

# MSAMBWENI SUB-COUNTY JOINT EXAMINATION 2015

## FORM III GEOGRAPHY PAPER 1

### MARKING SCHEME

#### SECTION A

1. a) (i) What is meant by the term Equinox?

- the time of the year when the sun is overhead the Equator and all places on the Earth have equal length of day and night (1 mark)

(ii) Give **two** dates in a year during which the Equinoxes are experienced

- 21<sup>st</sup> March and 23<sup>rd</sup> September each 1mk = (2 marks)

b) Why do places on the Earth's surface experience varying length of day and night?

- Because the Earth is tilted on its axis
- Because of the revolution of the Earth/the apparent movement of the sun within the tropics (1 mark)

2. a) Name **three** instruments to match three elements of weather that can be measured at a weather station

instrument	element
Rain gauge	Rainfall
Thermometer	Temperature
Barometer	Pressure
Hygrometer / Psychrometer	Humidity
Wind vane	Wind direction
Anemometer	Wind speed
Wind sock	Wind strength
Sunshine recorder	Sunshine

Any 3 @ 1 = 3 mks

1<sup>st</sup> 3 x 1 = 3 marks

b) Give **two** reasons why the recording of data at a school weather station may be inaccurate

- because of using defective instruments
- due to human error
- if the instruments have been interfered with
- because of poor siting of the weather station
- due to extreme weather conditions
- as a result of natural calamities

(any 2 @ 1 mark = 2 marks)

3. a) (i) What is a rock?

A naturally occurring aggregate of minerals cemented together forming the solid part of the earth's crust

(2 marks) (1 mk)

(ii) Name **three** processes through which sedimentary rocks are formed

- Mechanically formed / Sedimentation

- Organically formed / *Peatification*
- Chemically formed / *precipitation*

3 @ 1mk = (3 marks)

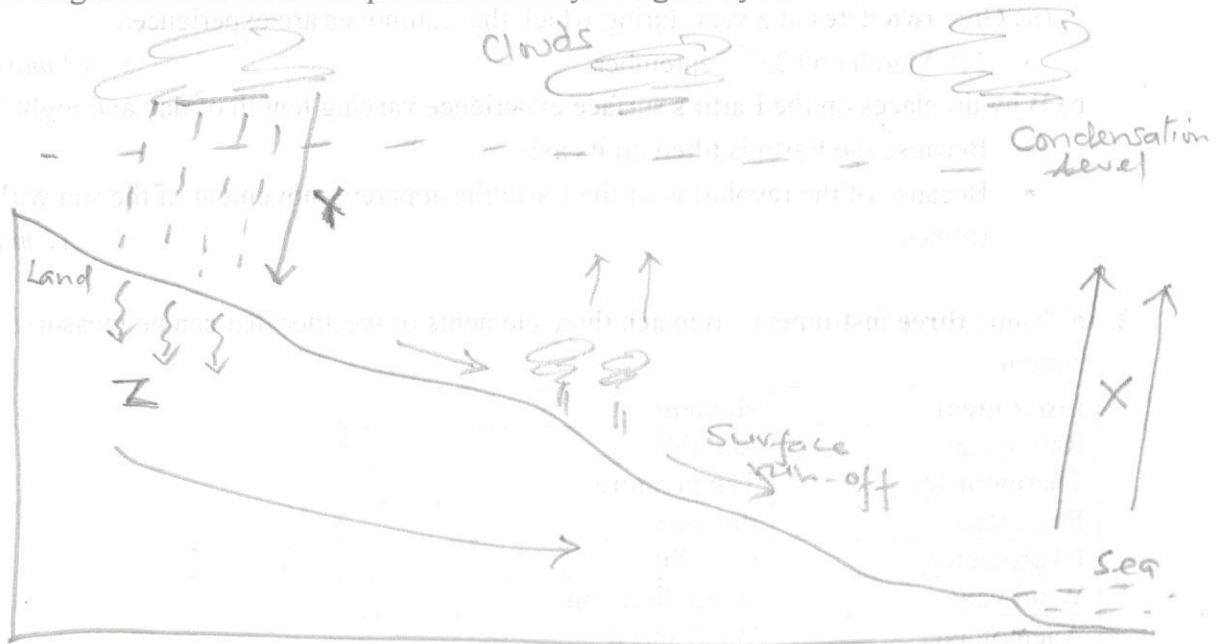
(3 marks)

b) Give a reason why sedimentary rocks are dominant in the coastal plain of Kenya

- the coastal plain is a lowland which has facilitated deposition of sediments
- the shallow continental shelf has a conducive environment for formation of coal rocks
- much of the coastal plain emerged from the sea where sedimentation occurred

(Any 1 @ 1 mark)

4. The diagram below shows the processes of a hydrological cycle



a) Name the processes represented by the arrows marked X, Y and Z

X - Evaporation

Y - Rain/precipitation

Z - Infiltration

1mk

1mk

1mk

3 @ 1mk = (3 marks)

b) Identify **two** sources of ~~water found in~~ rivers

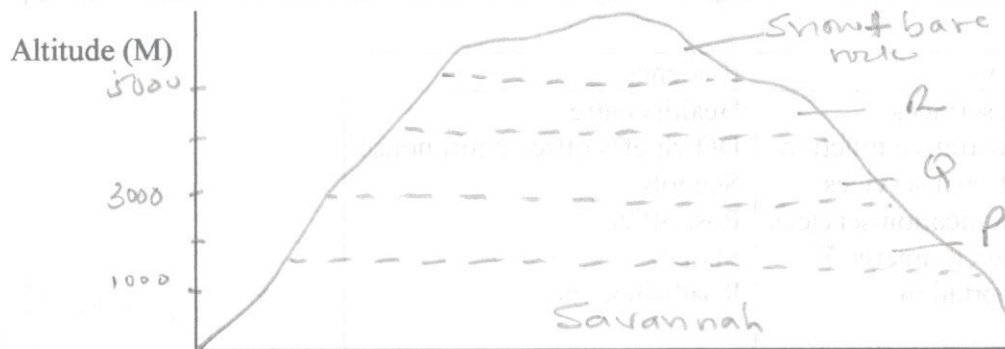
- Lakes
- Melting ice/snow *melt*
- Springs
- Swamps
- Surface run-off

2 X 1 = 2 marks

5. a) What is natural vegetation?

- The plant cover that grows wildly on the earth's surface without the interference of human beings or their animals (1 mark)

c) The diagram below represents zones of natural vegetation on a mountain



(i) Name the vegetation zones marked P, Q and R

P – Rain forest

Q – Bamboo

R – Heath and moorland

1  
1  
1

(3 marks)

(ii) Give two reasons why the mountain top is bare of vegetation

- The temperatures are too low/cold to support plant growth
- There is bare rock/no soil to support plants
- Water is always in a frozen state and not available to plants

(2 x 1 = 2 marks)

## SECTION B

Answer question 6 and any other TWO questions from this section

6. Study the map of Migwani 1:50,000 (sheet 151/1) provided and answer the questions that follow.

a) (i) Give the longitudinal extent of the area covered by the map.

(2 marks)

$38^{\circ} 01' E - 38^{\circ} 13' E$  ✓  $\pm 1'$   $[38^{\circ} 00' E - 38^{\circ} 14' E]$

(ii) State the magnetic declination of the map when it was drawn.

(1 mark)

$2^{\circ} 23'$  ✓

(ii) Calculate the bearing of the school at grid square 0965 near Mutitu from the water tank in grid square 1169

$201^{\circ}$   $\pm 1'$   $[200^{\circ} - 202^{\circ}]$  ✓

(2 marks)

b) (i) Draw a rectangle 10 cm by 8 cm to represent the area bounded by Eastings 05 and 13, and by Northings 70 and 80.

(1 mark)

(ii) On it mark and label the following:



- Dry weather road (1 mark)
- River Ikoo (1 mark)
- Mboni Dam (1 mark)
- Ridge (1 mark)

c) Citing evidence from the map, identify **three** functions of Mutitu (Ndooa) township (6 marks)

Function	Evidence
Health services	Health centre
Administrative function	DO/chief's office/court house
Educational services	Schools
Communication services	Post office
Trading/commerce/Business	Shops
Transportation	Roads/pipelines

Function 3  
Evidence 3 } 6 marks

~~3 Score for function and correct evidence~~ Function can score alone but evidence can't)

d) Students of the school at Mutitu carried out a field study of the area covered by the map.

i. Name **three** features of relief they identified during the study

- River valleys
- Hills
- Ridges
- Steep slopes/gentle slopes/slopes
- Outcrop rock
- interlocking spurs

(3 x 1 = 3 marks)

ii. State **two** natural vegetation types that they may have identified

- Scrub vegetation
- Scattered trees
- Forests

(2 x 1 = 2 marks)

iii. Describe the characteristics of the long profile of river Ikoo they are likely to have studied

- the river is permanent ✓
- the river has many tributaries ✓ that form a dendritic pattern ✓ along the course
- there are sand /mud deposits down stream ✓
- the river becomes wide east of easting 08 /narrow west of easting 08
- there are some interlocking spurs upstream ✓
- river Ikoo flows towards the south east

- It meanders east of Easting 08
- It is winding upstream
- It forms a radial pattern around Kamubya

any 4 (4 x 1 = 4 marks)

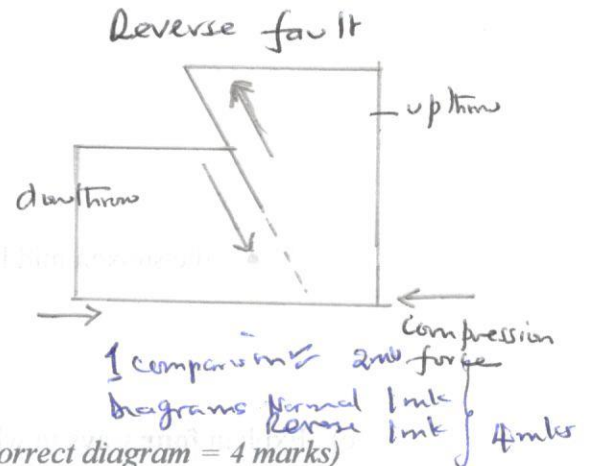
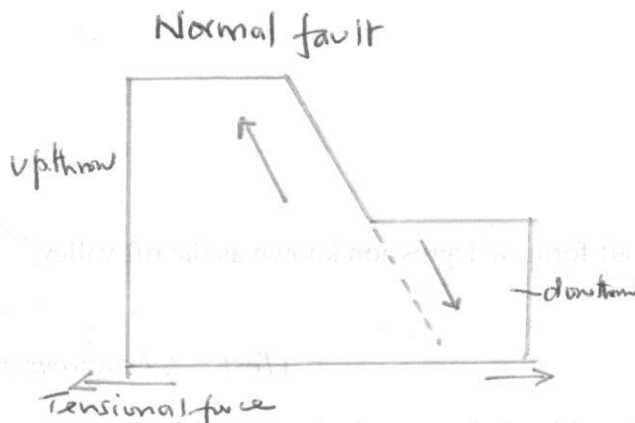
7. a) (i) What is faulting?

- Process by which the brittle crustal rocks break/fracture due to tectonic force

(1 mark)

(iii) Using diagrams differentiate between a normal fault and a reverse fault

- A normal fault is formed by tensional forces while a reverse fault is formed by compression forces
- In the normal fault the fault scarp is exposed/in the same direction as the down throw while in the reverse fault the fault scarp overhangs the down throw



(double tick complete comparison and award 1 mark for each correct diagram = 4 marks)

b (i) Name **three** types of tectonic plate boundaries

- Divergence/extension/constructive boundary
- Convergence/compression/destructive boundary
- Transform/conservative boundary

(3 x 1 = 3 marks)

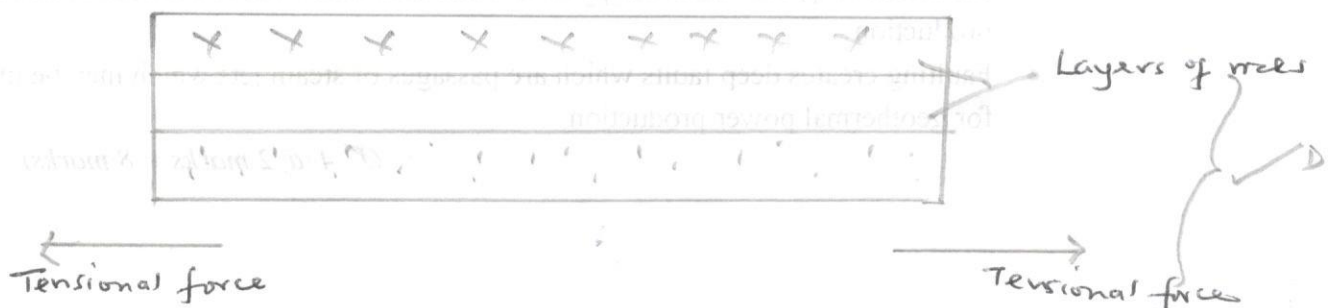
(ii) Give **two** reasons why it is important to study the plate tectonics theory

- it helps to explain the current positions of continents/~~theory of continental drift~~
- it enables one to understand the creation of structural landforms/~~it explains the destruction of structural landforms~~
- it enables one to understand how the earth maintains balance/isostasy
- it explains the causes of earthquakes/volcanicity

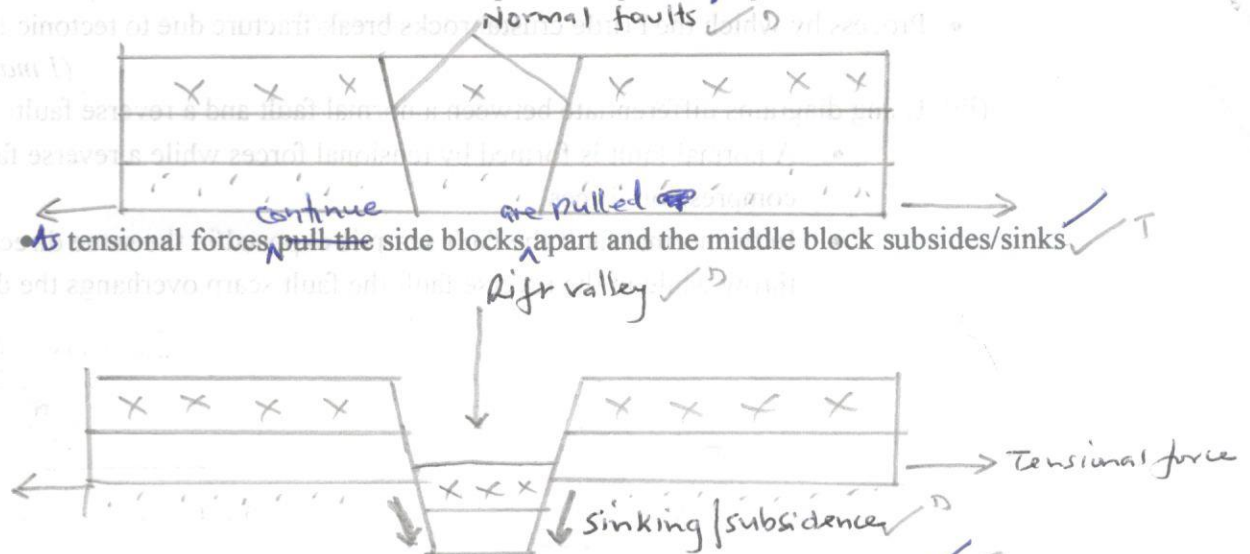
(2 x 1 = 2 marks)

d) With the aid of well labeled diagrams, describe how tensional forces can lead to the formation of a Rift Valley.

- Layers of rocks are subjected to tensional forces and lines of weakness develop



- continued tension leads to development of parallel/adjacent normal faults ✓



- \* the sunken middle part forms a depression known as the rift valley ✓

T-4  
D-4 max 3 } 7 (Text 4, Diagrams max 3-7 marks) \* must be mentioned to score max 4

e) Explain **four** ways in which faulting influences the human environment

- Faulting leads to formation of features that form beautiful scenery which attract tourists ✓
- Faulting leads to formation of rift valley lakes that are important fishing grounds/tourist attraction sites/mining sites or provide water for irrigation/industrial/domestic use ✓
- Faulting causes displacement of rocks which exposes minerals making them easy to mine ✓
- Mountains formed through faulting receive high rainfall and give rise to rivers that provide water for irrigation/industrial/domestic use/generation of HEP ✓
- Block Mountains (formed through faulting) lead to formation of relief rainfall on their windward side thus favour agriculture/forestry (in their windward side) ✓
- When faulting occurs across a ridge, it may provide a dip which could form a mountain pass where transport and communication lines can be constructed/fault blocks may hinder development of transport links ✓
- Subsidence of land as a result of faulting may lead to loss of life/destruction of property ✓
- Faulting may cause a river to change direction or disappear causing water shortage for the people downstream ✓
- Springs occurring at the foot of a fault scarp attract settlements ✓
- Rivers flowing over fault scarps form waterfalls which may be suitable sites for HEP production ✓
- Faulting creates deep faults which are passages of steam jets which may be utilized for geothermal power production ✓

4 @ 2 marks = 8 marks)



8. a) (i) What is the difference between weathering and mass wasting?

- Weathering is the breaking down and decomposition of rocks in situ/without movement while Mass wasting is the downward movement of weathered rock material on a slope under the influence of gravity.

(award double ticks for each correct, = 4 marks) 2 mks

(ii) Describe carbonation as a process of chemical weathering

- Rain water absorbs carbon dioxide to form a weak carbonic oxide.
- The rain falls on jointed limestone rocks. The weak carbonic acid falls in limestone rocks causing reaction on the surface.
- The percolating rain water reacts with limestone along the joints causing disintegration.
- The reaction forms calcium bicarbonate ( $\text{Ca}(\text{HCO}_3)_2$ ) which is soluble.

(5 mks) (4 x 1 = 4 marks)

(iii) Other than carbonation, list **four** other processes involved in chemical weathering

- Solution
- Oxidation
- Hydration
- Hydrolysis

(4 x 1 = 4 marks)

b) Describe **five** ways in which soil creep occurs.

- Due to temperature changes, soil particles expand and contract hence shift position down slope
- Moisture/rainwater causes soil to become wet and compact. On drying, the particles loosen and shift position down slope
- Removal of soil on the downhill side making soil on the upper slope to shift down slope
- Water/ moisture acts as lubricant to soil particles causing their movement down slope
- Ploughing on slopes where soil is turned in one direction only causes the soil particles to shift downwards
- Shaking of the ground by earthquakes/heavy trucks loosen the soil particles causing them to slide down slope
- Trampling by animal movement along the slope trigger soil particles to move down slope

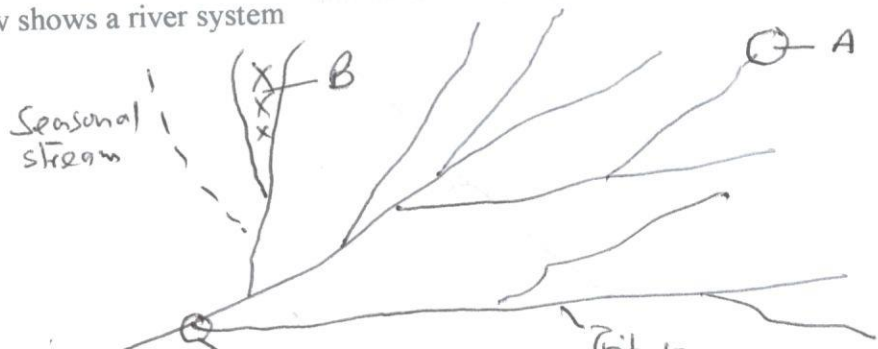
(5 x 2 = 10 marks)

c) List <sup>four</sup> ~~three~~ evidences of soil creep in an area

- Bent tree trunks/inclined telephone/fence poles
- Accumulated soil at the foot of a slope/behind obstacles
- Existence of bare rock/exposed upper slope
- Presence of ribbed/stepped pattern across the slope
- Presence of a slope retreat
- Presence of overhanging banks above roads/rivers

(4 x 1 = 4 marks)

9. a) The diagram below shows a river system



(i) Name the parts marked A, B and C

A - River source

B - Interfluvies

C - Confluence

(3 marks)

(ii) Identify two different types of river flow

- Quiet laminar flow
- Turbulent flow
- Helicoidally/corkscrew flow
- Plunge flow

Any 2 x 1 = 2 marks

b) Describe how a river erodes by the following processes:

(i) Attrition

- As rock materials are transported downstream, they constantly collide against each other
- The material gradually wear down/reduce in size

2 x 1 = (2 marks)

(ii) Hydraulic action

- Water hits the banks and is forced to enter cracks in the rocks
- Air in the cracks is compressed
- Compressed air creates pressure which widens the cracks
- As the water retreats, pressure is suddenly released making crack walls to collapse
- Repeated compression and widening of the cracks shatters the rocks
- The retreating water carries away the loose particles creating more room for shattering
- The force of the moving water and the eddying effect sweep away the loose material down the river channel

6 max 4  
(Any 4 @ 1 mark = 4 marks)

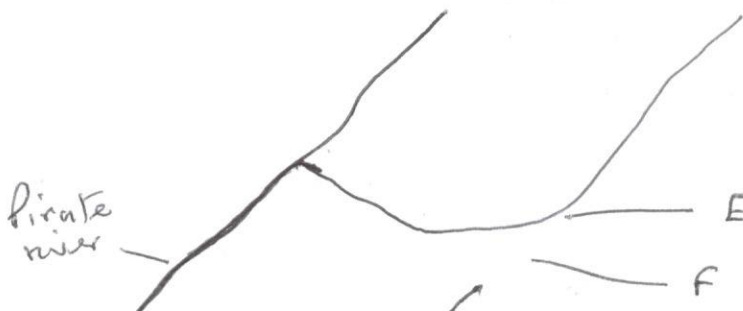
c) Describe the processes by which a river transports its load

- Suspension- the light and small particles are carried within the water current or while floating on the water
- Saltation/hydraulic lift- the fairly heavy particles are lifted and bounce over short distances by the water. They are carried in a series of hops and jumps
- Traction/rolling- the large and heavy particles are rolled/dragged along the river bed
- Solution- soluble materials are dissolved in water and carried away in solution

(mark for process and description 3 @ 2 marks = 6 marks)

3 } 6 marks

d) The diagram below illustrates river capture





- They have surface outlets through which excess salt deposits drain away
- Some have subterranean/underground outlets which drain the salts that accumulate on the lake bed
- ~~They have a regular inflow of fresh water from rivers which dilutes the salts to keep the water fresh~~
- ~~Some are found in areas of high rainfall which keeps the water fresh~~
- Some are situated in areas of low temperatures thus experience low rates of evaporation

(Any 3 @ 2mks = 6 marks)

c) Your class intends to carry out a field study of lakes

(i) What preparations would you make before going for the study

- Formulate objectives and hypotheses
- Carry out a reconnaissance/pre-visit
- Seek permission from the relevant authority
- Carry out literature review/read from secondary sources
- Prepare a route map
- Organize into groups
- Prepare a working schedule
- Make transport arrangements
- Prepare the necessary tools/equipment/stationery
- etc

(Any 4 x 1 = 4 marks)

(ii) State two methods you would use to record data during the study

- Photographing/filming/video taking
- Taking notes/writing notes
- Drawing/sketching
- Tape recording
- Filling tables/tabulating
- Tallying
- Filling in questionnaires
- etc

Any 2 x 1 = 2 marks)

(iii) Give five uses of lakes you are likely to find out

- Their water is used for irrigation
- They provide water for industrial/domestic use
- They are sources of minerals
- Lakes are harnessed to generate hydro-electric power
- Lakes provide waterways/water transport
- Lakes are tourist attractions/used for recreational activity
- Are sources of fish
- Lake shores are sources of sand used in the construction industry

(1<sup>st</sup> 5 @ 1 mark = 5 marks)

(i) Name the parts marked E, F, and G

E – Elbow of capture

F – Wind gap

G – Misfit /beheaded river/captured river

(3 marks)

(ii) Describe the process of river capture illustrated above

- Two rivers flow in adjacent valleys
- One of the rivers has more erosive power than the other
- The more powerful river erodes both vertically and laterally faster than the weaker one
- It thus flows at a lower level than the weaker river
- A tributary of the more powerful river erodes away the ridge between the two river valleys by headward erosion
- \*Eventually it encroaches into the valley of the weaker river diverting its water into the valley of the more powerful river

(\*must be mentioned to score 5 otherwise award max 4 (5 marks)

10. a) (i) What is a lake?

- an accumulation of water in a wide hollow or depression

(2 marks)

(ii) List **four external** land forming processes that can lead to formation of lakes

- Erosion by wind/ice/rivers
- Deposition by water/ice
- Mass movement/mass wasting
- Meteorite falling on the earth surface
- Weathering by solution in limestone areas
- ~~Human activity e.g. damming~~

(4 x 1 = 4 marks)

b) (i) Name **two** saline lakes found in the Rift Valley

- L. Natron
- L. Magadi
- L. Bogoria
- L. Elementaita

(2 x 1 mark = 2 marks)

(iii) Explain **three** factors that make some lakes in the Rift Valley have fresh water