



# MARANDA HIGH SCHOOL

Kenya Certificate of Secondary Education  
FORM 4 END-TERM 1 – 2022 EXAMINATIONS

312/1

GEOGRAPHY

Paper 1

June 2022

## MARKING SCHEME

### SECTION A

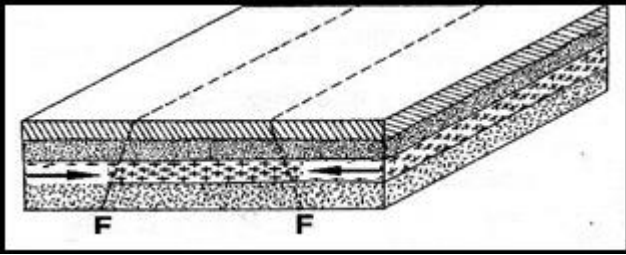
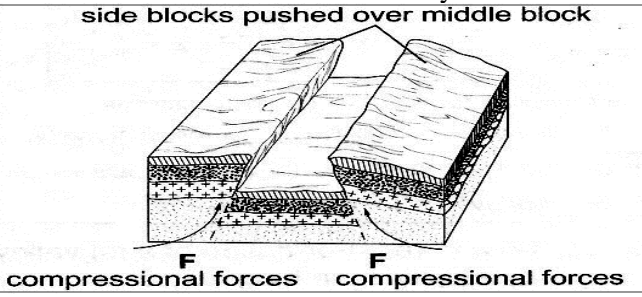
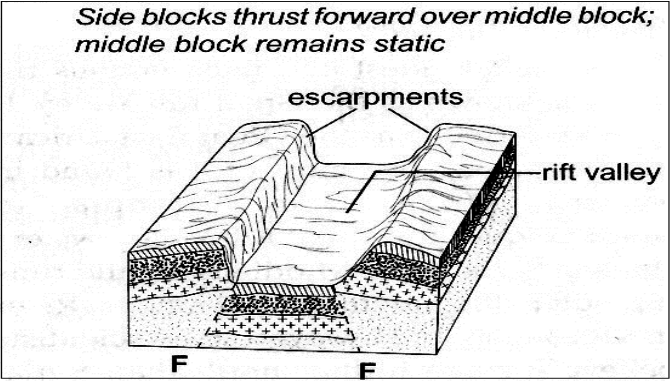
1. (a)	<p><b>What is a weather station?</b></p> <ul style="list-style-type: none"> <li>• a place that is set aside for the purpose of observing, measuring and recording weather elements.</li> </ul>	1×2=2 marks
(b)	<p><b>Give three factors that influence wind direction.</b></p> <ul style="list-style-type: none"> <li>• the pressure gradient</li> <li>• Coriolis force</li> <li>• centrifugal force</li> <li>• friction with the earth's surface</li> </ul>	3×1=3 marks
2. (a)	<p><b>Name two types of tectonic plate boundaries.</b></p> <ul style="list-style-type: none"> <li>• divergence/extension/constructive</li> <li>• convergence/compressional/destructive</li> <li>• transform/conservative</li> </ul>	2×1=2 marks
(b)	<p><b>Give three effects of the movement of tectonic plates.</b></p> <ul style="list-style-type: none"> <li>• they cause earthquakes</li> <li>• can lead to formation of fold mountains</li> <li>• can lead to formation of new oceanic crust</li> <li>• can lead to formation of submarine islands/volcanic islands</li> </ul>	3×1=3 marks
3.	<p><b>State four causes of the decline of the areas under forests in Kenya.</b></p> <ul style="list-style-type: none"> <li>• forests are destroyed by accidental or intended fires</li> <li>• pests attack planted forests making them to dry up</li> <li>• human activities/settlement/charcoal burning/logging have destroyed many forests</li> <li>• overexploitation depletes some tree species</li> <li>• prolonged droughts lead to degeneration of forests</li> <li>• government policy of degazetting some forests</li> </ul>	4×1=4 marks
4. (a)	<p><b>The diagram below shows a section of a river. Use it to answer the questions that follow.</b></p>	

	<b>Identify the stage of development of the section of the river.</b> <ul style="list-style-type: none"> <li>old/lower stage</li> </ul>	1×1= 1 mark
(b)	<b>A part from feature marked R, give two other features formed at this stage.</b> <ul style="list-style-type: none"> <li>meanders</li> <li>braided channel</li> <li>flood plain</li> <li>deltas</li> <li>bluffs</li> <li>deferred tributaries</li> </ul>	2×1=2 marks
(c)	<b>State three conditions necessary for the formation of the feature marked R.</b> <ul style="list-style-type: none"> <li>presence of pronounced meanders in the flood plain</li> <li>heavy load being carried by the river</li> <li>a reduction in the river gradient/energy/low velocity</li> <li>presence of obstacles in the river channel</li> <li>lateral erosion on the outer side of the river banks</li> <li>deposition on the inner side of the river banks</li> </ul>	
5. (a)	<b>Differentiate between an aquifer and a water table.</b> <ul style="list-style-type: none"> <li>an aquifer is a mass of permeable rock which can hold water in its air spaces and can allow it pass through while a water table is the level of ground water below which all available air spaces are saturated with water.</li> </ul>	1×2=2 marks
(b)	<b>Give three problems associated with artesian wells.</b> <ul style="list-style-type: none"> <li>saline water in the wells</li> <li>overexploitation of the wells</li> <li>pollution of ground water</li> <li>prolonged drought leading to the wells drying up</li> </ul>	3×1=3 marks

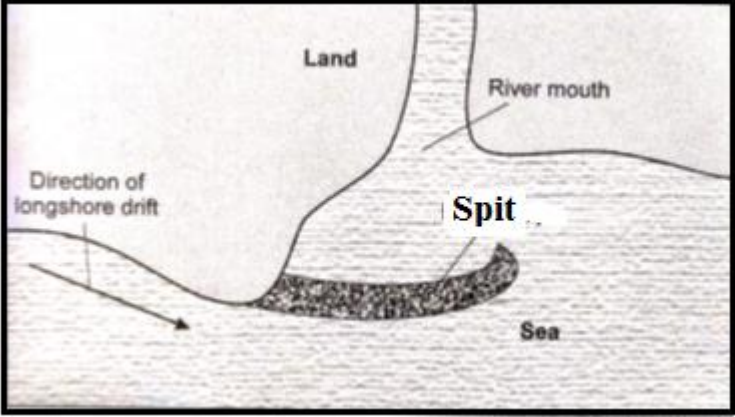
### SECTION B

6. (a)	<b>(i) Give the longitudinal extent of the area covered by the map.</b> <ul style="list-style-type: none"> <li>36°45'E to 37°00'E</li> </ul>	1×2=2 marks
	<b>(ii) Give the six figure grid reference of the trigonometric station at Nyeri Hill forest.</b> <ul style="list-style-type: none"> <li>665548</li> </ul>	1×2=2 marks
	<b>(iii) Calculate the area of Nyeri forest. Give your answer in square kilometres.</b> <ul style="list-style-type: none"> <li><math>2 + \frac{19}{2} = 11.5 \text{ km}^2</math></li> </ul>	1×2=2 marks
(b)	<b>(i) What is the bearing of The Ark Lodge from the trigonometric station 120 UT 16.</b> <ul style="list-style-type: none"> <li>317°±1° or N43°W</li> </ul>	1×2=2 marks
	<b>(ii) Identify three man-made features in grid square 7263.</b> <ul style="list-style-type: none"> <li>road D449</li> <li>other track/footpath</li> <li>settlement/houses</li> <li>Nderitu farm</li> </ul>	3×1=3 marks
	<b>(iii) Give three drainage features found in the area covered by the map.</b> <ul style="list-style-type: none"> <li>rivers</li> <li>dams/reservoirs</li> </ul>	

	<ul style="list-style-type: none"> <li>• water holes</li> <li>• water tank</li> <li>• ditch</li> </ul>	3×1=3 marks
(c)	<p><b>Describe the relief of the area covered by the map.</b></p> <ul style="list-style-type: none"> <li>• there are several river valleys</li> <li>• there is a hill in grid square 6963</li> <li>• north eastern and western area has gentle slopes</li> <li>• there are steep slopes in the north western and southern parts</li> <li>• there are ridges in the south western part</li> <li>• the highest point is 2820m and lowest point is 1680m</li> <li>• the area generally slopes downwards from west to east</li> </ul>	5×1=5 marks
(d)	<p><b>Citing evidence from the map, identify three social services offered in Nyeri Township.</b></p> <ul style="list-style-type: none"> <li>• administration services – PC/DC/Admin offices</li> <li>• religion – church</li> <li>• recreation – golf course/club/show ground/hotel</li> <li>• rehabilitation – prison</li> <li>• education – school</li> <li>• security – police station</li> </ul>	3×2=6 marks
7. (a)	<p><b>(i) What is a mineral?</b></p> <ul style="list-style-type: none"> <li>• a mineral is an inorganic substance with a definite chemical composition found at or beneath the surface of the earth.</li> </ul> <p><b>(ii) Describe the following characteristics of minerals:</b></p> <ul style="list-style-type: none"> <li>• <b>Lustre</b> - minerals differ in their brightness depending on the nature of their reflective surfaces (dull/shiny). 1×2=2 marks</li> <li>• <b>Colour</b> – different minerals display different colours 1×2=2 marks</li> <li>• <b>Cleavage</b> – minerals have patterns in which they split/divide/break into thin layers or along layers or shapes 1×2=2 marks</li> </ul>	1×2=2 marks 1×2=2 marks 1×2=2 marks
(b)	<p><b>Describe three ways in which igneous rocks are formed.</b></p> <ul style="list-style-type: none"> <li>• <b>mechanically formed sedimentary rocks</b>; rock fragments are transported by wind/water/ice are deposited in layers. Over a long period they are compacted in hard rocks.</li> <li>• <b>organically formed sedimentary rocks</b>; remains of plants or animals are deposited in layers. Over long period of time the remains are compacted into hard rocks</li> <li>• <b>chemically formed sedimentary rocks</b>; dissolved minerals are transported into water bodies. They are then precipitated/evaporated over time. Precipitates or evaporates are compacted to form hard rocks.</li> </ul>	3×3=9 marks
(c)	<p><b>Explain four significance of rocks to the economy of Kenya.</b></p> <ul style="list-style-type: none"> <li>• some rocks form unique features that attract tourists earning the country foreign exchange/income</li> <li>• some sedimentary rocks contains fossil fuels which are sources of energy for domestic/industrial use e.g. coal</li> <li>• some rocks act as storage for ground water which can exploited for domestic/industrial/agriculture</li> <li>• some rocks e.g. phonolites are exploited for building ad construction</li> <li>• rocks weather to form fertile soils that support crop farming</li> <li>• some rocks are ores with valuable minerals that are exploited and sold to generate income</li> </ul>	4×2=8 marks

<p>8. (a)</p>	<p><b>(i) State three causes of faulting.</b></p> <ul style="list-style-type: none"> <li>• earth movements causing tension within rocks</li> <li>• earth movements causing compression within rocks</li> <li>• faulting can occur when rocks shear</li> <li>• vertical movement in the rocks cause rocks to fracture</li> </ul> <p><b>(ii) Differentiate between a normal fault and a reverse fault.</b></p> <ul style="list-style-type: none"> <li>• a normal fault is caused by tensional forces while reverse fault is caused by compressional forces</li> <li>• in a normal fault, the upthrow moves away from the downthrow while in a reverse fault, the upthrow rides over the downthrow.</li> </ul>	<p>3×1=3 marks</p> <p>2×2=4 marks</p>
<p>(b)</p>	<p><b>(i) A part from rift valley, give three other relief features formed due to faulting.</b></p> <ul style="list-style-type: none"> <li>• tilt block</li> <li>• escarpment/scarp slope</li> <li>• block mountain/horst</li> <li>• fault steps</li> </ul>	<p>3×1=3 marks</p>
	<p><b>(ii) With the aid of diagrams, describe how compressional forces can lead to formation of a rift valley.</b></p> <ul style="list-style-type: none"> <li>• When layers of crustal rocks are subjected to compressional forces, lines of weakness occur and forms adjacent reverse faults</li> </ul>  <ul style="list-style-type: none"> <li>• Continued compression pushes out/thrusts the outer blocks over the central/middle block to form the floor of the rift valley.</li> </ul>  <ul style="list-style-type: none"> <li>• The steep fault scarps on either sides of the outer blocks are further worn out by denudation (erosion, mass wasting, and transportation) to form gentle slopes.</li> </ul>  <p><i>Text – 5 marks    Diagrams – 3 marks</i></p>	

<p>(c)</p>	<p><b>Students from your class are planning to carry out a field study on an area affected by faulting.</b></p> <p><b>(i) State four reasons why it is important to have a pre-visit to the area.</b></p> <ul style="list-style-type: none"> <li>• to draw route map</li> <li>• prepare a working schedule</li> <li>• identify relevant tools/equipment for the study</li> <li>• identify suitable methods of collecting data</li> <li>• seek permission from the authorities at the area of study</li> <li>• prepare budget for the study</li> </ul> <p><b>(ii) Give three reasons why it would be inappropriate to use observation to collect data during the field study.</b></p> <ul style="list-style-type: none"> <li>• expensive to travel long distances</li> <li>• time consuming</li> <li>• limited to primary sources</li> <li>• only suitable to the sighted people</li> </ul>	<p>4×1=4 marks</p> <p>3×1=3 marks</p>
<p>9. (a)</p>	<p><b>(i) What are ocean tides?</b></p> <ul style="list-style-type: none"> <li>• ocean tides are periodic rise and fall in the level of ocean waters as a result of the gravitational attraction of the sun and the moon.</li> </ul> <p><b>(ii) Name two ocean currents along the western coast of Africa.</b></p> <ul style="list-style-type: none"> <li>• Benguela</li> <li>• Guinea</li> <li>• Canary</li> </ul>	<p>1×2=2 marks</p> <p>2×1=2 marks</p>
<p>(b)</p>	<p><b>State three factors that determine the rate of coastal erosion.</b></p> <ul style="list-style-type: none"> <li>• duration of exposure of coast to wave erosion</li> <li>• degree of exposure of the coast to wave erosion</li> <li>• nature of materials transported by waves</li> <li>• structure/nature of the coastal rocks</li> <li>• nature/strength of the waves</li> </ul>	<p>3×1=3 marks</p>
<p>(c)</p>	<p><b>With the aid of labeled diagrams, describe the formation of the following coastal features:</b></p> <p><b>(i) Fringing reef</b></p> <ul style="list-style-type: none"> <li>• This is a platform of coral which forms when coral polyps start building a reef near the shore.</li> <li>• The reef extends seawards where the building is faster because of more food and the water is clearer.</li> <li>• As the reef builds seawards, it encloses a shallow lagoon with the coast.</li> </ul> <div data-bbox="349 1386 1323 1711" style="text-align: center;"> </div> <p style="text-align: center;"><i>Text – 3 marks Diagram – 2 marks</i></p>	
	<p><b>(ii) Spit</b></p> <ul style="list-style-type: none"> <li>• The movement of materials by the longshore drift is halted by a headland and the materials piled up/deposited in the sea/ocean water.</li> <li>• This continues until they bulge out with the accumulation growing towards the sea</li> </ul>	

	 <p style="text-align: center;"><i>Text – 3 marks Diagram – 2 marks</i></p>	
<p>(d)</p>	<p><b>Explain the significance of oceans to human activities.</b></p> <ul style="list-style-type: none"> <li>• Presence of oceans modifies climatic conditions of an area through land and sea breezes.</li> <li>• Oceans provide rich grounds for subsistence and commercial fishing.</li> <li>• Ocean tides and waves can be harnessed to produce tidal power.</li> <li>• Oceans are natural habitat for marine life/ Biodiversity conservation.</li> <li>• Provides cheap free water ways to transport goods and services across continents.</li> <li>• Oceans provide sites for a variety of recreational activities e.g. water skiing, cruising sport fishing and tourism.</li> <li>• Oceans provide grounds for navy/ military activities</li> <li>• Ocean water can be distilled to provide fresh water</li> <li>• Ocean water provide grounds for scientific/ educational research</li> </ul>	<p>4×2=8 marks</p>
<p>10. (a)</p>	<p><b>Name three components of soil.</b></p> <ul style="list-style-type: none"> <li>• soil air</li> <li>• soil water/moisture</li> <li>• soil organic matter/humus</li> <li>• soil inorganic matter/minerals</li> </ul>	<p>3×1=3 marks</p>
<p>(b)</p>	<p><b>Explain how the following factors influence the formation of soil:</b></p> <p><b>(i) Climate</b></p> <ul style="list-style-type: none"> <li>• Areas with heavy precipitation (rainfall) are heavily leached and weathered compared to drier areas, they therefore have deep soils</li> <li>• High temperatures promote rapid faster weathering and chemical changes in the soil/cold temperatures slow these processes</li> <li>• Winds act as agents of soil erosion, blowing fine sand and dust and depositing them far away forming rich fertile soils</li> </ul>	<p>2×2=4 marks</p>
	<p><b>(ii) Topography</b></p> <ul style="list-style-type: none"> <li>• valley bottoms/gentle slopes encourage formation of deep and fertile soils due to deposition/accumulation of materials</li> <li>• steep slopes encourages erosion of top layer of soil slowing down formation of soil/have thin soils</li> <li>• flat areas/flood plains are saturated with water slowing down soil formation</li> <li>• slope influence the arrangement of soil.</li> </ul>	<p>2×2=4 marks</p>
<p>(c)</p>	<p><b>Describe how laterization occurs.</b></p> <ul style="list-style-type: none"> <li>• during wet season, mineral salts in the top layer of the soil dissolve in the rain water</li> <li>• dissolved minerals percolate or seep downwards from the top soil to the sub-soil</li> <li>• the dissolved minerals are further moved downwards to lower layer</li> <li>• Insoluble minerals such as iron and aluminium accumulate on the top layer to form a crust of laterites hence laterization.</li> </ul>	<p>6×1=6 marks</p>

<b>(d)</b>	<b>Explain four ways in which human activities contribute to soil erosion.</b> <ul style="list-style-type: none"><li>• cultivation on steep slopes increases the rate of soil erosion</li><li>• shifting cultivation/bush fallowing may leave land unprotected against agents of erosion</li><li>• cutting down trees exposes the soil to agents of erosion</li><li>• continuous ploughing weakens the soil structure, making it easy for the agents of erosion to carry it away.</li><li>• overgrazing leads to the removal of the protective cover of grass exposing the soil to agents of erosion</li><li>• overstocking leads to many animals trampling on the topsoil, loosening the particles and making it easy for them to be carried away.</li></ul>	4×2=8 marks
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