

Cambridge IGCSE™

ENVIRONMENTAL MANAGEMENT**0680/21**

Paper 2 Management in Context

May/June 2026

MARK SCHEME

Maximum Mark: 80

Published

This mark scheme contains the instructions and marking guidance that our examiners used to mark candidate responses for this component.

Before they start marking, examiners complete a standardisation process. They review a range of candidate responses and discuss the mark scheme in detail to agree which answers can and cannot be accepted. Examiners award marks where it is clear that candidate responses have met the requirements of the mark scheme. These requirements may vary between different components or different versions of the same component, depending on the exact requirements of the question and the candidate responses seen during the standardisation process.

Sometimes, our mark schemes may allow marks to be awarded to responses which contain elements that are factually incorrect or for content not covered by the syllabus. We do this in response to the demands of a specific question to support candidates and make sure that our assessments are fair. However, these allowances should not be used as a guide for teaching and learning.

We cannot discuss the mark scheme with schools, and we recommend that schools read the mark scheme together with the assessment material and the Principal Examiner Report for Teachers.

This document consists of **26** printed pages.

General marking principles

All examiners must apply these marking principles when marking candidate responses.

1	Examiners must award marks for each response in line with: - the specific content defined in the mark scheme - the specific skills defined in the mark scheme or in the level descriptions - the standard of response required as exemplified by the standardisation scripts.
2	Examiners must award whole marks (not half marks, or other fractions).
3	Examiners must award marks positively . This means that: - marks are not deducted for errors or omissions - marks are awarded for correct/valid answers as defined in the mark scheme and also for other valid answers which go beyond the scope of the syllabus and mark scheme referring to your team leader as appropriate - the quality of spelling, punctuation and grammar are judged only when the mark scheme indicates that these features are specifically assessed in the question. However, the meaning of all responses must be unambiguous.
4	Examiners must consistently apply the requirements of the mark scheme and any rules for what to do when candidates have not followed instructions correctly.
5	Examiners must use the full range of marks defined in the mark scheme, unless limited by the quality of the candidate responses seen.
6	Examiners must award marks according to the mark scheme and must not award marks with grade thresholds or grade descriptions in mind.

Science-Specific Marking Principles

1	Examiners should consider the context and scientific use of any keywords when awarding marks. Although keywords may be present, marks should not be awarded if the keywords are used incorrectly.
2	The examiner should not choose between contradictory statements given in the same question part, and credit should not be awarded for any correct statement that is contradicted within the same question part. Wrong science that is irrelevant to the question should be ignored.
3	Although spellings do not have to be correct, spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. ethane / ethene, glucagon / glycogen, refraction / reflection).
4	The error carried forward (ecf) principle should be applied, where appropriate. If an incorrect answer is subsequently used in a scientifically correct way, the candidate should be awarded these subsequent marking points. Further guidance will be included in the mark scheme where necessary and any exceptions to this general principle will be noted.
5	<u>'List rule' guidance</u> For questions that require <i>n</i> responses (e.g. State two reasons ...): • The response should be read as continuous prose, even when numbered answer spaces are provided. • Any response marked <i>ignore</i> in the mark scheme should not count towards <i>n</i>. • Incorrect responses should not be awarded credit but will still count towards <i>n</i>. • Read the entire response to check for any responses that contradict those that would otherwise be credited. Credit should not be awarded for any responses that are contradicted within the rest of the response. Where two responses contradict one another, this should be treated as a single incorrect response. • Non-contradictory responses after the first <i>n</i> responses may be ignored even if they include incorrect science.

6 Calculation specific guidance

Correct answers to calculations should be given full credit even if there is no working or incorrect working, **unless** the question states 'show your working'.

For questions in which the number of significant figures required is not stated, credit should be awarded for correct answers when rounded by the examiner to the number of significant figures given in the mark scheme. This may not apply to measured values.

For answers given in standard form (e.g. $a \times 10^n$) in which the convention of restricting the value of the coefficient (a) to a value between 1 and 10 is not followed, credit may still be awarded if the answer can be converted to the answer given in the mark scheme.

Unless a separate mark is given for a unit, a missing or incorrect unit will normally mean that the final calculation mark is not awarded. Exceptions to this general principle will be noted in the mark scheme.

7 Guidance for chemical equations

Multiples / fractions of coefficients used in chemical equations are acceptable unless stated otherwise in the mark scheme.

State symbols given in an equation should be ignored unless asked for in the question or stated otherwise in the mark scheme.

Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning
	correct point or mark awarded
	incorrect point or mark not awarded
	information missing or insufficient for credit
	incorrect or insufficient point ignored while marking the rest of the response
	contradiction in response, mark not awarded
	benefit of the doubt given
	error carried forward applied
	First answer
	response has not answered question
	power of ten error

Annotation	Meaning
	point has been noted, but no credit has been given or blank page seen
	response is too vague or there is insufficient detail in response
	repetition in response
	to show a correct point but where the number of points does not relate to the number of marks i.e. 3 correct= 2 marks
	correct awarding one mark from marking point or marking group 1. similar numbered ticks are used for marking point or marking groups 2, 3, 4 etc.
Highlighter	Highlight

Mark Scheme Abbreviations

Abbreviation	Meaning
;	separates marking points
/	alternative responses for the same marking point
R	reject the response
A	accept the response
I	ignore the response
ecf	error carried forward
AVP	any valid point
ora	or reverse argument
AW	alternative wording
<u>underline</u>	actual word given must be used by candidate (grammatical variants excepted)
()	the word / phrase in brackets is not required but sets the context
max	indicates the maximum number of marks that can be given
M1, M2....	marking point reference

Question	Answer	Marks	Guidance
1(a)(i)	500 km ;	1	
1(a)(ii)	<i>any one from:</i> M1 infrastructure or stated example e.g. transport links / has a port; M2 education ; M3 healthcare / hospitals ; M4 employment or job opportunities or stated example e.g. jobs in tourism ; M5 access to fisheries / access to food (source) AND from sea ;	1	ignore on the coast / next to the sea / next to Atlantic ocean / quality of life / good climate ignore poverty ignore used to be the capital city / centre of economy / exporting unqualified M3 accept lack of access to birth control
1(a)(iii)	M1 256.6 ; M2 unit: people / km² people / square km people / square kilometre ;	2	M1 accept 257 M1 accept correct rounding of 256.5579236 M1 accept rounding up or down from 5 e.g. 256.5 M2 accept population or persons for people M2 accept p or popn or pp or pop for people M2 accept per for the solidus / e.g. people per km² M2 reject million per km² / people M2 accept capitals for KM M2 accept people km⁻²

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Question	Answer	Marks	Guidance
1(b)(i)	M1 largest first starting at 'noon' going clockwise or anticlockwise ; M2 sectors in clockwise rank order from noon ; M3 correct plotting with straight lines used for sectors ; M4 key completed and matches sector shading ;	4	guidance: use the protractor tool on RM for 0–14 and 65 + only guidance: annotate vertically M2 guidance: rank order: 15–64 > 0–14 > 65+ M4 ignore % in key e.g. 43, 54, 3 M4 accept numbers or letters e.g. 1, 2, 3, A, B, C M4 guidance (1): rank order is not needed in the key – we are looking for the sector shading to match the key boxes. If the plotting is incorrect, we then look at the proportions (see M4 guidance 2). M4 guidance (2): plotting incorrect but sectors in correct proportions e.g. 15–64 > 0–14 > 65+ by eye and key shading matches sectors = M4
1(b)(ii)	A ;	1	accept 'A' circled or identified on pyramid if answer line is BLANK but answer line takes precedent

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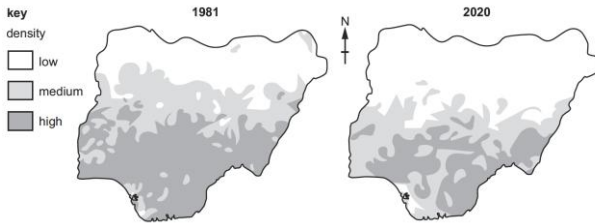
Question	Answer	Marks	Guidance
1(b)(iii)	<i>any three from:</i> M1 increase in working population / more working age people ; M2 change in jobs or change in number of a stated job e.g. change in number of jobs in construction ; M3 increase in young dependents ; M4 (need) more schools / insufficient school places ; M5 (need) more hospitals or healthcare ; M6 (need) more homes / increase in house or land prices ; M7 (need) more infrastructure / stated example e.g. more waste disposal facilities needed ; M8 increase demand or increase in cost for food or water ; M9 increase demand or increase in cost of energy ; M10 more tax revenue ;	3	ignore generation of wealth / impact economy ignore change dependency ratio / quoted age ranges / more babies ignore poverty or wealth unqualified ignore resources unqualified ignore overcrowding / increase in population density M2 accept more or less unemployment / more labour M3 ignore increase in elderly dependents / reference to elderly people M3 accept more young dependents described e.g. more young people need looking after / young people do not contribute to economy M4 ignore education unqualified M5 accept need more public services M4 M5 M6 M7 M8 M9 accept idea of lack of xxx e.g. lack of schools / lack of hospitals / lack of food / lack of homes M10 ignore pensions M10 ignore GDP / foreign exchange unqualified M10 accept more non-tax payers

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Question	Answer	Marks	Guidance
1(b)(iv)	<i>any three from:</i> M1 lack of education on or accessibility to, family planning / contraceptives ; M2 high infant mortality ; M3 traditional / cultural, reasons ; M4 government / pronatalist, policy ; M5 limited opportunities or jobs for women / limited education (for all) ;	3	ignore irrelevant responses ignore economic reasons M1 guidance: education on contraceptives is not the same as general education M2 accept poor healthcare M3 accept religious reasons / early marriage / have children to work / need for a workforce / have children to look after parents when they are older M4 accept there are no antinatalist policies
1(c)(i)	2012 ;	1	
1(c)(ii)	<i>any one from:</i> M1 fluctuates / data goes up and down ; M2 only two large values / peaks in data ; M3 no obvious pattern / natural hazards or data are random or unpredictable ; M4 some numbers too small to be seen on the scale used / no data recorded for some years / missing or gaps in data;	1	ignore anomalies / outliers / not representative / reliable / accurate / precision / validity / mean ignore sample size M3 accept data not consistent / data shows variation or scattered

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Question	Answer	Marks	Guidance
1(c)(iii)	<i>any three from:</i> M1 drought ; M2 flooding / heavy rains ; M3 cyclones / hurricanes ; M4 wild fires ; M5 extreme heat / heatwaves ; M6 mass land movement / landslides / mudslides ; M7 disease / pandemics / stated example e.g. COVID 19 ;	3	apply list rule ignore tectonic events e.g. earthquakes, tsunamis, volcanic eruptions ignore global warming / climate change ignore crop failure ignore extreme weather unqualified reject acid rain reject ozone hole reject non-natural hazards e.g. war M2 accept storm surges (this gets M2 only and is not enough for M3 storms) M3 accept storms / tornado / monsoons / typhoon M3 accept La Nina / El Nino M4 accept forest fires

Question	Answer	Marks	Guidance
2(a)(i)	<i>any two from:</i> M1 (overall) increased ; M2 to south / on south coast / in north or north-east ;	2	ignore refs to medium or high density ignore up down left right ignore descriptions of low-density vegetation e.g. less trees M1 accept there is more (in 2020) M1 accept changed from 30% to 50% M2 accept extended or spread to middle or interior (of country) 
2(a)(ii)	<i>any three from:</i> M1 stated example of change in climate e.g. temperature increase or decrease / drought / flooding ; M2 decreased soil fertility / (increased) soil erosion ; M3 increased demand for trees / forests cleared / deforestation / more logging ; M4 mining / mineral extraction ; M5 increased animal grazing / overgrazing ; M6 urbanisation or stated example e.g. (new) cities / infrastructure or houses or roads ; M7 natural disaster or stated example e.g. wildfires ; M8 (plant) disease / invasive species / pests ;	3	ignore habitat / biodiversity / food web or chain ignore increase in population ignore pollution / water pollution M1 ignore global warming / greenhouse effect / climate change unqualified M1 ignore weather changes unqualified M1 guidance: response needs to be comparative i.e. hotter rather than hot (weather) M1 accept hotter / colder / less or more rainfall / drier / wetter M2 accept desertification / soil erosion described M3 accept stated use for wood e.g. paper / fuel M5 accept cleared for, agriculture / farming / cleared for growing crops or cultivation / overcultivation

Question	Answer	Marks	Guidance
2(a)(iii)	the variety of <u>species</u> or the different <u>species</u> AND within a, habitat / ecosystem / area ;	1	ignore a lot of / many / multiple species accept number / different / type, of species in an area accept genes for species ignore environment accept biome to mean ecosystem
2(b)(i)	<i>any one from:</i> M1 difficult to see / difficult to count when dark ; M2 move around ; M3 large areas of forest ; M4 insufficient scientists to search for them ;	1	ignore active at night / only appear at night / nocturnal / ignore small M1 accept elusive / camouflaged / cannot be seen / not easy to find / they hide M3 accept dense or inaccessible forest or area / remote area
2(b)(ii)	M1 method of dividing up the forest e.g. grid / coordinates / GPS ; M2 stated method of random number selection e.g. random number generator ;	2	M1 ignore map unqualified M1 ignore quadrat unqualified without reference to equal size M1 accept divide into equal sized quadrats / divide the forest into equal sized areas or numbered equal sized areas using a map or equal sections M2 CON references to systematic sampling M2 ignore randomly select numbers / use randomised numbers / use calculator unqualified M2 accept use random number generator / roll dice / pick squares out of a hat / use AI to randomly pick

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Question	Answer	Marks	Guidance
2(b)(iii)	<i>any one from:</i> M1 repeat (the investigation) / description of repeat e.g. carry out at different season ; M2 increase the number of sampling sites / sample at different sites ;	1	ignore use another method or stated method / mark recapture / pitfall traps / transects / quadrats / beating tray ignore calculate mean / identify outliers M2 accept sample in different place or areas
2(c)(i)	<i>any two from:</i> M1 educate (people about them) / increase awareness ; M2 idea of encourages governments (to pass laws) to protect pangolins or habitat ; M3 idea of fewer pangolins hunted / discourages poaching ; M4 raises money to protect or research pangolins ;	2	M1 ignore copying of question info e.g. publish latest information M1 accept shows people where they are so can avoid them M1 accept description of how awareness protects pangolin e.g. people more likely to be interested in pangolin or volunteer to look after them / (encourages) ecotourism
2(c)(ii)	<i>any from wildlife reserves:</i> M1 a stated human activity that is restricted e.g. hunting / tourism ; <i>any one from wildlife corridors:</i> M2 allows pangolins to move from one area to another / safe routes between areas ; M3 find mates to breed / increase chance of mating ; M4 increases, gene pool / genetic diversity / less chance of inbreeding ; M5 more food sources ;	2	ignore increases habitat unqualified ignore predators ignore not disturbed by human activity or protected from humans, unqualified by how they are not disturbed or protected M1 accept less chance of hunting or being hunted M1 M3 ignore safe place / place to breed M2 accept areas or habitats connected / lets them move freely (between areas or habitats) / idea of expanding available habitat

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Question	Answer	Marks	Guidance
2(d)(i)	M1 pyramid shape, widest at bottom and narrowest at top ; M2 four horizontal rectangles drawn in pyramid shape one on top of each other ; M3 correct order with ONLY four organisms labelled from bottom to top: plants → insects → pangolin → lion	3	annotate vertically ignore numbers in bars / differences in bar height M1 accept triangle M1 reject inverted pyramid or inverted triangle M1 reject left aligned or right aligned pyramids or triangles M2 accept lines not drawn with ruler M2 accept four horizontal sections in a triangle M2 accept single line for top bar M2 accept ± 3 small squares asymmetry around the mid point M2 guidance minimum of 4 sections, accept more than 4 sections, so this can be in a triangle M3 reject incorrect food chain or order M3 reject inclusion of sunlight M3 ignore producer, consumer labels M3 accept labels outside of rectangles, with or without label lines or arrows to rectangles M3 accept for list of the organisms with arrows in correct order: plants → insects → pangolin → lion or vertical list with arrows in this order:
2(d)(ii)	lion(s) ;	1	reject additional organisms

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Question	Answer	Marks	Guidance
2(d)(iii)	M1 secondary consumers (often) larger in size (than primary consumers) / ora ; M2 (90%) energy lost between (trophic) levels / less energy available in higher (trophic) levels (of the food chain) ; M3 stated way that energy is lost e.g. movement / respiration / excretion / reproduction / ingestion / egestion / digestion / waste products / some parts of animal not eaten ; M4 the energy is lost as, heat or thermal energy ;	3	M2 ignore energy transfer is not efficient M2 ignore primary consumers as a group contain less energy M2 accept individual primary consumers contain less energy M2 accept 10% is passed on between trophic levels M3 guidance needs to relate to energy in some way so 'animals move' or 'animals respire' is not enough M3 ignore decomposition / death M3 accept life processes M2 M3 energy lost due to stated process = [2] marks
2(d)(iv)	M1 <i>increase</i>: less competition for stated resource e.g. food sources / prey / habitat ; M2 <i>decrease</i>: increased predation (of other organisms) ;	2	M1 ignore resources unqualified M1 ignore more insects unqualified as need to relate to prey or food M1 accept more food / more prey / more insects to eat M2 ignore more predators unqualified / no pangolins to eat M2 ignore lions unqualified M2 accept more of these (other) organisms are eaten / more predation / more predators per prey / more lions per prey / increased chance of getting hunted / predator or lions will look for another source of prey / lions eat other animals (instead)

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Question	Answer	Marks	Guidance
3(a)(i)	M1 285.1 ; M2 24.2 ;	2	ignore minus sign note '4' can look like 9 or 7 M2 correct answer = [2] M2 accept 24 M2 accept ecf a correct answer from: $69 \div \text{their M1} \times 100$ or their untotaled values from the table used correctly in the expression for determining the percentage M2 accept correct rounding on ecfs M2 accept rounding up or down from a '5' from ecfs
3(a)(ii)	<i>any three from:</i> M1 (remains of) marine organisms / organisms on sea bed ; M2 deposited as sediment / sedimentation (occurs) ; M3 (remains) (only) partially decayed / anaerobic conditions / lack of oxygen ; M4 pressure and (high) temperature ; M5 (over) millions of years ;	3	M1 reject organisms not in the sea M1 ignore aquatic M1 accept living organisms die in the sea / plankton die / stated marine organism / plants in sea die M2 ignore buried unqualified M2 accept buried with sediment / layers with sediment / formed sediment / covered by sediment / layers of rock form on top M3 accept partially decompose M4 ignore melting M4 accept pressure and heat M4 accept compressed or compaction for pressure M5 ignore over time / many years M5 CON millennia / thousands

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Question	Answer	Marks	Guidance
3(a)(iii)	(a resource that) cannot (naturally) replenish / cannot be replaced / finite ;	1	ignore cannot be remade / cannot be used over again / non-reusable / cannot be reused / not recyclable / not sustainable / cannot be renewed / one time use ignore has a limit unqualified ignore stated time frames ignore uses fossil fuels CON for naming a renewable resource e.g. solar accept cannot be used infinitely / will be used up / will run out / cannot be regenerated / will deplete / used quicker than is made / it will finish / limited supply / has a limit on usage
3(a)(iv)	<i>any three from:</i> M1 has large reserves ; M2 limited alternative resources or stated resource e.g. tidal not available ; M3 established industry / known technology / provides jobs ; M4 easy to extract ; M5 economic value / to sell / generate foreign exchange ; M6 reduced cost AND qualified reason e.g. cheaper than alternative energy resources / expensive to switch to other resources / idea of reducing costs as do not need to import oil ; M7 high demand or stated demand e.g. needed for cars / heating / air conditioning / to generate electricity	3	ignore ease of transport of oil ignore produces a lot of energy M1 accept idea of Nigeria has a lot of oil M2 ignore reliable without qualification M2 accept not dependent of stated external factor e.g. not dependent on amount of wind or sun M4 accept easy to mine or obtain M5 accept can be exported M6 ignore cheap or cost unqualified M6 ignore cheap to extract

Question	Answer	Marks	Guidance
3(a)(v)	<i>any two from:</i> M1 change in, weather / temperature ; M2 affordability / change in cost, (of energy) ; M3 availability or stated reason for change in availability e.g. conflict ; M4 stated reason for change in use e.g. use of air conditioners ;	2	guidance: responses need to refer to reasons for fluctuations rather than progress or lack of progress ignore population / birth rate, change / migration ignore change in demand M1 accept climate change / global warming / (enhanced) greenhouse effect / extreme weather M2 accept price of energy / inflation / wealth of individuals (in the country) / economy (of country) M3 accept low supply M4 ignore advancement in technology
3(b)	<i>any two from:</i> M1 employment / jobs; M2 cannot afford to live elsewhere ; M3 improvements to infrastructure or stated example e.g. roads / communications / health facilities / schools ; M4 improvement in local economy ;	2	ignore poverty unqualified / access to oil / transport of oil ignore nowhere else to go unqualified M1 accept live close to where they work M2 accept houses or land is cheap M3 ignore standard of living M3 accept multiplier effect or described M4 ignore economy without idea of being a benefit to 'local' people
3(c)(i)	<i>any two from:</i> M1 methane is a greenhouse gas ; M2 contributes to, the (enhanced) greenhouse effect / global warming / climate change ; M3 stated impact of climate change e.g. causes sea level rise ; M4 flammable gas / risk of explosions / risk of fire ;	2	ignore air pollution / habitat or biodiversity loss M1 CON CFC M2 accept global warming described M2 CON reference to ozone depletion / acid rain

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Question	Answer	Marks	Guidance
3(c)(ii)	<i>any one from:</i> M1 stated example of air pollution: smog / smoke / particulates / toxic gases ; M2 breathing difficulties ; M3 crops become polluted ; M4 risk of fires ; M5 risks of burns (to people) ;	1	ignore global warming / climate change / carbon dioxide ignore air pollution unqualified / visual pollution ignore suffocation / smell ignore death / injuries unqualified ignore explosions ignore 'affect' 'effect' M1 ignore harmful substances M1 accept benzene / toluene / carbon particles / carbon monoxide / CO / volatile organic compounds / VOCs / sulfur dioxide / NO_x M2 accept damage lungs / respiratory problems / eye irritation / cancer / asthma / lung or breathing problems or issues M3 accept crop failure / kills crops
3(c)(iii)	M1 $[7539 + 7760 + 7195 + 6627 + 5318] \div 5$ or $34\,439 \div 5$ or 6887.8 ; M2 correct rounding to nearest whole number: 6888 ;	2	M2 ecf on their M1 correct rounded to a whole number M2 accept round up or down from 5 from their ecf M2 correct answer = 2 marks M2 accept 6888.0
3(c)(iv)	<i>any two from:</i> M1 overall decrease (from 2013 to 2022) ; M2 fluctuates / goes up and down ; M3 overall change of 4023 AND million m³ (from 2013 to 2022) ;	2	ignore quoted data M1 accept decreases over the years M1 reject decreases EVERY year M2 ignore dates for when it fluctuates M3 reject answers without units

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Question	Answer	Marks	Guidance
3(d)(i)	<i>any two from:</i> M1 rain ; M2 run off / washed off surface ; M3 rivers carry or transport oil (to sea or coast) ;	2	ignore slope of landscape / transfer by animals or birds ignore references to oil tankers or ships / dumped at sea / offshore M1 reject by wind / air M1 accept floods M2 accept leaching M3 ignore movement underground or in groundwater
3(d)(ii)	<i>any three from:</i> M1 toxic ; M2 shortage of food / kills the prey (of birds) ; M3 bioaccumulation (when prey is ingested) ; M4 coats feathers or bird or wings AND so cannot fly ; M5 coats feathers or bird or wings AND so not insulated or get hypothermia M6 coats their nostrils / causes suffocation ; M7 feathers stop being waterproof ; M8 oil covers surface of water preventing birds from seeing or catching prey ; M9 damages coastal nesting sites / reduces chances of (successful) breeding ; M10 eye irritation / blindness ; M11 skin irritation ;	3	ignore kills unless qualified ignore can't see unqualified ignore photosynthesis ignore disrupts food chains or webs / loss of habitat ignore harm unqualified M1 accept poisonous M3 accept bioaccumulation described / biomagnification or biomagnification described M4 accept feathers clump together AND cannot fly or affects ability to fly M4 accept coats feathers AND weighs them down AND causes drowning or cannot fly M5 accept coats feathers AND get hyperthermia M6 accept choking M7 accept feathers clump together AND stop being waterproof

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Question	Answer	Marks	Guidance
3(d)(iii)	M1 <i>booms</i>: prevent the oil from spreading ; M2 <i>detergent sprays</i>: breaks up oil ; M3 <i>skimmers</i>: remove or scrape oil from the (water) surface ;	3	ignore clean the oil M1 accept gather / catches / captures / traps / acts as barrier / encloses / collects / surrounds the oil (on the surface) M2 accept disperse / degrade / decompose / break down / dissolve the oil M3 guidance: looking for reference to surface or a (top) layer of oil or oil and water have different densities M3 accept skim oil or collects from (water) surface
3(e)(i)	2.5×10^{10} ;	1	accept correct rounding of 24 869 746 835.4430 e.g. 24 869 746 840 e.g. 24 870 000 000 / 25 000 000 000 / 25 billion / 25 000 million accept other standard form e.g. 24.9×10^9 248.7×10^8 2486×10^7 $2\,487.0 \times 10^7$ $24\,869.7 \times 10^6$ $248\,697.5 \times 10^5$ $2\,486\,974.7 \times 10^4$ $24\,869\,746.8 \times 10^3$ $248\,697\,468.4 \times 10^2$

Question	Answer	Marks	Guidance
3(e)(ii)	<i>any two from:</i> M1 increase in demand or use or increase in stated use e.g. more technology / increased use of air conditioners ; M2 increase in population (of Nigeria) ; M3 increased exports / sold to other countries ; M4 prediction was wrong / estimate was inaccurate ;	2	ignore economic status of country ignore leaks / spills ignore climate change / global warming M1 accept need more energy M3 ignore sold unqualified M4 accept estimate was wrong
3(e)(iii)	<i>any two from:</i> M1 dedicated car lanes for multiple occupancy (in car) / car sharing / restrictions for car usage or stated example driving on certain days of the week ; M2 stated financial penalty e.g. charges for using car in cities / parking controls / congestion charge / road tolls / taxation ; M3 stated financial incentives e.g. financial incentive for selling 2nd car / subsidies for buying an electric vehicles / lower road tax for electric vehicles / cheaper public transport ; M4 more / improved access to / priority in roads given to, public transport ; M5 introduce cycle lanes or pedestrian areas / priority for bikes or pedestrians compared to cars ; M6 improved infrastructure for electric cars or EVs / more charging points for EVs ; M7 public awareness / advertising ;	2	ignore urban planning / harder driving exam ignore legislation unqualified ignore harsher penalties for breaking driving laws M2 accept other stated vehicle-use charge e.g. ULEZ / increase cost of fuel / increase cost of cars / tax on cars / stated tax M4 ignore list of public transport vehicles e.g. bus, train unqualified without idea of more etc. M4 accept (use of) public transport M6 accept (use of) EVs / electric vehicles

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Question	Answer	Marks	Guidance
3(e)(iv)	<i>any two from:</i> M1 renewable ; M2 idea of carbon neutral ; M3 makes use of waste materials ;	2	ignore pollution unqualified ignore cost ignore acid rain M1 accept descriptions of renewable M2 ignore less CO₂ emitted without net carbon emissions or overall emissions M2 ignore less CO₂ emissions – as no reference to NET or OVERALL M2 accept carbon neutral described e.g. less CO₂ emitted overall / less net CO₂ emitted M2 accept carbon to mean carbon dioxide M3 ignore extraction / easier to obtain / readily available M3 accept sustainable

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Question	Answer	Marks	Guidance
3(e)(v)	<i>any two from:</i> M1 risk of deforestation / requires large areas of land ; M2 grown in place of food crops / causes food shortages / increase food prices ; M3 irrigation of crops may cause water shortage (for other uses) ; M4 not all vehicles can run on biofuels / vehicles need to be converted to run on biofuels ;	2	ignore take up space unqualified / cost unqualified ignore availability of biofuels or fossil fuels ignore lack of technology ignore loss of habitat / loss of biodiversity M4 accept cost of converting vehicles to biofuel M5 ignore less energy / less energy when used unqualified M5 ignore efficiency M5 allow biofuels have less energy density (than fossil fuels) / less energy in tonne of biofuel than tonne of fossil fuels M6 allow stated cost of growing biofuels e.g. cost of fertilisers or irrigation