**GEOGRAPHY PAPER 312/1**

**EXAMINATION – 2021.**

**END OF TERM II NOV- DEC.**

**FORM IV**

**GEOGRAPHY MARKING SCHEME PAPER ONE**

**Kenya Certificate of Secondary Education (K.C.S.E)**

1. The diagram below represents structure of the earth. Use it to answer questions that follow.
2. Diagram on the boundaries marked E and F.
3. E – Gutenberg discontinuity (1 mark)

F – Mohorovicin discontinuity (1 mark)

1. Identify minerals that make up the layer marked H (2 marks)

* Iron and Nickel

1. Give two effects of the rotation of the earth on its axis (2 mark)

* Causes day and night
* A difference of 1 hour between meridian 15 degrees apart.
* Causes deflection of winds and ocean currents
* Variation of speed of air masses
* Causes of rising and falling of ocean tides.

1. a) Magnetic water – Plutonic water that gets trapped in the rocks underground

b) Examples of surface features

* Grikes/grykes
* Clints
* Dolines
* Uvala
* Polge
* Swallow hole

1. a) Define vegetation. (2 marks)

* It is the total mass of plant life that occupies a given area.

b) Explain how the following factors influence the distribution of vegetation

i) Relief (2 marks)

* high altitude areas have low temperature which encourages scanty/no vegetation / low altitude areas have moderate temperature which encourage dense vegetation.
* Gently sloping areas are well drained hence encouraging dense vegetation growth/steep slopes experience excessive drainage that discourages plant growth/ hence scanty vegetation. 1 x 2 = 2 marks

ii) Soils

* Fertile soils have a variety of nutrients which encourage the growth of dense vegetation / infertile soils have insufficient nutrients leading to scanty vegetation.
* Medium textured soils are well drained thus support a variety of plants / dense vegetation. Coarse / fine textured soils are poorly drained leading to scanty / no vegetation.
* Deep soils enable the penetration of long roots thereby supporting trees (forests) / thin soils support vegetation with shallow roots thereby supporting grass vegetation. (1 x 2 = 2 marks)

1. State **Four** indicator of occurrence of soil creep in an area (4 marks)

* Telephone/fence poles that are inclined down a slope/bent tree trunk
* Accumulated soil at the foot of a slope/behind obstacles such as walls/ on roads/ railways.
* Existence of ribbed /stepped pattern across the slope
* Presence of dipped rock strata in the direction of the slope
* Presence of overhanging banks above roads/rivers. 4 x 1 = 4 marks

1. a) Name **two** types of submerged highland coasts.

* Longitudinal/Dalmatian
* Ria
* Fiord/fjord

1. Identify **two** resultant features of the emerged highlands coast

* Raised geo/blow hole
* Raised cliffs
* Raised wave-cut platforms
* Raised beaches
* Raised caves
* Raised notches
* Raised arch/Raised stack/stump

Section B. Map work Question.

6(a) (i). Identify the tittle of the map provided. (1 mark).

* Kijabe

(ii). Give the latitudinal extent of the map given. (2marks)

* 0053’ to 1000’ S

(ii). Identify any **three** methods used to represent relief in the map provided. (2 marks)

* Contours
* Trigonometrical Stations

(iii). Identify the feature in grid reference 402003. ( 1 mark)

* River confluence.

b)(i). Determine the length of all-weather road bound surface from grid reference 2589 to the junction at petrol station in kilometers. (2 marks)

* 6.7 ± 0.1 Km

(ii). Identify **three** natural vegetation in the area covered by the map. (3marks)

* Forest
* Scrub
* Scattered Trees
* Thicket
* Woodlands. 3 x 1 = 3 marks

(ii). Describe the drainage of the area covered by the map. ( 6 marks)

* The main drainage features are rivers.
* The main river is Ewaso Kendong.
* Most rivers in the area covered by the map are permanent as indicated by continuous blue lines.
* The main rivers are joined by many tributaries.
* There are many rivers in the area covered by the map.
* Most rivers are joined by their tributaries at an acute angle forming the dendritic patterns.
* Rivers flowing from Kijabe hill form radial drainage patten.
* Some rivers in the are covered by the map are disappearing eg at grid square 2796.

Mark the first 6 x 1 = 6 marks.

(c )(i). Explain **three** social activities found in the area covered by the map. (6 marks)

* Education: The presence of many school eg Kinare sch.
* Health Services. There are several dispensaries eg Kinale /Kijabe Hospital.
* Religious Services. Presence of several churches eg. Grid square 3890.
* Security services. Presence of police station at 3098.
* Recreation services. The presence of Rest House at Grid 3498.
* Administration. Evidenced by Location centers/Police post. 3 x 2 = 6 marks

(ii). Give **two** proofs that suggests lumbering is taking place in the area covered by the map. ( 2 marks)

* Saw- Mill.at grid 4399.
* Dry weather road passing through the forest. 2 x 1 = 2 marks.

7a) i) Give **three** reasons why weather forecasting is important.

* Help farmers plan their activities
* Help people to choose clothing for the day
* Influence designing of the houses and guide in landing of aircrafts.
* Help in planning military activities
* Guides fishing activities

Any 3 points 3 x 1 = 3 marks

ii) State three conditions that lead to fog formation. (3 marks)

* Air must have sufficient moisture
* Clear sky / absence of clouds to allow free terrestrial radiation
* Air must be cooled below dew point
* Wind must be light /calm conditions to help hold water droplets in suspension

Any 3 points 3 mks

b) Explain how the following factors influence climate.

(i) Aspect

* In the Northern Hemisphere of temperate regions North facing sloper are cooler as they do not receive direct sunshine. Southern facing slopes are warmer because they receive direct sunlight.
* In the southern Hemisphere of the temperate region, North facing slopes are warmer while south facing slopes are cooler.
* Windward slopes receive higher rainfall as they trap moist prevailing winds which raise through orographic effect. leeward sides have little or no rainfall due to rain shadow effect. Any 2 points 2 x 1 =2 marks

(ii). Altitude

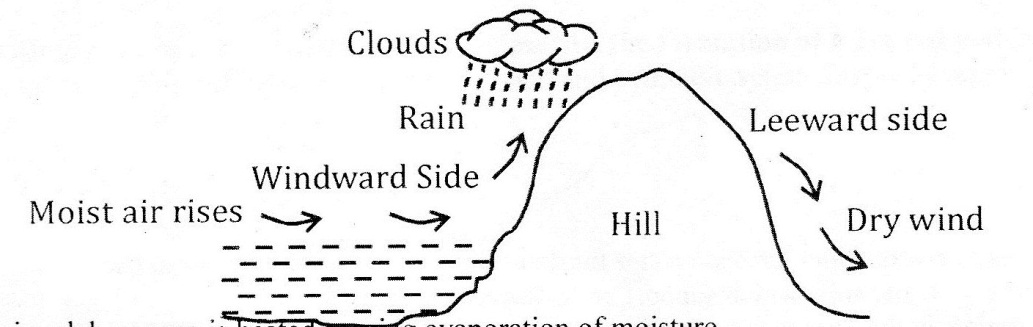
* Temperature decrease with the increase in Height / Altitude as 1 at a loss of 6.5oC for a rise of 1000 M ASL.
* Lower altitudes have a longer column of air that vetains a lot of heat .
* Higher altitudes have a shorter column of air leading to cooling which lower temp.
* Temperature is higher at lower altitudes than at high altitude since air is heated from below and not directly from the sun.

Any 2 points 2 x 1 = 2 marks

(iii). Distance from the sea

* Relative humidity in places near the sea is higher than places far away in the continent.
* The amount of rainfall received in places near large water bodies is relatively higher than in places far away.
* Air pressure is relatively higher near large water bodies than in places far away.
* Near large water bodies temperatures are relatively warmer than in areas towards the continents.

(c). Using a well labeled diagram describe the formation of orographic reainfall. ( 6 marks)



* Water in a lake /sea is heated causing evaporation of moisture formation.
* Most air is forced to move horizontally by wind.
* As the air rises, it expands, cools and condenses to form clouds.
* The clouds then form relief rainfall.
* The rainfall is mainly experienced on the wind wards.
* The cool air then crosses over the hill and descends on the leeward side as dry wind.
* There is little or no rainfall on the leeward side.

Mark- diagram 3 marks

- Description 3 marks (Total 6 marks).

d) i) State three advantages of studying weather through field work. (3 marks)

* Enable learners to collect firsthand information
* Help learners develop manipulative skills
* Enable students apply knowledge learnt in classroom in real life situation
* Makes learning interesting.
* Provides detailed or in depth or broadened learning.
* Enhances visual memory.
* Breaks classroom monotony and boredoms. 3 x 1 = 3 marks

ii) Students from Turuturu Secondary conducted a field study on weather in a weather station. Formulate a suitable hypothesis they could have used for the study. (2 marks)

* The area of study receives high rainfall.
* The area of study has cool temperatures.
* The area of study experiences convectional rainfall.
* The station has many weather recording instruments.

Mark any other relevant statement. 2 x1 = 2 marks

iii) State any three fall-up activities they would carry out after the study. ( 3 marks).

* Discussing the findings
* Analyzing data
* Writing a report
* Giving relevant advice to the state/residents
* Drawing sketches
* Displaying photographs / sketches Any 3 x 3= (3 marks)

8. a) Identify **three** ways in which ice moves

• Plastic flowage

• Basal slip

• Extrusion flow

• Internal shearing

b) Describe plucking as a process in glacial erosion (4marks)

• Pressure from the overlying mass of ice cause freeze and thaw action

• Melting water fills cracks / joints in the bed rock

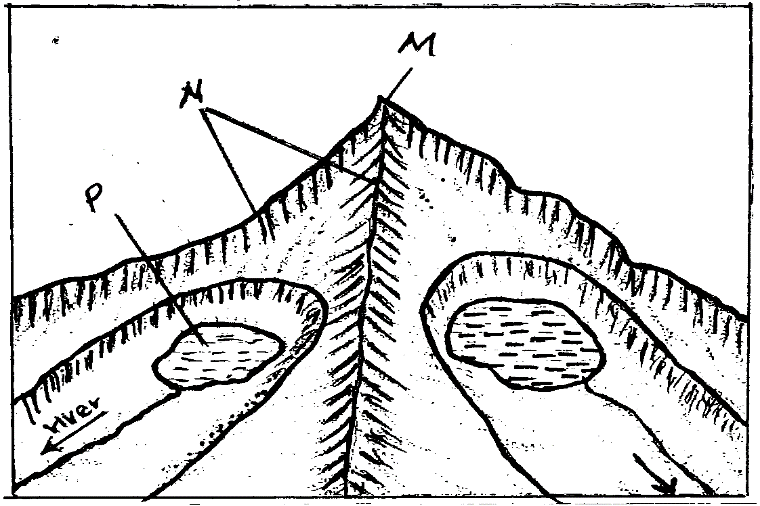
• As the water freezes it exerts pressure on the cracks enlarging them

• The enlarged cracks led to disintegration of the rock

• the disintegrated rocks eventually get embedded within the mass of ice.

4 x 1= 4 marks

1. i) Using a well labeled diagram, describe the formation of a pyramidal peak. (6marks)



Pyramidal peak

Arete

* Ice accumulates in several shallow pre-existing depressions on the mountain sides.
* As the ice moves it plucks the rocks steepening the sides of the hollows / depressions.
* Continued erosion by abrasion deepens and widens the hollows.
* Adjacent hollows continue to be eroded causing the cirques backwall to erode until they are separated by narrow steep ridges called aretes.
* Where aretes converge at the top of the mountain they form a sharp steep sided peak known as the pyramidal peak.

Mark Text 4 marks

Diagram 2

Total 6 marks.

cii). Explain three factors that lead to glacial deposition. ( 6 marks)

- rising temperature lead to melting of ice thereby causing the ice to deposit its loads.

- change of gradient to relatively flat surface will reduce the velocity of the glacial.

- movement which will subsequently lead to deposition of glacial materials.

- alternating warm and cold periods lead to seasonal melting of ice which allows materials embedded in the ice to be released and deposited.

- Stagnation/accumulation of glacier leads to pressure at the base of the glacier which in turn leads to melting of ice at the base.

- The melt water then carries and deposits materials underneath which loosens the heavy materials beneath the mass of ice and subsequently deposited.

Condition 1 mark

Explanation 1 mark (any 3 x 2 = 6 marks)

d) You are required to carry out a field study on erosional features in glaciated lowland area

i) Give **three** reasons why you would require a working schedule (3marks)

- It enables the planned activities to be carried out systematically.

- It allows for proper use of available time.

- It enables the assessment of the progress of the ﬁeldwork.

- It enables the estimation of total time required for the study.

- It conﬁnes the researcher to the scope of the topic.

- It ensures all areas are adequately covered.

Any 2 x l = (2 marks)

ii) Give **three** erosional features in the lowland areas they would have identified. (3marks

* Ice eroded plains.
* Depressions
* Roche Mountonee.
* Crag and tail

9.a)i) A part from the Rift Valley name two other relief features that are formed as result of faulting. (2marks)

* Tilt block
* Escarpment/scrap slope
* Block mountain/ horsts Any 2x1=2marks

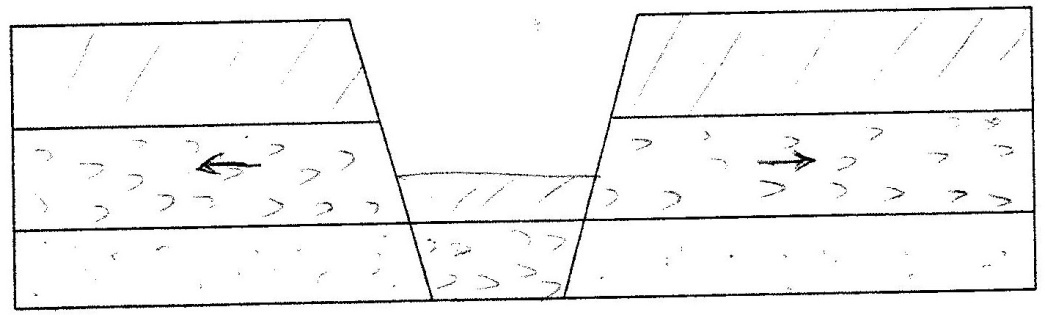
ii) With the aid of a well labeled diagram, describe how a Rift Valley is formed by tensional forces. 8 marks

Layers of crustal forces

* Layers of rocks are subjected to tensional forces when there is some tensional forces when there is some instability within the earth’s crust.
* Parallel normal faults develop/lines of weakness develop.

Normal faults

The middle part gradually sinks/ subsides.



Rift valley

The sunken middle part forms a depression known as the Rift Valley

b) Explain **fou**r effects of faulting (8marks)

* Faulting / fault scraps make it difficult to construct roads/ railways.
* Depression in the Rift valley contain water that forms lakes
* Faulting exposes minerals such as diatomite.
* Step faulting makes rivers to have waterfalls, rapids and cataracts
* The scrap slopes / steep slopes tend to discourage settlement.
* Some rivers such as the Katonga in Uganda have had their directions of flow changed. (Any 4 x 2 = 8 marks)

c) Students are planning to carry out a field study of an area affected by faulting

i)State **four** reasons why it is important for the students to have a pre-visit of the area. (4marks)

* To enable them draw up study objectives / hypothesis
* To enable them draw a route map.
* To enable them prepare a work schedule / plan of activities
* To enable them identify / sort our relevant tools / equipment for the study
* To identify suitable methods of data collection.
* To seek permission from the occupants of their site of study.
* To enable them prepare financial (Any 4x1 = 4mks)

d) One of the ways they would use to collect data is through direct observation. Give three disadvantages of direct observation in the study of such an area. (3marks)

-It is expensive

- It is time consuming

-It is tiresome

- It is limited only to direct sources / primary sources

- It is only suitable to the signed people (Any 3x1 =3 marks)

10a) i) Name three major deserts found in Africa. ( 3 marks)

* sahara
* Kalahari
* Namib

3 x 1= 3 marks

ii) Give two processes in which wind erodes the earth’s surface. ( 2 marks).

* + abrasion
  + deflation
  + attrition 2 x 1 = 2 marks.

iii) Explain three ways in which wind transports its load. ( 6marks)

* Saltation – This is where course granted sand particles are transported through a series of short jumps bouncing along the earth’s surface.
* Suspension - very fine materials are picked by wind raised high and blown for long distance.
* Surface creep - heavy materials are rolled pushed for short distances along the earth’s surface. 3 x 2 = 6 marks

b) Using well labeled diagram explain how the following desert feature are formed.

(i). yarding 5 marks

* Prevailing wind blow across the land where there are alternating vertical bands of resistant rocks.
* The rock layers lie parallel to direction of prevailing wind.
* Soft rocks are eroded by wind through abrasion to form depression, furrows while hard bands or rocks form ridges.
* The ridges form features called yardings.

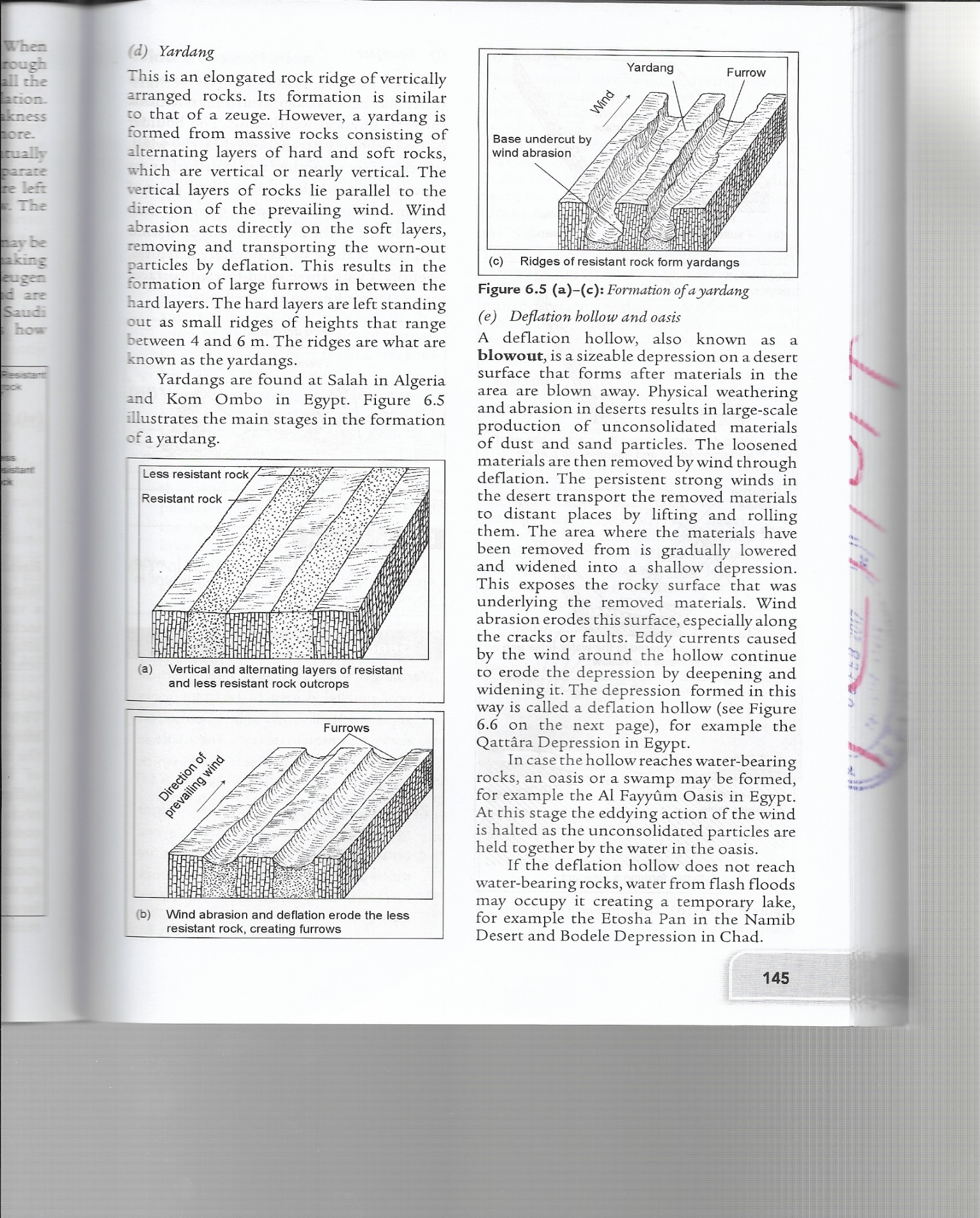


Diagram 2 Text 3 total 5 marks

(ii). Mushroom Blocks 6 marks

* it is formed where there is a homogeneous rock outcrop along the direction of prevailing winds.
* The base of the rock is eroded more by wind abrasion
* The top part is polished and smoothened through abrasion to form a massive rock with a broad rounded top called a mushroom block.

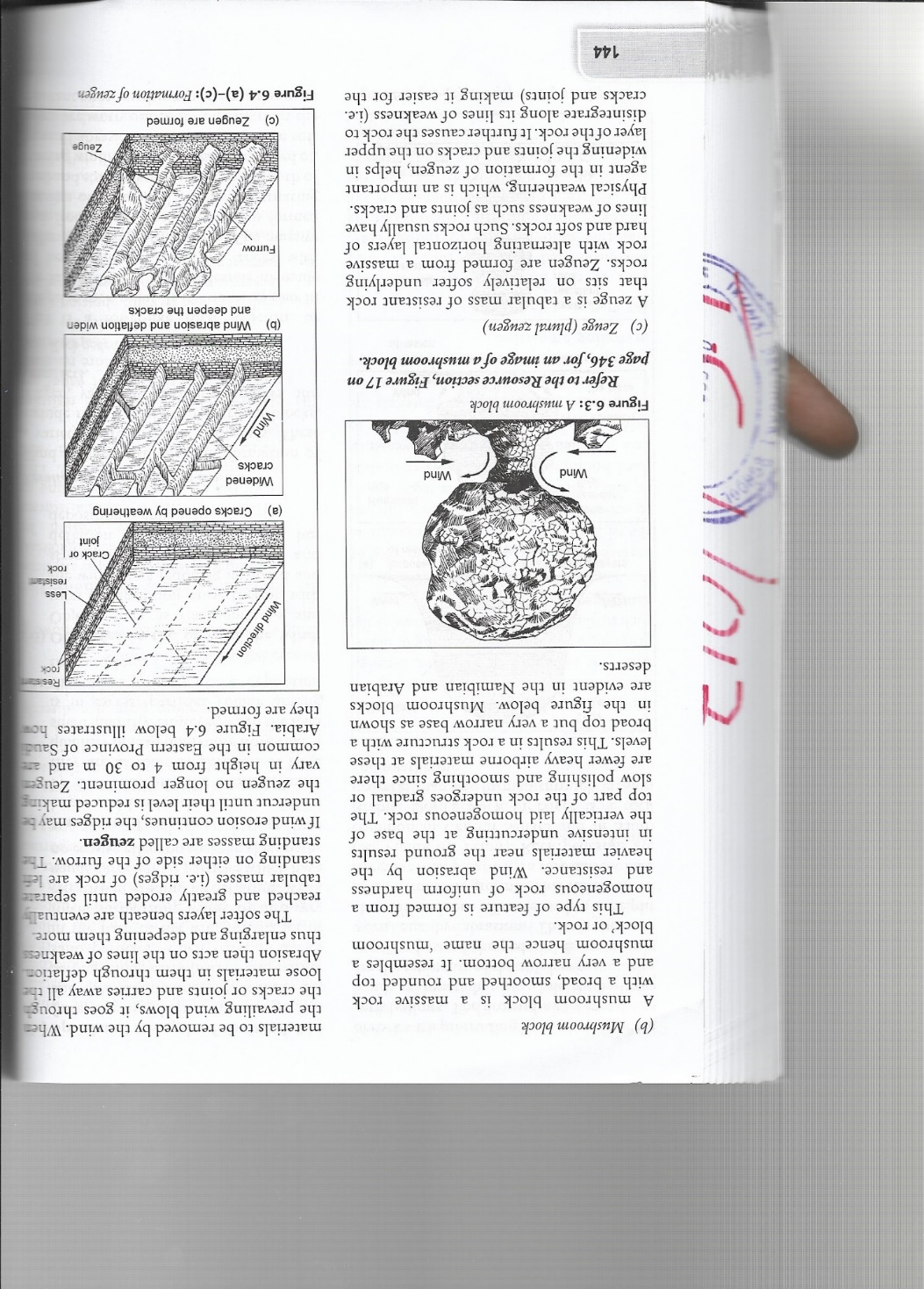
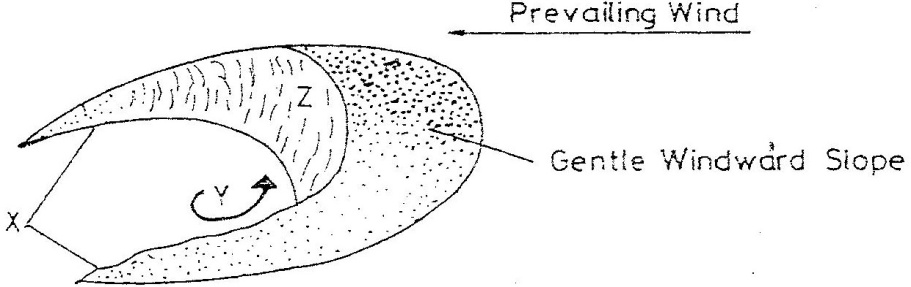


Diagram 3

Text 3 Total 6marks

c) The diagram below represents features resulting from wind deposition in a desert.

Use it to answer the questions that follow.



i) Barchan 1 mark

ii) J – Horns

L- Steep slope 2 marks