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ENVIRONMENTAL MANAGEMENT

0680/22

Paper 2 Management in Context

February/March 2024

1 hour 45 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

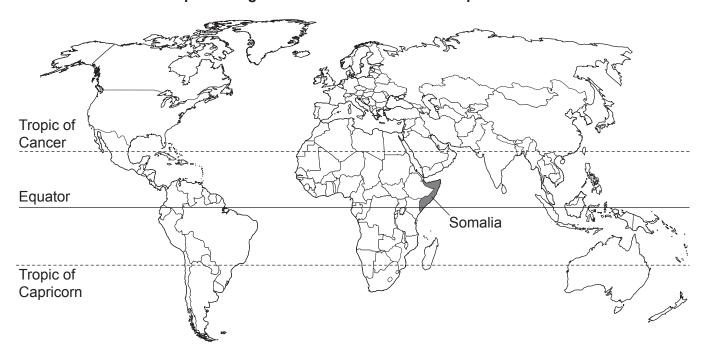
- Answer all questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do not write on any bar codes.
- You may use a calculator.
- You should show all your working and use appropriate units.

INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [].

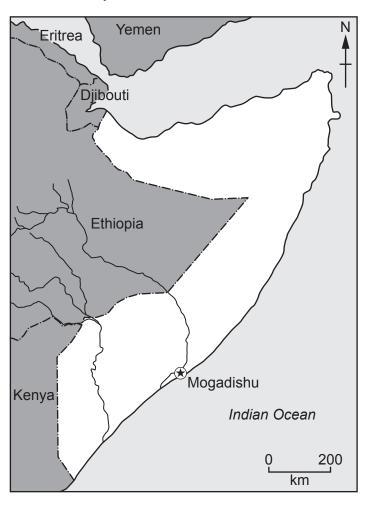
This document has 20 pages. Any blank pages are indicated.

World map showing the location of the Federal Republic of Somalia



Map of the Federal Republic of Somalia

Key★ capital city ----- international boundary



Area of Somalia: 637657 km²

Population: 16790432 (in 2022)

Children per woman: 5.98

Life expectancy: 55.3 years

Currency: Somali shilling (584 SOS = 1 USD)

Language: Somali and Arabic

Climate of Somalia: hot all year-round, two dry seasons and two rainy seasons

Terrain of Somalia: mainly flat, with hills in the north

Main exports of Somalia: gold, livestock, fish and bananas

The Federal Republic of Somalia, known as Somalia, is a country in Eastern Africa. Somalia has many reserves of minerals and oil that have not been extracted. The country experiences frequent droughts and flooding. 60% of Somalia's population is under 25. Education and jobs are limited for many people.

1 The map shows the distribution of different types of land and land use in Somalia.

Key	
very large pastoral farms and grassland	
intensive agriculture	
desert	
forest	
	Mogadishu
	N
	+
	y

(a)	(i)	Describe the distribution of land and land use in Somalia.
		[3]

(ii)	Suggest two reasons for the distribution of intensive agriculture in Somalia.	
	1	
	2	
		2]
(iii)	Intensive agriculture is often commercial.	
	State what is meant by commercial agriculture.	
	[1]
(b) The	photograph shows a <i>Spodoptera</i> moth.	



Spodoptera moths eat plants, including crops such as maize. Lizards eat *Spodoptera* moths. Eagles eat lizards. Wolves eat eagles.

(i)	Construct the food chain containing three trophic levels which includes Spodoptera mot	hs.
		[2]

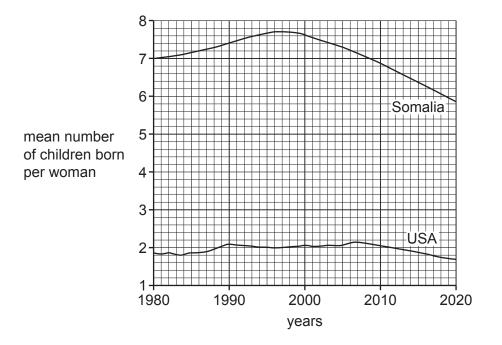
(ii)	Spodoptera moths are primary consumers.
	State what is meant by primary consumer.
	[1]
(iii)	Farmers in Somalia want to control the population of <i>Spodoptera</i> moths. A scientist has found a fungus that kills <i>Spodoptera</i> moths. The fungus does not exist naturally in Somalia.
	Suggest benefits and limitations of releasing a fungus into Somalia to control the population of <i>Spodoptera</i> moths.
	benefits
	limitations
	[3]
(iv)	A farmer notices that some individual plants in the maize crop are not affected by <i>Spodoptera</i> moths.
	Describe how these plants can be used to produce a maize crop that is resistant to Spodoptera moths.
	[4]
	[]

(c) (i) A scientist investigates the population of *Spodoptera* moths in a 1000 m² field of maize using a random sampling technique.

Describe how the scientist:

	 uses random sampling uses a quadrat records the data collected obtains an estimate for the population of <i>Spodoptera</i> moths in the field. 	
(ii)	Estimating the population of <i>Spodoptera</i> moths using a quadrat has limitations.	[4]
	Suggest two limitations of sampling <i>Spodoptera</i> moths using a quadrat.	
	1	
	2	
(iii)	Suggest one other method for estimating the population of <i>Spodoptera</i> moths.	[2]
		[1]
	[Total:	231

2 The graph shows the mean number of children born per woman in Somalia and the USA from 1980 to 2020.



aj	(1)	Compare the Overain trends shown in the graph.
		[2]
	(ii)	Determine the year with the maximum mean number of children born per woman in Somalia.
		year = [1]
	(iii)	Suggest three reasons why the mean number of children born per woman is decreasing in many countries.
		1
		2
		3

[3]

(b) In 2022, it was estimated that 2.8 million people in Somalia could not meet their daily food

requirements. One strategy to prevent malnutrition is to provide school children with me Charities, such as the World Food Programme, provide the food for the meals.	als.
Suggest benefits and limitations of this strategy for preventing malnutrition.	
benefits	
limitations	
	••••
	 [4]

(c) The government of Somalia wants to find out if there is a difference in access to safe drinking water for people in rural areas compared to urban areas.

A questionnaire was used to survey 200 men.

question	response
1.	
2. Do you have access to safe drinking water?	
3. How far do you have to travel to access safe drinking water?	

(i)	The questionnaire is incomplete and will not allow a conclusion to be made.
	Suggest a suitable question that will allow a conclusion to be made.
	[1
(ii)	Suggest two ways to improve the survey.
	1
	2
	ro
	[2

(d) The photograph shows a person collecting water from a shallow well dug in a dry river.



(1)	State the source of water that is accessed by wells.	
		[1]
(ii)	The river is dry because of a drought in Somalia.	
	Suggest two other reasons why the river is dry.	
	1	
	2	
		 [2]
(iii)	Water collected from shallow wells is an important source of fresh water in Somalia.	
	Describe two limitations of collecting fresh water using the method shown the photograph.	in
	1	
	2	
		 [2]

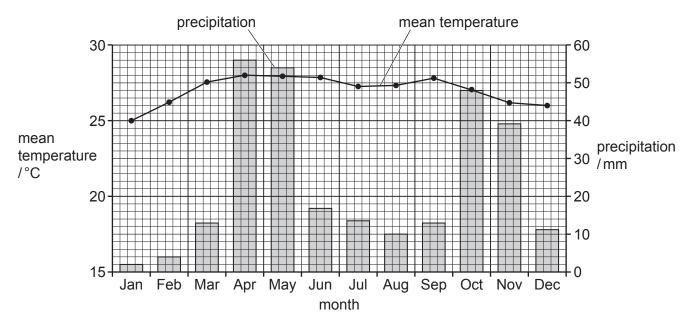
(e) Malaria is a disease that kills more than 2000 people a year in Somalia.

Malaria is spread by mosquitoes infected with the malaria parasite. Mosquitoes are the vector for spreading malaria.

State **two** strategies of vector control for malaria.

1	
2	
_	
	[2]

(f) The graph shows climate data for Somalia.



(i) Identify the month with the lowest precipitation.

(ii) Identify the 3-month period with the greatest precipitation.

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(iii) Calculate the range of the mean monthly temperature.



	(iv)	Identify the month when drought conditions are most likely.	
		Explain your answer.	
		month	
		explanation	
			[2]
	(v)	State two strategies for managing the impacts of drought.	
		1	
		2	 [2]
(g)	Dro	ughts are a cause of soil erosion.	
State three strategies for reducing soil erosion.			
1			
			[3]

[Total: 30]

The photograph shows a uranium mine. Uranium is a metal.



(a)	(i)	(i) State the name of the type of mining shown in the photograph.		
		[1]		
(ii) Somalia has deposits of uranium. Mining companies want to extract the ura				
		State three factors that the company must consider before deciding to extract the uranium.		
		1		
		2		
		3		
		[3]		

(iii)	Some people are concerned about uranium mining in Somalia.			
	One local person says:			
	I live in a village near the mine.			
	How will the mine affect me?			
	Suggest how the mine will affect people living in a nearby village.			
	[4]			
(iv)	The mining company agrees to restore the landscape once the extraction of uranium is finished.			
	Describe two strategies to restore the landscape.			
	1			
	2			
	[4]			

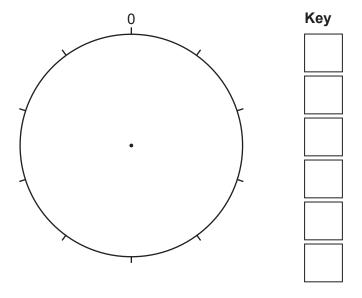
(b) Uranium is a nuclear fuel and can be used to generate electricity. In Somalia extracted uranium is exported.					city. In Somalia all of the
	(i)	Suggest thr generate ele	-	lia exports all of its uranio	um and does not use it to
		1			
					[3]
	(ii)	A report stat	ed that in 2022, 36% of	people in Somalia had ac	
		Calculate the	e number of people in S	omalia in 2022 that did no	t have access to electricity.
			number	of people =	[2]
(c) The table shows the percentage of total electricity generated globally in 2019 from different energy resources.			bally in 2019 from severa		
			energy resource	percentage of total electricity generated	

energy resource	percentage of total electricity generated
fossil fuels	70
wind	8
solar	4
hydro-electric	8
nuclear	9
other	

(i) Calculate the percentage of total electricity generated by other energy resources.

percentage =[1]

(ii) Complete the pie chart to show the percentage of total electricity generated globally in 2019 from the different energy resources listed in the table.



[4]

This table shows the percentage of total electricity generated in Somalia in 2019 from (iii) the different energy resources.

energy resource	percentage of total electricity generated
fossil fuels	92
wind	2
solar	3
hydro-electric	3

Calculate the difference in the percentage of total electricity generated by non-renewable resources in Somalia compared to the global percentage generated by non-renewable resources.

difference in percentage =[1]

(d) The photograph shows a solar power station near Mogadishu. The power station opened in 2020.



(i)	State why this solar power station cannot generate electricity 24-hours per day.	
(ii)	Suggest benefits of this solar power station for the people in Mogadishu.	
		[3]

[Total: 27]

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