KAPSABET HIGH SCHOOL

SECTION A

ANSWER ALL THE QUESTIONS IN THIS SECTION

1.a) Name two layers of discontinuity that are part of the interior of the earth. (2mks)

Mohorovicic discontinuity.

Gutenberg discontinuity. **(2 × 1)= 2 mks**

b) State three characteristics of the outer core in the interior structure of the earth. (3mks)

- ✓ It is composed of molten rock materials.
- ✓ The main minerals are iron and nickel.
- ✓ It has a depth of about 2100km to 2900 km thick.
- ✓ Has a temperature ranging from 3700 C to 5000 C
- ✓ Has an average density of 10.0 gm/cc to 12.3 gm/cc . **(any first 3× 1=3 marks)**

2.What is a lake? (2mks)

A large mass of water occupying a depression or a hollow on the surface of the earth.

b) Give three ways in which water weeds have affected lakes in Kenya. (3mks)

- ✓ See weeds chock the lakes hindering effective exploitation of lake resources.
- ✓ Too much lake weed makes navigability hard especially during fishing using vessels e.g boats.
- ✓ Rotting weeds affect the habitat of aquatic animals. **(3×1 mrks)**

3.a) Name two types of faults associated with faulting. (2mks)

- ✓ Normal faults
- ✓ Reverse faults
- ✓ Tear/shear/slip faults
- ✓ Thrust fault
- ✓ Anticlinal fault **(2×1mrks)**

(b) State three effects of faulting on drainage of an area. (3 marks)

- ✓ Down warping due to faulting may lead to formation of depressions which may be filled by water to form lakes.

- ✓ Fault lines due to fracturing of crustal rocks may change the course of river making the river to start flowing along the fault line forming faulting guided drainage pattern.
- ✓ Fault scarps forming across rivers course may lead to formation of waterfalls.
- ✓ Faulting may lead to formation of lines of weakness in earth‟s crust which becomes passages for hot water from the underground to the earth‟s surface to form hot springs and geysers**. (3×1mrks)**

4. a) i) What is a soil profile? (1mk)

Vertical arrangement /cross section of different layers of soil from the surface to the bedrock. **(1×1mrk)**

ii) Name two components of soil. (2mks)

- ✓ Soil air.
- ✓ Soil water .
- ✓ Soil organic matter/humus .
- ✓ Soil inorganic matter/minerals. **(2×1mrks)**

iii) Differentiate between soil structure and soil texture. (2mks)

- ✓ Soil structure refers to the way the soil particles are grouped together into larger particles **while** soil texture is the size of the individual soil particles.

OR

- ✓ Soil texture is the grouping /arrangement of soil particles /aggregates **while** soil texture refers to the size of soil particles /degree of fineness or coarseness of soil particles. **(2×1mrks)**

5.(a) Differentiate between secondary vegetation and planted vegetation

Secondary vegetation is the plants growing naturally in a place but has been interfered with by people **while** planted vegetation comprises plants which were grown in a place by people. **(Any 2 x 1 = 2mks)**

(b) State three characteristics of Mediterranean vegetation .(3 mrks)

- ✓ The vegetation is adopted to the long, hot and dry summers.
- ✓ Some plants are evergreen.
- ✓ Grasses dry up during summer and germinate during winter.
- ✓ Shrubs, thickets, bush and thorn bush and maquis are common.
- ✓ Woody scrub is common in very dry areas
- ✓ Some plants have small, springy leaves while others have thick-skinned leathering leaves.
- ✓ Some plants have deep roots.

- ✓ Some plants have thick barks.
- ✓ Some plants have large and fleshy bulbous roots.
- ✓ Some plants have fleshy leaves while other have skinny waxy leaves.
- ✓ Some trees are deciduous. **(Any 3 x 1 = 3mks)**

SECTION B

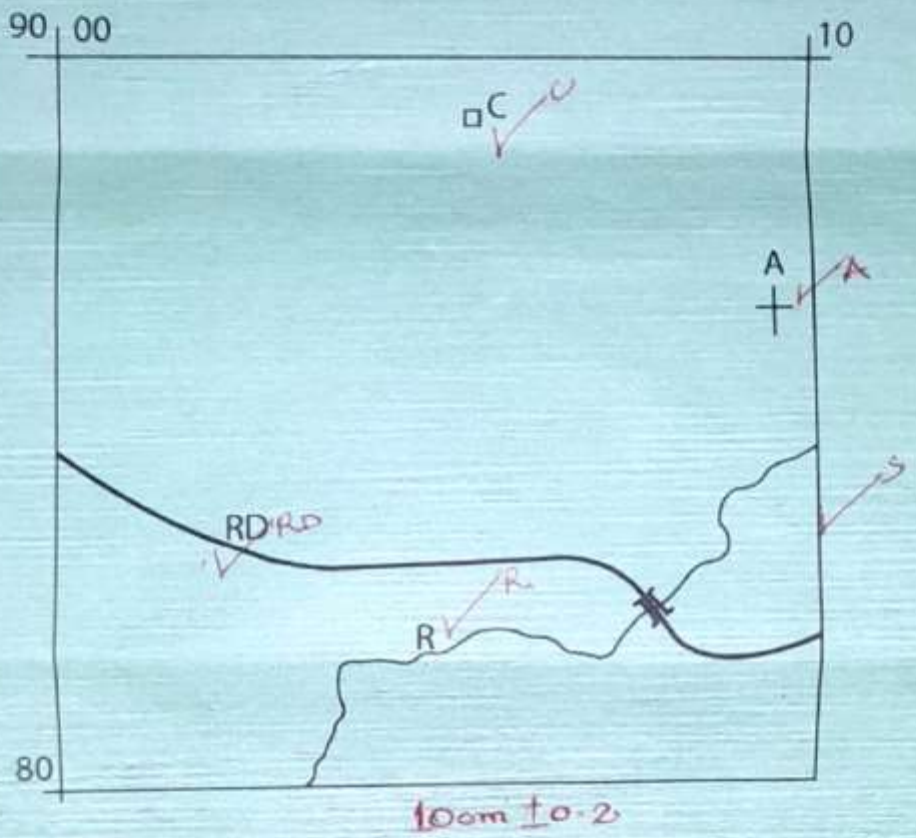
ANSWER QUESTION 6 AND ANY OTHER TWO QUESTIONS FROM THIS SECTION

Answer **question 6** and any other **two questions** from this section.

6. (a)	**Study the map of Kisumu East 1:50,000 (Sheet 116/2) Provided and answer the following questions:**	
(i)	**Give the longitudinal extent of the area covered by the map** 34° 45'E to 35° 00'E ✓/ 15'/ 34°45'E to 34°53'E/8' (1)	~~(1 mark)~~ 1
(ii)	**Name ~~the~~ three human-made features in the grid square 0193** - Main track (motorable track) ✓ - Plantation ✓ - Agricultural Department. ✓ - Houses ✓ - Built up areas ✓	~~Any 3 x 1 = (3 marks)~~ 3
(iii)	**Identify ~~the~~ two methods used to show relief on the map.** - Contours. ✓ - Trigonometrical stations ✓ - Rock and cliff drawing ✓/ Pictorial	~~(2 marks)~~ 2
(iv)	**Calculate the area of Kisumu town. Give your answer in square kilometres.** Complete squares = 5 x 1 = 5 kms² Incomplete squares = 16 x ½ = 8km² Total area 13 kms² ✓ ± 0.5 (12.5 - 13.5)	~~(2 marks)~~ 2
(v)	**Name two types of natural vegetation, found in the area covered by the map** - Scrub ✓ - Scattered trees - Woodland ✓ - Papyrus ✓/ Papyrus swamp vegetation	~~Any 2 x 1 = (2 marks)~~ 2
		10

(b) **Draw a square 10cm by 10cm to represent the area enclosed by eastings 00 and 10, and Northings 80 and 90. On it mark and name the following:**

SQUARE REPRESENTING THE AREA BOUND BY EASTINGS 00 AND 10, NORTHING 80 AND 90



KEY

A	Air photo principal point (04)
C	Chiga market
RD	All weather road bound surface
R	River Ombeyi

S-1
RD-1
R-1
C-1
A-1
5

Rectangle-(1mark)

Each feature (1 mark)=(4 marks)

5 5

* Missing square — RD
— R

b) Explain how the following factors influence climate.

i) Aspect. (2mks)

The windward slopes of mountains receive higher rainfall than the leeward slopes since moist winds form clouds on these slopes releasing rain .

The leeward side of the mountains receive much lower rainfall than windward slopes since the winds blowing over them are dry. (**1×2=2mrks**)

ii) Ocean currents. (2mks)

- ✓ Onshore winds blowing over cold ocean currents are cooled and bring a cooling effect to the adjacent lands resulting in lower temperatures of the land.
- ✓ Onshore winds blowing over warm ocean currents are warmed and bring a warming effect to the adjacent lands thus raising the temperatures on the land.
- ✓ Warm onshore winds crossing a cold ocean current are cooled and the moisture they carry cools prematurely resulting into rains/fog over the oceans.as they reach the land; they are dry and hence no rain. **(any 1 ×2=2 mks)**

a) The table below shows rainfall and temperature for a station in Africa. Use it to answer the questions that follows.

MONTH	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
TEMPERATURE	27	28	27	26	23	21	21	21	23	25	26	27
RAINFALL(MM)	232	250	219	107	60	32	27	26	22	37	90	210

i) Calculate the annual range of temperature. (1mk)

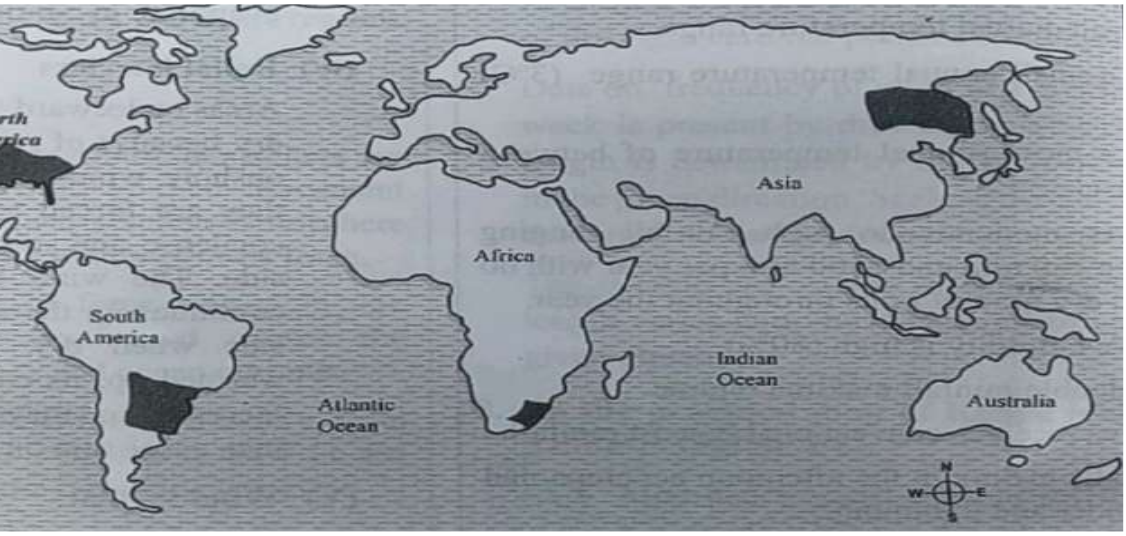
28° C – 21° C

= 7°C

ii) Describe the annual rainfall pattern of the station. (4mks)

- ✓ There is rain throughout the year/there is no distinct dry month.
- ✓ The wettest month is February with 250 mm of rain
- ✓ The driest month is September with 22mm of rain.
- ✓ The total annual rainfall received is 1312mm which is high.
- ✓ The hottest months from November to April receive higher amounts of rainfall.
- ✓ There is a dry season from June to October. **(4×1=4mks)**

d) The world map below shows a certain climatic region . Study it and answer the following questions.



i) Identify the climate experienced in the shaded region. (1mk)

Warm temperate eastern margin.

iii) Describe the characteristics of the climate named above. (4mks)

- ✓ Summers are hot with 26 C whereas winters are mild with 13 C.
- ✓ Rainfall is moderate with 700 mm to 1500 mm and is well distributed all year round.

- ✓ Trade winds are onshore in summer causing heavy rain in the coastal and highlands.
- ✓ Convectional rainfall is common in summer.
- ✓ In winter the westerlies winds are offshore resulting in very little rain.
- ✓ Typhoons or hurricanes are common and lead to heavy rainfall.

e) Distinguish between aridity and desertification. (2mks)

aridity is the state of hand being deficient moisture leading to scanty or lack of vegetation and deficiency in soil fertility while desertification the encroachment of desert like conditions to formerly productive land.

ii)State two human activities that contribute to aridity and desertification. (2mks)

- ✓ Destruction of vegetation to increase land for cultivation /settlement leading to soil erosion.
- ✓ Overstocking by nomadic pastoralists resulting in overgrazing which exposes land to agents of erosion .
- ✓ Poor agricultural practices e.g monoculture ,overcultivation leading to soil degeneration.
- ✓ Establishment of industries that release /emit green house gases to the atmosphere leading to global warming /increase in temperature of the earth.
- ✓ Population pressure leading to replacement of rangelands with cultivation. **(2×1=2mks)**

7. (a) (i)Name two types of hot desert landscape. (2mks)

- ✓ Sandy /erg /koum
- ✓ Stony/reg/serrir
- ✓ Rocky/hamada.
- ✓ Badlands.

(Any first 2×1=2mks)

ii)State two reasons why wind erosion is very effective in hot deserts. (2mks)

- ✓ Presence of loose unconsolidated dry matter /sand /gravel.
- ✓ Occurrence of strong tropical storms.
- ✓ Absence of vegetation leading to high wind velocity due to little frictional force.

(Any 2×1=2mks)

b i)) Apart from Yardangs name three features that results from wind action in deserts.

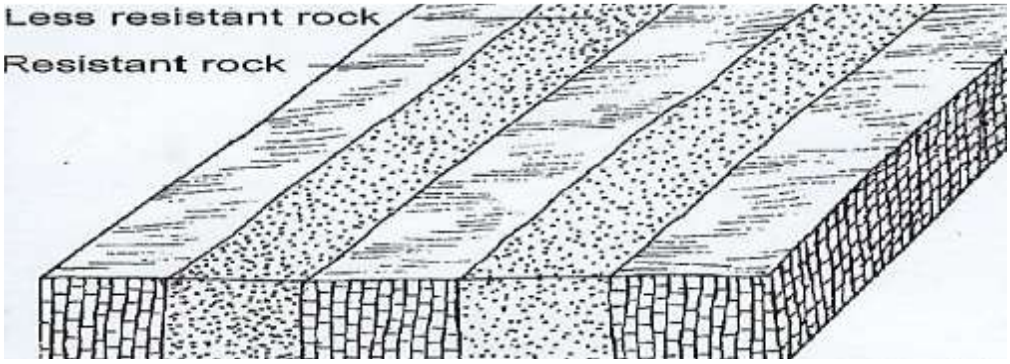
(3 marks)

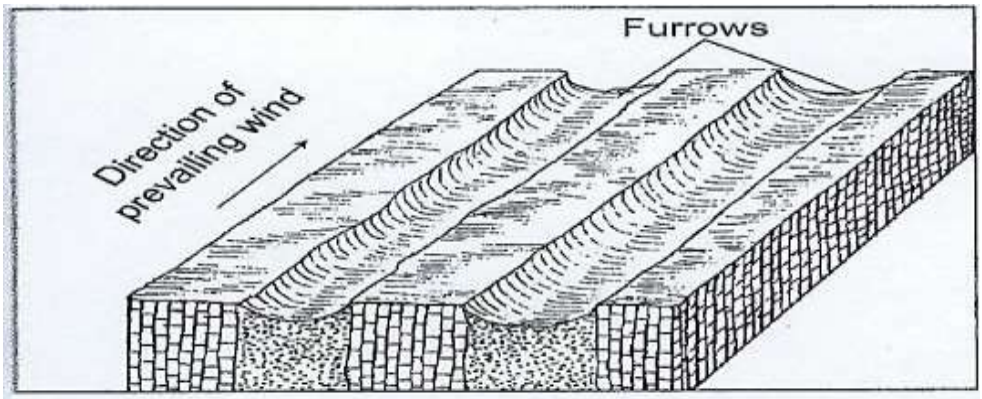
- ✓ Rock pedestals
- ✓ Mushroom blocks

- ✓ Zeugens
- ✓ deflation hollows/depressions.
- ✓ Ventifacts**. (any 3×1=3mks)**

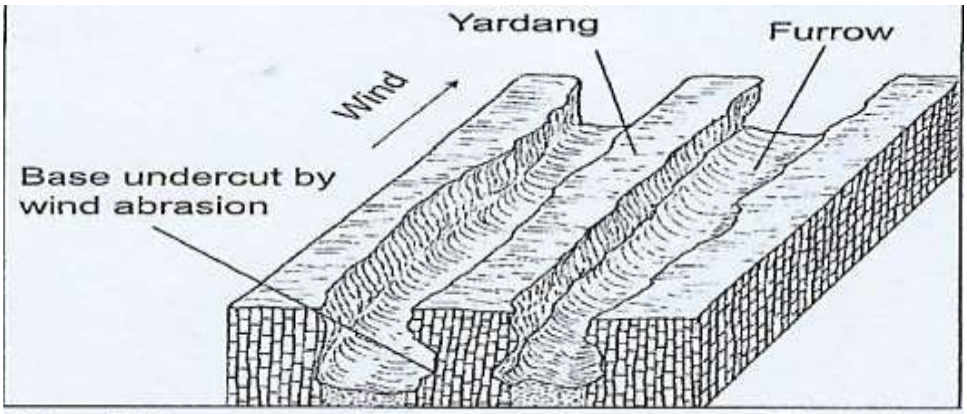
iv) Using well labelled diagrams,describe how Yardangs are formed.(7mks)

- ✓ Rocks made up of vertical alternating layers of hard and soft rocks lie parallel to the prevailing winds in desert.
- ✓ Wind abrasion erodes the soft rocks and the particles are removed by deflation leading to formation of large furrows .the layers of hard resistant rocks are left standing as ridges.
- ✓ The ridges that are left standing in between furrows are called Yardangs.





(b) Wind abrasion and deflation erode the less resistant rock, creating furrows



(c) Ridges of resistant rock form yardangs

b) Explain how the following processes of wind erosion occur in the desert areas .

i) Saltation. (2mks)

Medium sized particles are carried by a series of jumps and hops. Materials are rolled along the ground, collide with each other and bounce off into the air and transported for short distances.

ii) Surface creep. (2mks)

Wind transport heavy materials e.g. gravel, pebbles by pushing them along the desert.

They are never lifted and move for a short distance due to their weight.

c) You intend to carry out a field study in an arid area near your school.

i) State two reasons for carrying out a pre-visit. (2mks)

- ✓ It assists the researcher to be familiar with the area of study.
- ✓ It assists in preparation of the budget.
- ✓ It helps the researcher in identifying possible problems that are likely to be experienced during the study.
- ✓ It helps the researcher in developing a work schedule.

ii) State four positive effects of desert features to man that you are likely to identify. (4mks)

- ✓ Vast open ground s of deserts are used for testing bombs / films development.
- ✓ Loess deposited in wetter areas have rich soils for agriculture.
- ✓ Oasis provide water used for domestic use by the desert communities.
- ✓ Playas / Salinas may contain salts that may be exploited for income generation.
- ✓ Strong winds in the desert areas may be tapped for energy / hot sun for solar energy.
- ✓ Rock pedestals, yardangs and zeugens may be attractive features for tourist attraction.
- ✓ Seasonal streams can be dammed to supply water to the surroundings e.g Kigombo dam in Mbololo area of Taita Taveta**.**

(Any 4×1=4mks)

8. **a) i) Differentiate between a rock and a mineral. (2mks)**
   A rock is a substance that is an aggregate of mineral particles forming the earths crust **while** minerals are naturally occurring inorganic substances with definite physical and chemical properties occurring at or beneath the surface of the earth.

b) Describe the following characteristics of minerals.

i) Color. (2mks)

Different minerals display different colors e.g gold is yellow in color .

ii) Hardness. (2mks)

This is a measure of resistance of a mineral to disintegration. Some minerals e.g. diamond have a high resistance to breakage while others are soft .e.g. Talc

(i) What are igneous rocks? (2mks)

These are rocks that are formed from cooling and solidification of magma or lava on or below the earth's surface.

ii) State three notable differences between plutonic and volcanic rocks. (3mks)

- ✓ Plutonic rocks form from magma while volcanic rocks form from lava.
- ✓ Plutonic rocks form deep in the earth's crust while volcanic rocks form on the surface of the earth.
- ✓ During formation of plutonic rocks magma cool slowly while during formation of volcanic rocks, lava cools rapidly.
- ✓ Plutonic rocks form large crystals /coarse grained /textured while volcanic rocks form small crystals or no crystals at all/are fine grained. **(3×1=3mks)**

d) Describe the formation of the following rocks.

i) Mechanically formed sedimentary rocks. (3mks)

- ✓ Sediments of rock particles are derived from pre-existing rocks by the process of weathering.
- ✓ The sediments are transported by agent of erosion e.g., water, wind, ice and deposited in sea, or on land in layers.
- ✓ The sediments undergo compaction and cementation as more layers are deposited and consolidated to form a new rock.

iii) Chemically formed sedimentary rocks. (3mks)

- ✓ They form when minerals in rocks gets dissolved and carried in solution in water bodies.
- ✓ Water reaction with these dissolved minerals leads to precipitation of the sediments.
- ✓ The sediments accumulate at the bottom of the water body and finally compress to form a rock.

d) I) Identify the missing type of rocks. (3mks)

Original rock	Metamorphic rock
Limestone	**i) Marble**
ii) Coal	Graphite
Granite	**iii) Gneiss**

e) Supposing you were to carry out a field study on rocks at the Kenyan coast.

i) State two reasons as to why you would ask for permission from the school administration. (2mks)

- ✓ For the administration to be informed of some students being out of school for official purpose.
- ✓ To help in preparation of the budget needed.
- ✓ To help in preparation of the transport means**.**

(any first 2 ×1=2mks)

ii) What reasons would you give for the widespread of sedimentary rocks at the coastal plain. (3mks)

- ✓ The coastal plains were once part of the extensive continental shelf of the Indian ocean and so sedimentation took place.
- ✓ Shallow continental shelf provided conducive environment for coral polyps to form sedimentary rocks.
- ✓ Many rivers deposit their load to at the mouth in the ocean accumulating to form sedimentary rocks.

9. (a) (i) Differentiate between a spring and a well (2 marks)

A spring is a natural outflow of water from rocks **while** a well is a hole sunk into a permeable rock to reach the water table.

iii) State four conditions favoring formation of artesian well. (4 marks)

- ✓ The aquifer must be of the same permeable materials.
- ✓ The aquifer must be exposed in an area of sufficient precipitation.
- ✓ The aquifer must lie in between two impermeable rocks for it to retain water.

- ✓ The basin must dip towards a region where the land surface is lower than it is at the exposed end of the previous formation.
- ✓ There must be a partial construction or total blockage of exit sufficient for the water to be replaced in high pressure**.**
  (any 4 ×1)=4mrks

b). (i) What is a Karst scenery? (2 marks)

These are areas that have limestone chalk or dolomite.

(ii) Name five features formed on the surface in a Karst area. (5 marks)

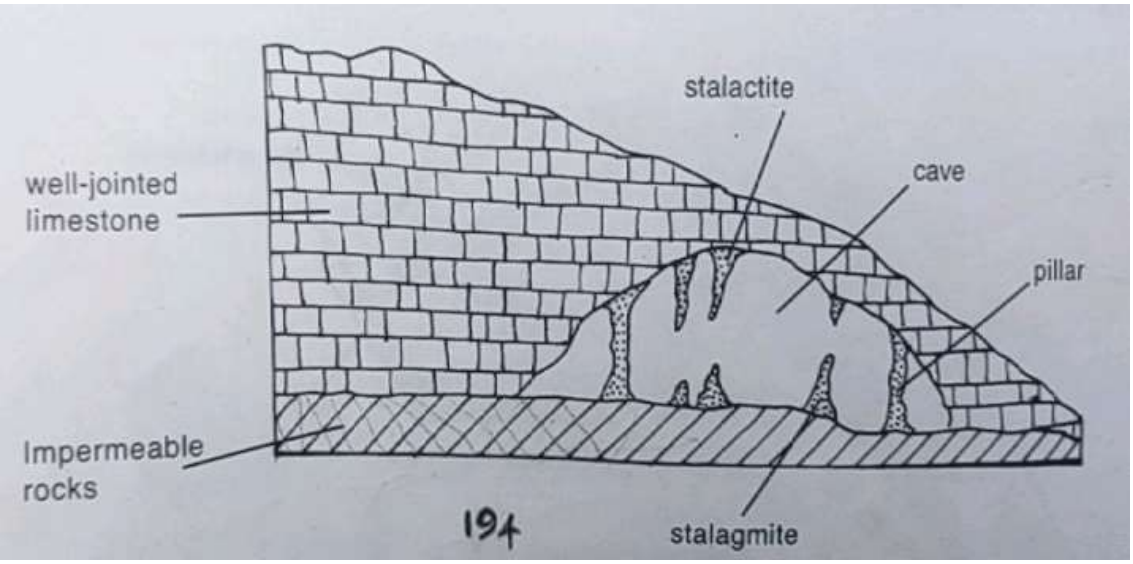
- ✓ Grikes and clints
- ✓ Dolines
- ✓ Uvalas
- ✓ Polje
- ✓ Limestone gorge. **(any 5×1=5mks)**

c). With the aid of a well labeled diagram describe how a limestone pillar is formed.

(6 marks)

- ✓ Rainwater dissolves Carbon (iv) oxide in the atmosphere to form weak carbonic acid which seeps through the roof of an underground cave.
- ✓ It reacts with the limestone rock to form calcium hydrogen carbonate solution.
- ✓ The solution drips from the roof of the cave to the floor as each drop spreads out and evaporates. Some evaporate and build up on the ceiling to form a stalactite.
- ✓ The residue of sodium carbonate in form of tiny crystals is left on the floor and builds up to form a stalagmite directly below the stalactite.
- ✓ Continued accumulation of crystals on the stalagmite and the stalactite make them to grow in size until they merge to form a limestone pillar.

Text =5 mks
Diagram well labelled =1 mks



d) Explain three significance of Karst scenery to human economic activities. (6 marks)

- ✓ Karsts features from good tourist attractions like the caves, gorges, dry valleys who bring in foreign exchange.
- ✓ Collapse of doline into water table may lead to lakes in the Karst area. Solution lakes occur in poljes and provides domestic and industrial water.
- ✓ Karsts scenery landscape is characterized with intermittent streams or absence of streams leading to scarcity of water supply in these areas.
- ✓ The limestone areas are also characterized by outcrops of bare rock, rugged rock and steep sided dry valleys with gorges which make development of infrastructure especially roads not only difficult but also expensive.
- ✓ Lime stone areas are very favorable for grazing purposes, particularly for sheep because the soil is thin and the surface dry.
- ✓ Cement used in the building industry is derived from limestone rock e.g. in Kenya cement factories found at Bamburi due to the presence of coral limestone in the region. **(any first 3 x 2 = 6 marks)**