

Siyabusa Secondary **School**

POSSIBLE ANSWERS

GEOMORPHOLOGY **REVISION 2020**

GRADE 12

ACTIVITY 1**(DBE/NOVEMBER 2019)**

2.2

2.2.1 river mouth (1)

2.2.2 ground water (1)

2.2.3 drainage basin (1)

2.2.4 river source (1)

2.2.5 water table (1)

2.2.6 surface runoff (1)

2.2.7 confluence (1) (7)

ACTIVITY 2**(DBE/NOVEMBER 2018)**

2.2.1 E (Floodplain) (1)

2.2.2 G (Levee) (1)

2.2.3 C (Meander) (1)

2.2.4 F (Oxbow Lake) (1)

2.2.5 D (Braided stream) (1)

2.2.6 H (Waterfall) (1)

2.2.7 B (Delta) (1) (7 x 1) (7)

ACTIVITY 3

(DBE/NOVEMBER 2018)

FIGURE 1.5: DRAINAGE DENSITY

- 1.5.1 There are very few tributaries (1)
Few streams cover a large area (1) **[ANY ONE]** (1 x 1) (1)
- 1.5.2 Low/soft rainfall will increase infiltration and decrease run-off (2)
Gentle gradient will increase infiltration and decrease run-off (2)
More vegetation cover will increase infiltration and decrease run-off (2)
Permeable soil will increase infiltration and decrease run-off (2)
Porous rock will increase infiltration and decrease run-off (2)
Drier soil will increase infiltration and decrease run-off (2)
High evaporation rate reduces water available for surface run-off (2)
Little development therefore few artificial surfaces to prevent infiltration (2)
Low rainfall will result in fewer streams (2) **[ANY TWO]** (2 x 2) (4)
- 1.5.3 There will be more first order streams/fingertip streams (2)
The order of subsequent streams will increase (2)
Stream order at A will increase (2)
3rd order to higher order (2) **[ANY ONE]** (1 x 2) (2)
- 1.5.4 Clearing of natural vegetation/deforestation will increase run-off (2)
Overgrazing by animals removes natural vegetation which increases run-off (2) / Incorrect ploughing methods can result in more water flowing down the furrows (2)/ Over-cultivation of farmland destroys vegetation and top soil (2) / The loss of topsoil due to human activities can result in the formation of gullies (dongas) (2)
Building of settlements increases artificial surfaces therefore more run-off (2)
Building of canals to divert run-off create more river channels (2)
Building of roads reduces natural vegetation which increases run-off (2)
Open cast mining causes removal of natural vegetation increasing run-off (2)
Trampling of soil by livestock decreases infiltration (2)
[ANY FOUR. CANDIDATE MUST INDICATE HOW THE FACTOR RESULTED IN A HIGHER DRAINAGE DENSITY] (4 x 2) (8)

ACTIVITY 4

(EC/SEPTEMBER 2018)

FIGURE 1.2: AN EXAMPLE OF A DRAINAGE BASIN

- 1.2.1 Easterly (1)
1.2.2 Water table (1)
1.2.3 Evapotranspiration (1)
1.2.4 Laminar (1)
1.2.5 Confluence (1)
1.2.6 Sheet (1)
1.2.7 Infiltration (1)
1.2.8 Interfluve (1) (8 x 1) (8)

FIGURE 2.6: FLUVIAL LANDFORMS

- 2.6.1 Undercut slope (1) /Meander loop (1) / (Accept Meander) (1)
[ANY ONE] (1 x 1) (1)
- 2.6.2 **UNDERCUT SLOPE**
 Faster moving water on the outer bank (2)
 /Increased erosion on the outer bank (2)
MEANDER/MEANDER LOOP
 The gradient is more gradual (2)/ Reduction in velocity (2)
 Increase in lateral erosion (2) [ANY ONE] (1 x 2) (2)
- 2.6.3 Constant undercutting of the outer bank causes it to collapse (2)
 Faster moving water on the outer bank removes the eroded material (2)
[ANY ONE] (1 x 2) (2)
- 2.6.4 (Regular) flooding generally occurs in the lower course of the river and as it overflows sediments are deposited on the banks (2)
 In the lower course of the river the gradient is more gentle and deposition occurs (2) **[ANY ONE]** (1 x 2) (2)
- 2.6.5 **POSITIVE**
 It reduces risk of flooding of farmland and loss of farm equipment (2)
 Reduces direct run off into the river making more water available for farming on the floodplain (2)/ Levees prevent fertile soil from the floodplain from being washed into the river (2) / Raised banks increases the carrying capacity of the river (2) /More water available for farming (2) /Prevents loss of livestock/farmland therefore higher profits (2)/ Fertile soil on the levee promotes farming (2)
NEGATIVE
 Reduces the deposition of sediment (alluvium) on farmland (2)/ Reduces the fertility of soil on the farmland (2) /Reduces access to water for farmers (2) Forms an obstacle to tributaries joining the main river, reducing the amount of water available in the river (2)/ Irrigation becomes more difficult and expensive (2)/ Bad drainage can result in waterlogged floodplains and rotting crops (2)
[CANDIDATES MUST REFER TO BOTH POSITIVE AND NEGATIVE IMPACT]
[ANY FOUR] (4 x 2) (8)

ACTIVITY 6

(EC/SEPTEMBER 2018)

FIGURE 1.5: FLUVIAL LANDFORM

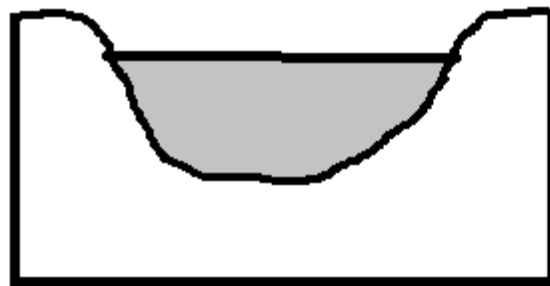
1.5.1 Floodplain (1) (1 x 1)

1.5.2 Lower course (1) (1 x 1)

1.5.3 Meander loop (1) (1 x 1)

1.5.4

Highest velocity (1)



sketch (1)

(2 x 1) (2)

1.5.5

(a) Cut-off from mainstream (1)

It has a horseshoe like shape (1)

There is still water in the horseshoe shape (1)

(Any TWO) (2 x 1) (2)

Cut off

(b) Continuous undercutting at both outer banks at the neck (2)

River cuts through the neck during flooding (2) Deposition of sand and silt isolate the oxbow lake from the mainstream (2)

Water supply

Frequent flooding causing the mainstream to overflow (2)

Rainfall keeps channel refreshed (2)

Groundwater through throughflow (2) (Any FOUR)

(4 x 2) (8)

ACTIVITY 7

(KZN/SEPTEMBER 2019)

FIGURE 1.2: RIVER MEANDER

1.2.1 A ✓

1.2.2 A ✓

1.2.3 B ✓

1.2.4 B ✓

1.2.5 A ✓

1.2.6 B ✓

1.2.7 B ✓

(7)

ACTIVITY 8**(EC/SEPTEMBER 2018)****Figure 1.6**

- 1.6.1 Headward erosion (1 x 1) (1)
- 1.6.2 Eastwards/East (1) (1 x 1) (1)
- 1.6.3 Rivers on the western side erode more rapidly than those on the eastern side (1) (1 x 1) (1)
- 1.6.4 River capture has increased the drainage density on the west side and decreased it on the east side (2) (1 x 2) (2)
- 1.6.5 (a) Y Wind gap (1)
Z Elbow of capture (1) (2 x 1) (2)
- (b) The area has become dry and consists of river gravel (2)
The stream in the valley has become misfit because the valley it flows in is too large (2) (2 x 2) (4)
- (c) The generation of hydroelectricity will be possible (2)
It will become a tourist attraction, especially eco-tourism (2)
Water can be used for irrigation purposes (2) (Any TWO) (2 x 2) (4)

ACTIVITY 9**(MP/SEPTEMBER 2019)****FIGURE 2.5: RIVER CAPTURE**

- 2.5.1 When the more energetic river robs/steals the water of the less energetic river.(concept) (1) (1 x 1)
- 2.5.2 a) B (1) (1 X 1)(1)
(2)
- b) River **B** has stolen the water of river **A** due to headward erosion through the watershed (2) Water from river **A** has been diverted into river **B**. (2) (Any ONE) (1 x2)
- 2.5.3 Once river capture has occurred very little water will pass into river **D** (2)
It becomes a misfit stream (2)
The carrying capacity of the river also decreases in volume and velocity (2)
Deposition of the river load takes place in the wind gap (2) (Any TWO) (2 x 2)
- 2.5.4 **RIVER C**
The volume of water increases (2) The drainage basin increases in size (2).
Rejuvenation occurs and the river renews its erosion (2)
Flooding could be an issue (2)
MISFIT STREAM (D)
River valley larger than the river that flows in it (2) No possible flooding due to decreased flow. (2) River might still be fed by underground sources but will flow at a much lower level (2) Deposition will be the dominant process (2)
(Any FOUR, **MUST** refer to both river **C** and **D**) (4 x 2) (8)

ACTIVITY 10

(KZN/SEPTEMBER 2019)

FIGURE 1.6: RIVER CAPTURE

- 1.6.1 B ✓ (1 x 1) (1)
- 1.6.2 River B erodes headward through the watershed to capture the waters of A ✓✓ (1 x 2) (2)
- 1.6.3 One side of the watershed could have been steeper than the other side ✓✓
The catchment area of the captor stream could be receiving higher rainfall (greater volume) ✓✓
Rejuvenation of the captor stream resulting from tectonic forces ✓✓
The underlying rock structure in the drainage basin of the captor stream could have been softer ✓✓
One river is flowing at a lower altitude than the other ✓✓ **(ANY TWO)** (2 x 2) (4)
- 1.6.4 River **C** – Captor river will therefore increase in volume resulting increase in speed will result in greater erosion ✓✓
River will be rejuvenated resulting in greater erosive power ✓✓
River **D** – Captive river therefore decrease in volume results in lower stream discharge ✓✓
Decrease in speed will result in less erosion/greater deposition ✓✓
(ANY FOUR) (4 x 2) (8)

ACTIVITY 11

(EC/SEPTEMBER 2019)

FIGURE 1.2: SLIP-OFF AND UNDERCUT SLOPES

- 1.2.1 Undercut
- 1.2.2 Slip off
- 1.2.3 Undercut
- 1.2.4 Undercut
- 1.2.5 Slip off
- 1.2.6 Undercut
- 1.2.7 Slip off
- (7 x 1) (7)

FIGURE 1.2: DRAINAGE PATTERNS

- 1.2.1 Deranged (1)
- 1.2.2 Trellis (1)
- 1.2.3 Centripetal (1)
- 1.2.4 Radial / Centrifugal (1)
- 1.2.5 Trellis (1)
- 1.2.6 Dendritic (1)
- 1.2.7 Parallel (1) **(7)**

ACTIVITY 13**FIGURE 1.5: DRAINAGE PATTERNS**

- 1.5.1 It refers to the way in which streams are arranged in a drainage basin/The description of the pattern of a river system/streams in a drainage basin/Surface pattern formed by the river and its tributaries (1) **[CONCEPT] (1 x 1) (1)**
- 1.5.2 It resembles the branches of a tree (2) **(1 x 2) (2)**
- 1.5.3 Dendritic: Tributaries join at acute angles (2)
Trellis: Tributaries join main stream at 90° angle (2)
- Dendritic: Long tributaries (2)
Trellis: Short tributaries (2)
- OR**
- The dendritic pattern (2) has longer (2) tributaries
- OR**
- The trellis pattern (2) has shorter (2) tributaries
- [ANY ONE RELATED DIFFERENCE. NO PART MARKS] (2 x 2) (4)**
- 1.5.4 Dendritic
The underlying rock structure is massive/uniformly/equally resistant to erosion (2)
- Trellis
Varying resistance to erosion/folded rock structure/Alternative layers of hard and soft rock/Inclined rock strata (2) **(2 x 2) (4)**
- 1.5.5 In the dendritic pattern water is widely distributed in the drainage basin and water is accessible (2) Longer tributaries therefore water is more accessible (2)
Occurs over flat/gentle land (middle/lower course) thus more suitable for farming (2) Larger floodplains with access to fertile soils (2)
- [ANY TWO] (2 x 2) (4)**

ACTIVITY 14

(EC/SEPTEMBER 2019)

FIGURE 1.5: DRAINAGE PATTERNS

- 1.5.1 Surface patterns formed by a river and its tributaries
The way in which streams are arranged within a drainage basin (1)
- 1.5.2 A – Radial (Centrifugal) (1)
B – Trellis (1)
- 1.5.3 At **A**, rivers are parallel to one another where as in **B** rivers flow outward (2)
from a high point
At **A**, tributaries meet the main river at acute angles where as in **B** (2)
tributaries meet the main river at right angles
[ANY ONE DIFFERENCE] (1 x 2) (2)
- 1.5.4 Found in folded mountains/steep land resulting in tributaries following a (2)
straight path
Form in a poort/gap with steep sides resulting in tributaries following a (2)
straight path **[ANY ONE]** (1 x 2) (2)
- 1.5.5 Massive igneous rocks with a uniform resistance to erosion form the (2)
underlying rock structure for the dendritic pattern
Rectangular drainage patterns form on igneous rocks that have (2)
many joints/cracks
Massive igneous rocks associated with volcanoes or domes form (2)
the underlying rock structure for the radial (centrifugal) pattern
The centripetal pattern has massive igneous rocks underlying (2)
it forming a basin
Parallel drainage patterns form from igneous rocks in areas of major faults (2)
[ANY FOUR] (4 x 2) (8)

ACTIVITY 15

(EC/SEPTEMBER 2018)

FIGURE 2.5: CROSS AND LONGITUDINAL PROFILES OF RIVERS

- 2.5.1 The side view of a river from source to mouth (1)
[CONCEPT] (1 x 1)
- 2.5.2 Rapids (1)
Waterfalls (1)
V-shaped valleys (1)
(Any TWO) (2 x 1)
- 2.5.3 The river does not have a smooth, concave slope (2)
There are a lot of knickpoints, resulting in excessive erosion (2)
Erosion is the dominant process (2)
(Any ONE) (1 x 2)
- 2.5.4 (a) The river in the lower course is deeper than the river in the upper course (2) (1 x 2)
(b) The river in the middle course is wide due to lateral erosion (2)
The river in the upper course is narrow due to downward/ vertical erosion (2) (2 x 2)

- (c) In the lower course the river channel does not have a lot of obstacles which can retard speed (2)
- Laminar flow is dominant in the lower course (2)
- The stream load in the lower course consists of very small particles to carry (2)
- (Any TWO) (2 x 2)

ACTIVITY 16

(DBE/NOVEMBER 2018)

FIGURE 1.6: CHANGING CROSS-PROFILE OF THE VALLEY ALONG A RIVER'S COURSE

- 1.6.1 Upper course (1) (1 x 1) (1)
- 1.6.2 Width/Breadth (1) Depth (1) Shape (1) Heights of interfluvies change (1)
[ANY TWO. ACCEPT DESCRIPTION OR MEASUREMENTS] (2 x 1) (2)
- 1.6.3 In the upper course vertical/downward erosion takes place (2)
 In the lower course deposition/lateral erosion takes place (2) (2 x 2) (4)
- 1.6.4 (Increased) lateral erosion/(decreased) downward erosion results in a river valley widening (2) Sheet flow down the valley slopes will result in the lowering of the slopes (2) River slows down in the middle course causing deposition which decreases the depth of the valley (2) More gentle gradient in the middle course causing deposition which decreases the depth of the valley (2) Meandering river will widen the valley floor (2) Where the river exits the confines of the mountain, the river valley will be wider (2) Greater volume of water and lower velocity will increase lateral erosion in the middle course (2) **ANY TWO]** (2 x 2) (4)
- 1.6.5 In the upper course of the river the valley is narrow (2) Cost of construction of the dam wall will be cheaper (2) The rocky banks will make the structure stronger (2) The dam will be deeper because of the deep valley (2) Cooler temperatures at higher altitude, therefore less evaporation (2) Smaller water surface area reduces evaporation rates (2) A deeper dam will have an increased capacity (2) Less silt in the dam as there are fewer tributaries that enter the dam (2) Steepness of slope allows easy flow of water into a dam (2)
[ANY TWO] (2 x 2) (4)

FIGURE 2.5: RIVER PROFILES

2.5.1 (Side) view of a river from source to mouth (1) **[CONCEPT]** (1 x 1) (1)

2.5.2 It has a concave shape (2)
It is steep in the upper course, less steep in the middle course and gradual in the lower course (2) **[ANY ONE]** (1 x 2) (2)

2.5.3 Ultimate (permanent) – sea (1) Temporary – dam (1) (2 x 1) (2)

2.5.4 It will decrease the capacity/reduce the volume of water (2) (1 x 2) (2)

2.5.5 Original longitudinal profile is graded /concave shaped/with no temporary base levels (2) New longitudinal profile is ungraded/multi-concave/has temporary base levels of erosion (2) **[ANY ONE COMPARISON]** (2 x 2) (4)

2.5.6 **EROSION**

More erosion upstream of dam due to greater water volumes (2)

Erosion temporarily stops at the dam (2)

Rate of erosion decreases downstream of the dam due to less water (2)

[ANY ONE]

DEPOSITION

Deposition of silt in the dam results in less deposition downstream (2) The rate of deposition increases as the velocity of the water is reduced downstream (2)

[MUST REFER TO BOTH EROSION AND DEPOSITION]

[ANY ONE] (2 x 2) (4)

ACTIVITY 18

(EC/SEPTEMBER 2019)

FIGURE 1.6: DRAINAGE BASIN

1.6.1 A cross (transverse) profile is a cross view of a river from bank to bank **[CONCEPT]** (1 x 1) (1)

1.6.2 Turbulent (1)

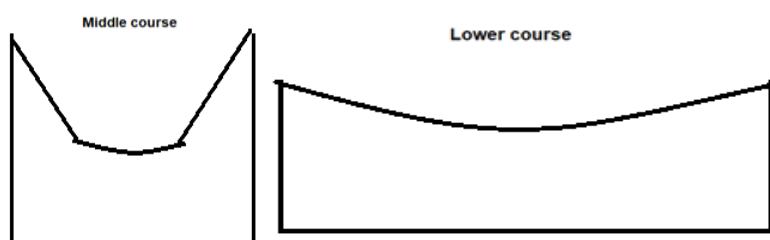
1.6.3 High rate of erosion (1)

Valley is narrow and steep (1)

Stream load is big bedrock **[ANY ONE]** (1 x 1) (1)

1.6.4

a)



2-marks for shape (4)

2-marks for difference in height

[THE MARKS MUST BE ALLOCATED FOR THE DIFFERENCES

IN HEIGHT AND SHAPE IN BOTH SKETCHES] (2 x 2) (4)

(b) The middle course has an open V- shape (2) whereas in the lower course (4) there is a very wide U-shape channel (2) (2 x 2)

1.6.5 The process of erosion (vertical in the upper course and lateral in the middle course) creates sediment

This sediment is transported to the mouth of the river where it is deposited (2)
(2 x 2) (4)

ACTIVITY 19

(FS/SEPTEMBER 2019)

FIGURE 2.5: DRAINAGE DENSITY

2.5.1 The total length of all streams in an area (1) **[CONCEPT]**

2.5.2 A: high (1)

B: low (1)

2.5.3 Uniform resistant rock (2)

2.5.4 Slope gradient: Steep slopes promote run-off hence high density, while gentle slope promotes infiltration (2)

Rainfall: High rainfall promotes more run-off and high density, low rainfall will result in more infiltration and low density (2)

2.5.5 Less vegetation promotes run-off (2)

Artificial surfaces allow for more surface flow (2)

Surface water reaching newly built urban area is removed through storm water drainage systems

Increasing runoff in the surrounding areas

Increased runoff results in more streams (2)

There is therefore more water available to create streams (2)

[ANY THREE]

(3 x 2) (6)

ACTIVITY 20

(FS/SEPTEMBER 2019)

FIGURE 1.6: FLUVIAL LANDFORMS

1.6.1 Lower (1)

1.6.2 Levee: naturally raised bank on a river (2) Floodplain: flat area adjacent to the river (2) (2 x 2) (4)

1.6.3 Floodplain: Forms as a result of deposits of silt that has been built up after repeated flooding (2)

1.6.4 Contain fertile soil and can be intensely cultivated (2)

The land is flat making it easier to use machinery (2)

It is next to the river/water (2)

In areas that are not prone to flooding settlements developed (2)

Flatland makes it easier to build infrastructure (can give examples) (2)

[ANY FOUR]

(4 x 2) (8)

ACTIVITY 21

(Limp/SEPTEMBER 2019)

FIGURE 1.5: RIVER GRADING AND REJUVENATION

1.5.1 Occurs when a river gets more energy and starts to erode downwards again. (1)
(Concept) (1 x 1) (1)

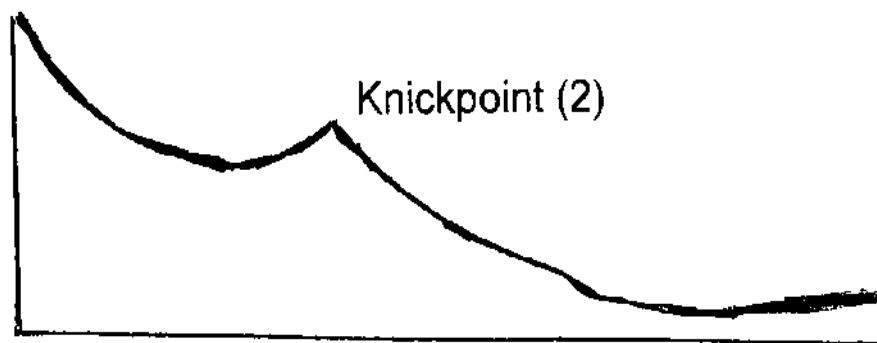
1.5.2 Knickpoint (1) Terrace (1)

New floodplain (1)

[ANY TWO]

(2 x 1) (2)

1.5.3 Knickpoint (1) Ungraded profile (1) (TWO marks for the drawing of the profile and the correct labelling thereof) (2)



1.5.4 Drop in sea level (2) Land rises (2) Significant increase in rainfall (2)

A rapidly flowing tributary that joins the main stream (2)

Tectonic change in the landscape (2) River capture (2)

[ANY TWO] (2 x 2) (4)

1.5.5 Importance of floodplains

Silt deposited by each flood, increases the fertility of the floodplain (2)

Fertile soil is suitable for farming (2)

Floodplains are flat making use of machinery possible (2)

They are adjacent to rivers making irrigation easy during times of drought (2)

[[ANY ONE] under importance] (2 x 2) (4)

ACTIVITY 22

(DBE/May/ June 2019)

FIGURE 1.6: RIVER REJUVENATION

1.6.1 Vertical (Accept downward) (1) (1 x 1) (1)

1.6.2 Upliftment (1)
Entrenched/Incised meanders (1) [ANY ONE] (1 x 1) (1)

1.6.3 Isostatic uplift/Tectonic forces (1) (1 x 1) (1)

1.6.4 Steeper slopes make it unsuitable for human living (2)
Deeper gorges makes farming activity impossible (2)
Building infrastructure will be more expensive (2)
More specialised farming machinery will be needed (2)
Water will not be easily accessible for human usage (2)
Narrow floodplains reduce fertile farming land (2) [ANY TWO] (2 x 2) (4)

1.6.5 A knick point will develop between the old and the new point of erosion (2)
Waterfalls develop at the knick point where there is a sharp change in gradient (2)
Vertical (accept downward) erosion results in (paired) terraces (2)
Valleys within valleys develop as a result of a new valley floor (2)
Meanders deeply erode to form entrenched or incised meanders (2)
Floodplains are narrowed (2)
[ALSO ACCEPT THE FOLLOWING]
Higher velocity may remove some braided streams (2)
Higher velocity may break through the levees (2)
Higher velocity may wash the existing deltas away (2)
Higher velocity may result in more oxbow-lakes (2) ANY FOUR] (4 x 2) (8)

ACTIVITY 23

(EC/JUNE 2016)

FIGURE 2.5: DRAINAGE PATTERNS

- 2.5.1 A Oxbow lake ✓
B Meander scar ✓ (1 + 1) (2)
- 2.5.2 Recurring erosion at the undercut slope and deposition at the slip-off slope. ✓✓
Eventually the stream will cut through the neck of the meander and separate it from the stream. ✓✓ (2 x 2) (4)
- 2.5.3 Continuous overflowing of the river causing deposition of sediments or silt on the banks ✓✓ (1 x 2) (2)
- 2.5.4 Soil is fertile and produce high yields per hectare ✓✓
Enough water available, also for irrigation ✓✓
Area is level, so building of infrastructure like transport and electricity facilities is easy and cheaper ✓✓
Level area makes mechanisation easy ✓✓
Continuous deposition of sediments keeps the plain naturally fertile ✓✓
(Any FOUR) (4 x 2) (8)

ACTIVITY 24

(DBE/NOVEMBER 2019)

FIGURE 1.6: CATCHMENT AND RIVER MANAGEMENT

- 1.6.1 Industries (1) (1 x 1) (1)
- 1.6.2 Lack of natural vegetation increases the run off (2) (1 x 2) (2)
- 1.6.3 **SETTLEMENTS**
Untreated sewage from settlement ends up in the river polluting the water and causing diseases (2)
Domestic waste water is released in drainage systems decreasing the quality of the water (2)
Grey water (dust, oil from roads) pollutes the river system (2)
Runoff from settlements carries waste material into the water (2)
[ANY ONE]
CULTIVATED LAND
Fertilizers used on farms is washed into the rivers causing eutrophication (2)
Pesticides used for crops is washed into the river polluting the water (2)
Soil erosion makes the water murky (2)
[MUST REFER TO BOTH SETTLEMENT AND CULTIVATED LAND]
[ANY ONE] (2 x 2) (4)
- 1.6.4 **SUSTAINABLE RIVER MANAGEMENT STRATEGIES**
Access to clean fresh water for future generations (2)
South Africa is a water scarce country (low unreliable rainfall) (2)
Better quality crops will be produced with higher yields (2)
Most industries need a good water supply to function productively (2)
Water is necessary for the production of products e.g. soft drinks, sweets,

canned foods (2)
 Higher exports with more profits from crops (2)
 Healthier meat products with a better monetary value will be produced (2) / Rivers are a less expensive mode of bulk transport (2) / Good river management encourages eco-tourism/tourism/ recreation (2) / Good quality of water sustains farming/mining/fishing/forestry industry (2) / Maintaining rivers creates sustainable employment (2) / It allows for the generation of hydroelectricity which is an alternative source of power (2) / Decreases purification costs of drinking water (2)
 Decreases water borne diseases therefore workforce is healthier (2)
 Results in water being more affordable/cheaper (2)

OR

UNSUSTAINABLE RIVER MANAGEMENT

Increases purification costs of drinking water (2)
 Increases water borne diseases therefore workforce is unhealthy (2)
 Acidic water stunts plant growth (2) / Acidic water can hinder crop cultivation (2)
 Contaminated water poses a health hazard (2) / Polluted rivers will affect the fishing industry (2) / Polluted rivers can contaminate oceans (2)

[CANDIDATES CAN REFER TO BOTH SUSTAINABLE OR UNSUSTAINABLE FACTORS BUT THE SAME FACT CANNOT BE REPEATED]

[ANY FOUR] (4 x 2) (8)

ACTIVITY 25

(DBE/NOVEMBER 2018)

FIGURE 2.6: DEFORESTATION AND ITS IMPACT ON RIVER MANAGEMENT

2.6.1 Deforestation is the removal of trees/natural vegetation/Cutting down of trees quicker than it can be replaced (1) **[CONCEPT] (1 x 1) (1)**

2.6.2 (a) 2050 (1) (1 x 1) (1)
 (b) KwaZulu-Natal/KZN (1) (1 x 1) (1)

2.6.3 Decreased carrying capacity (2) River blockage (2) Reduce water quality (2)
 Rivers/dams become shallower (2) Increases the stream load (2) Disrupt ecosystem of the river (2) Disrupt biodiversity in a river (2) Increased flooding of river system (2) Less infiltration (2) Decrease in groundwater levels (2) Reduction in base flow (2) More evaporation dries soil out (2) Greater erosion along river banks (2) Lowering of levees (2) More polluting of the rivers and eutrophication (2)
[ANY TWO] (2 x 2) (4)

2.6.4 Legislation to protect areas that are prone to deforestation (2)
 Fines to those who illegally remove trees (2)

Implement more afforestation within the river system (2) Create awareness of the negative impacts of deforestation (2) Educate people on the importance of good river management systems (2) Promote conservation and establish more protected areas to prevent deforestation (2) Create a buffer zone for protection of natural forests (2) Protect river banks from deforestation (2) Rehabilitation of forests/afforestation (2) Encourage recycling to reduce deforestation (2)

[ANY TWO] (2 x 2) (4)

2.6.5 Poor river management will result in less water being available (2)
 Poor quality of the water will result in higher purification costs (2) Water is unsafe for human consumption (2) Increased siltation of dams will compromise water quality (2) Shortage of good quality water would make it more expensive (2) More

run-off reduces groundwater supply (2) Expensive to implement inter-basin water transfer schemes (2) Less water for domestic, industrial and agricultural use (2)

[ANY TWO] (2 x 2) (4)

ACTIVITY 26

(FS/SEPTEMBER 2019)

FIGURE 2.6: RIVER POLLUTION

- 2.6.1 Deforestation is the removal of trees/natural vegetation/Cutting down of trees quicker than it can be replaced (1) **[CONCEPT]** (1 x 1) (1)
- 2.6.2 (a) 2050 (1) (1 x 1) (1)
(b) KwaZulu-Natal/KZN (1) (1 x 1) (1)
- 2.6.3 Decreased carrying capacity (2) / River blockage (2) / Reduce water quality (2)
Rivers/dams become shallower (2)/ Increases the stream load (2)
Disrupt ecosystem of the river (2) / Disrupt biodiversity in a river (2)
Increased flooding of river system (2) / Less infiltration (2)
Decrease in groundwater levels (2) / Reduction in base flow (2)
More evaporation dries soil out (2) / Greater erosion along river banks (2)
Lowering of levees (2) / More polluting of the rivers and eutrophication (2)
[ANY TWO] (2 x 2) (4)
- 2.6.4 Legislation to protect areas that are prone to deforestation (2)
Fines to those who illegally remove trees (2) Implement more afforestation within the river system (2) Create awareness of the negative impacts of deforestation (2)
Educate people on the importance of good river management systems (2)
Promote conservation and establish more protected areas to prevent deforestation (2) Create a buffer zone for protection of natural forests (2)
Protect river banks from deforestation (2) / Rehabilitation of forests/afforestation (2)
Encourage recycling to reduce deforestation (2) **[ANY TWO]** (2 x 2) (4)
- 2.6.5 Poor river management will result in less water being available (2)
Poor quality of the water will result in higher purification costs (2)
Water is unsafe for human consumption (2)
Increased siltation of dams will compromise water quality (2)
Shortage of good quality water would make it more expensive (2)
More run-off reduces groundwater supply (2)
Expensive to implement inter-basin water transfer schemes (2)
Less water for domestic, industrial and agricultural use (2) **[ANY TWO]** (2 x 2) (4)

FIGURE 2.6: RIVER MANAGEMENT

- 2.6.1 Sustainable conservation of the river and its drainage basin ✓
(Concept) (1 x 1) (1)
- 2.6.2 informal settlement on the river bank ✓ Littering ✓
 loose soil due to removal of vegetation ✓ Disposal of domestic waste ✓
 Remains of building in the river ✓ **(ANY TWO)** (2 x 1) (2)
- 2.6.3 Moving the settlement away from the floodline/river ✓✓
 Provision of low cost housing away from the river ✓✓
 Provision of refuse removal services ✓✓ Creating a buffer zone ✓✓
 Provide proper sanitation ✓✓ Provision of tapped water ✓✓
 Planting trees along the river especially on bare slopes ✓✓
 Imposing fines ✓✓ Educational programmes on water usage ✓✓
(ANY TWO) (2 x 2) (4)
- 2.6.4 Erratic rainfall results in limited water ✓✓
 Rivers are the main source of drinkable water ✓✓
 Clean water is required for domestic use ✓✓
 Clean water is required for farming purposes ✓✓
 Water is required for industrial activities ✓✓
 Maintains aesthetic appeal ✓✓
 Water is also used for recreational purposes / tourist attraction ✓✓
 Rivers also supply food example fish ✓✓
 Clean water is also essential for human health ✓✓
 To ensure that ecosystems remain healthy and in balance ✓✓
(ANY TWO) (4 x 2) (8)

m.j. 2020
