being in winter. The area is especially known for its wheat farming and wine production.

[Source: http://en.wikipedia.org/wiki/malmesbury]
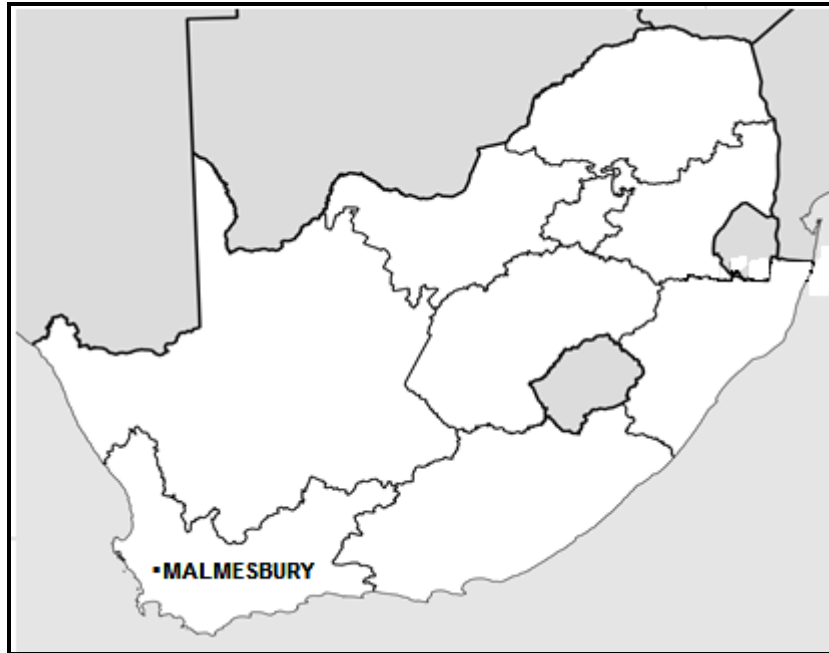
QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1 : 50 000 topographic map (3318BC MALMESBURY) as well as the orthophoto map 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 city situated approximately 65 km south of Malmesbury is …

         A   the Paarl.
         B   Cape Town.
         C   Port Elizabeth.
         D   Klipheuwel.

B

1.2   In the map index of 3318BC, the 18 represents …

         A   18° south of the equator.
         B   18° west of the Greenwich Meridian.
         C   18° north of the equator.
         D   18° east of the Greenwich Meridian.

D

1.3   … aerial photographs are used to create the orthophoto map.

         A   Horizontal
         B   Satellite
         C   Vertical
         D   Oblique

C

1.4   The contour interval of the orthophoto map is … metres.

         A   5
         B   10
         C   15
         D   20

A

1.5   When you use the main road in block **I11** on the topographic map to travel to Klipheuwel, you will be travelling in a … direction.

         A   east-south-easterly
         B   south-south-easterly
         C   west-north-westerly
         D   north-north-westerly

B

1.6   The source of water available for farming in block **A1** on the topographic map is a …

         A   canal.
         B   windpump.
         C   river.
         D   dam.

B

1.7   The grid reference/co-ordinates for spot height 167 in block **C6** on the topographic map is …

        A   33°23'30"S 18°38'30"E/33°23,5'S 18°38,5'E.
        B   18°38'30"E 33°23'30"S/18°38,5'E 33°23,5'S.
        C   18°38'30"S 33°23'30"E/18°38,5'S 33°23,5'E.
        D   33°23'30"E 18°38'30"S/33°23,5'S 18°38,5'S.

        > **A**

1.8   The land-use zone in which **5** on the orthophoto map is situated is the …

        A   commercial zone.
        B   residential zone.
        C   rural urban fringe.
        D   industrial zone.

        > **C**

1.9   The general direction of flow of stream **J** in block **D11** on the topographic map is …

        A   north.
        B   south.
        C   east.
        D   west.

        > **C**

1.10   The buildings at **1** on the orthophoto map is a …

        A   shop.
        B   prison.
        C   school.
        D   factory.

        > **B**

1.11   The recreational area **2** on the orthophoto map is a …

        A   caravan park.
        B   game reserve.
        C   golf course.
        D   botanical gardens.

        > **A**

1.12   The natural feature at line **3** on the orthophoto map is a …

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

        > **D**

1.13   The street pattern at **K** in block **G12** on the topographic map is …

        A   planned irregular.
        B   grid iron.
        C   unplanned irregular.
        D   radial.

        > **B**

Please turn over

1.14   The settlement demarcated at area **L** in blocks **H8** and **I8** on the topographic map is a …

       A   hamlet.
       B   city.
       C   town.   **D**
       D   village.

1.15   The main factor evident on the topographic map, that influenced the site of the settlement at **M** in block **C2**, is the …

       A   slope aspect.
       B   perennial water.
       C   fertile soil.
       D   pasturage.   **A**

                                                 (15 x 1)

                                                      [15]

QUESTION 2: MAP CALCULATIONS AND TECHNIQUES

2.1 Products from Malmesbury are transported along the N7 national road to Cape Town.

    2.1.1   Determine if vehicles travelling from Malmesbury to **N** in block **I8** on the topographic map, will drive uphill or downhill.

                Downhill ✓   (1 x 1)   (1)

LINK   2.1.2   Give a reason for your answer to QUESTION 2.1.1.

                *The height of bench marks (132.3 to 113.3) is decreasing from Malmesbury to **N*** ✓
                *Contour lines are decreasing in height towards **N*** ✓
                [Any ONE]   (1 x 1)   (1)

    2.1.3   Calculate the distance, in km, from **N** in block **I8** on the topographic map to Cape Town. Show ALL calculations. Marks will be awarded for calculations. Clearly indicate the unit of measurement in your final answer.

                Formula: **Actual Distance = Map Distance x Scale**

                3.1 cm ✓ *[Range: 3.0 cm – 3.2 cm]*   *3.1cm* ✓
                3.1 cm x 0.5 ✓

$$\frac{3.1 \text{ cm x } 50\,000}{100\,000} \checkmark$$

                = 1.55 (km) ✓ *[Range: 1.5 km – 1.6 km]*

OR $\dfrac{15.5}{10}$

                                              1.55 (km) ✓
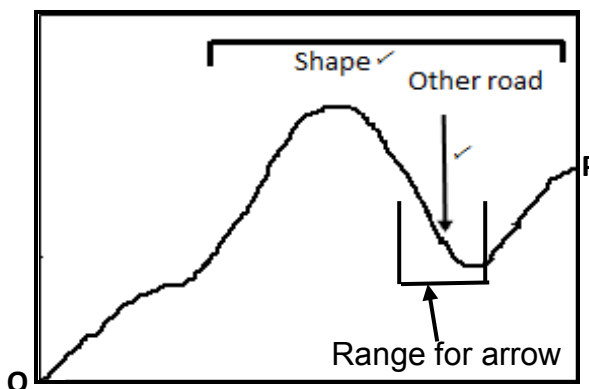   *Distance to Cape Town = 1.55 + 52 km = 53.55 km* ✓
                [Range: 53.5 km – 53.6km]   (4 x 1)   (4)

2.2   Refer to line **O-P** that connects contour line 120 at **O** and spot height 162 at **P** in blocks **I9** and **I11** on the topographical map.

Draw a freehand cross-profile from **O** to **P**.

(a)   Use the block below to draw the cross-profile.

(b)   Use an arrow to indicate the accurate position of the other road on the cross profile.

(2 x 1)   (2)

2.2.2   Give ONE reason why there is no intervisibility between **O** and **P**.

*There is an obstruction between **O** and **P*** ✓
*There is a high lying area/hill between **O** and **P*** ✓
[Any ONE]   (1 x 1)   (1)

2.2.3   If you use a vertical scale of 1 cm represents 25 m to draw the cross-profile, determine the vertical exaggeration of the cross-profile. Show ALL calculations. Marks will be awarded for calculations. Clearly indicate the unit of measurement in your answer.

Formula: **Vertical exaggeration** $= \dfrac{\textbf{vertical scale}}{\textbf{horizontal scale}}$

$\dfrac{\frac{1}{2\,500}}{\frac{1}{50\,000}}$ ✓   **OR** $\dfrac{1 : 2\,500}{1 : 50\,000}$ ✓ ✓
                ✓

$\dfrac{1}{2\,500} \times \dfrac{50\,000}{1}$ ✓

20 times ✓

$\left[\begin{array}{c} \dfrac{1}{2\,500} \times \dfrac{50\,000}{1} \text{ ✓} \\ \textit{[Give mark if substitution is} \\ \textit{not shown in first step]} \end{array}\right.$

20 times ✓   (4 x 1)   (4)

2.3   Calculate the magnetic bearing on the topographic map, from the reservoir (**Q**) in block **B5** to spot height 317 (**R**) in block **D8** for the current year.

True bearing: *128°* ✓ *(Range: 127° - 129°)*

Difference in years: *2018 – 2002 = 16* ✓*years*

Mean annual change: *6'*✓*W*

Total change: *16 x 6 = 1°36' (96')*✓*W*

Magnetic declination for 2018: *23°21' +*✓*1°36' = 24°57'W* ✓

Magnetic bearing for 2018: *128° + 24°57' = 152°57'W* ✓
                            (Range: 151°57'W - 153 °57'W)   (7 x 1)   (7)
                                                                                [20]

QUESTION 3: APPLICATION AND INTERPRETATION

3.1   Malmesbury receives seasonal rainfall.

      3.1.1   Name the season in which Malmesbury receives its highest rainfall.

          Winter ✓   (1 x 1)   (1)

      3.1.2   Which weather system is responsible for Malmesbury receiving its highest rainfall in the season named in QUESTION 3.1.1.

          Mid-latitude cyclone/Extra tropical cyclone/
          Frontal depression/Temperate cyclone ✓
          (Cold front) ✓
          [Any ONE]   (1 x 1)   (1)

      3.1.3   Give ONE point of evidence from the topographic map which indicates that Malmesbury receives seasonal rainfall.

          There are many non-perennial rivers/water ✓
          There are many dams ✓
          Many windpumps/reservoirs ✓
          There are canals/furrows ✓
          The index to sheet/map index indicates that Malmesbury is in the Western Cape ✓
          It experiences a Mediterranean climate ✓
          [Any ONE]   (1 x 1)   (1)

3.2   Refer to Abbotsdale, situated in blocks **I7** and **I8** on the valley floor, on the topographic map.

      3.2.1   Is the local wind responsible for the cool conditions experienced in Abbotsdale at night time, an anabatic or katabatic wind?

          Katabatic ✓   (1 x 1)   (1)

      3.2.2   Why does this local wind, named in QUESTION 3.2.1, result in a high concentration of pollution in Abbotsdale at night?

          There is more subsiding air during the night which pushes the inversion layer/thermal belt/pollution dome lower ✓✓
          A lower inversion layer/thermal belt/pollution dome will result in a high pollution concentration ✓✓
          [Any ONE]   (1 x 2)   (2)

3.2.3   With specific reference to the topographic map, what can the Abbotsdale local government (municipality) do to reduce the high concentration of pollution?

They could plant more vegetation/trees in the area/roof gardens/green parks/green belts (increase afforestation) ✓✓
Do not remove existing vegetation/trees (decrease deforestation) ✓✓

Relocate the refuse dump further away from Abbotsdale ✓✓
Recycling of waste ✓✓
Reduce waste production ✓✓
Promote the use of eco-friendly products ✓✓
Educate the community about the importance of reducing the pollution concentration (candidates can give examples) ✓✓
Reduce night time activities such as burning, industrial, etc. ✓✓
[Any ONE]   (1 x 2)   (2)

3.3   Refer to area **T** on the topographic map. It shows a dendritic drainage pattern.

3.3.1   Give TWO characteristics, visible on the topographic map, which indicates that a dendritic drainage pattern is shown.

It resembles branches of a tree ✓
The tributaries meet the main stream at acute angles/angles less than 90° ✓   (2 x 1)   (2)

3.3.2   State a characteristic of the underlying rock structure associated with a dendritic drainage pattern.

Rocks with uniform resistance to erosion ✓
Horizontal rock structure ✓
Massive resistant rocks ✓
[Any ONE]   (1 x 1)   (1)

3.3.3   With reference to area **T**, give the advantage of a dendritic drainage pattern for cultivation.

River channels are spread out evenly resulting in all parts of the cultivated land receiving water. ✓✓
Water from the tributaries and the river equally available ✓✓
[Any ONE]   (1 x 2)   (2)

3.4 Malmesbury is a central place town according to its main function.

3.4.1 Give ONE reason visible on the topographic map to support the statement that Malmesbury is a central place.

Transport networks lead from all directions to Malmesbury making it accessible to the surrounding areas ✓✓
Malmesbury has urban services (candidates may give examples of urban services) ✓✓
Malmesbury is surrounded by farms which require urban services ✓✓

[Any ONE] (1 x 2) (2)

3.4.2 Malmesbury experienced urban expansion, resulting in a change in the towns' original shape.

(a) State the shape of Malmesbury visible on the topographic map.

Stellar/Star shaped ✓ (1 x 1) (1)

(b) Give the main factor responsible for the current shape of Malmesbury?

Transport networks/Roads/Railway lines ✓ (1 x 1) (1)

3.4.3 Which physical (natural) factor may limit the expansion of Malmesbury in a south-easterly direction into block **H12**?

Steep gradient ✓✓
Hilly area ✓✓
[Any ONE] (1 x 2) (2)

3.5 Refer to area **4** on the orthophoto map.

3.5.1 Area **4** is being prepared for the planting of an agricultural product. Name the agricultural product that will be planted in area **4**.

Grapes ✓ (1 x 1) (1)

3.5.2 State the main secondary activity in Malmesbury associated with the agricultural product named in QUESTION 3.5.1.

Wine production ✓
Grape juice production ✓
Raisins processing ✓
Grape seed oil processing ✓
[Any ONE] (1 x 1) (1)

3.5.3   Suggest how the secondary activity stated in QUESTION 3.5.2 can improve the local economy of Malmesbury.

Malmesbury can have a wine festival ✓✓
Tours can be organised through the vineyards and wineries ✓✓
They could have wine tasting tours ✓✓
Tourists bring money into the town ✓✓
Jobs are created (in manufacturing of grape products/processing) ✓✓

Export of grape products will boost the local economy ✓✓
Improved infrastructure attracts business (can give examples) ✓✓
Multiplier effect will result in more economic development ✓✓
Selling grape products (can give examples) to the locals/tourists ✓✓

[Any TWO]   (2 x 2)   (4)
                                                                          [25]

QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1   Refer to the orthophoto map.

4.1.1   State the difference between *spatial* and *attribute* data.

Spatial Data: *The location (and shape) of a feature* ✓
[Concept]

Attribute Data: *Refers to the description/characteristics (further information) of the location (and shape) of a feature (spatial data)* ✓
[Concept]   (2 x 1)   (2)

4.1.2   The N7 national road is a tarred road. Would you consider this information to be spatial or attribute data?

Attribute data ✓   (1 x 1)   (1)

LINK   4.1.3   Give a reason for your answer to QUESTION 4.1.2

It gives descriptions/characteristics (further information) regarding the type of road ✓✓
It gives the description/characteristic (further information) about the road being tarred ✓✓
[Any ONE]   (1 x 2)   (2)

4.2   Refer to blocks **C4**, **D3**, **D4** and **D5** on the topographic map showing an example of buffering. (**S** points to areas of buffering.)

4.2.1   What is *buffering*?

It is the demarcation of an area around/along a feature ✓
[Concept]   (1 x 1)   (1)

4.2.2   Explain the positive impact that buffering will have on environmental sustainability in the area.

By avoiding human activities along the river it will assist in maintaining the biodiversity of the river ✓✓
It will reduce amount of chemicals/fertilizers/pollutants entering into the river maintaining its water quality ✓✓
River banks protected/stabilised preventing flooding ✓✓
Flood prevention will limit soil erosion ✓✓
It will allow the river to maintain its natural course ✓✓
Limit the effect on the natural capacity of the river ✓✓
(Any TWO)   (2 x 2)   (4)

4.3   Refer to block **C11** on the topographic map.

         4.3.1   Define the term *data integration*.

                       Taking data from different sources and combining it ✓
                       [Concept]   (1 x 1)   (1)

         4.3.2   Give examples of the following data layers found in block **C11**.

                   (a)   An infrastructure layer: *Track/Hiking trail* ✓
                                           Dam wall ✓
                                           Power line ✓
                                           Furrow ✓
                                           Farm boundaries ✓
                                             [Any ONE]   (1 x 1)   (1)
                   (b)   A drainage layer: *(Non-perennial) River* ✓
                                             Dam/perennial water ✓
                                             [Any ONE]   (1 x 1)   (1)

         4.3.3   State the relationship between agricultural activities and the features of drainage layers in block **C11**.

                       The dams are situated close to the agricultural activities ✓✓
                       River/dam provides water for irrigation of crops ✓✓
                       [Any ONE]   (1 x 2)   (2)

                                                                    [15]

                                             GRAND TOTAL: **75**