

CAMBRIDGE INTERNATIONAL EXAMINATIONS GCE Advanced Subsidiary Level

## MARK SCHEME for the May/June 2014 series

# 8291 ENVIRONMENTAL MANAGEMENT

8291/23

Paper 2, maximum raw mark 80

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

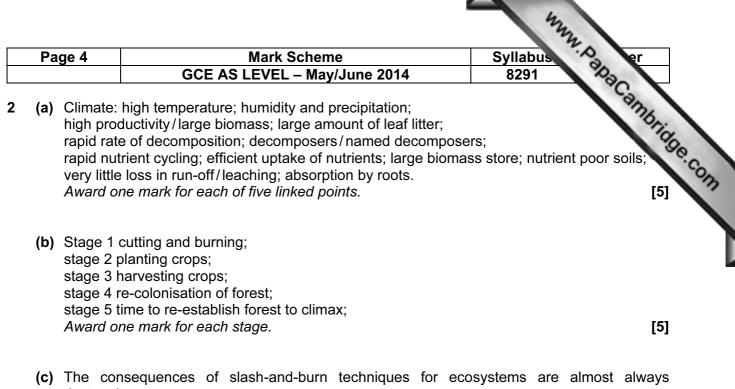
Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2014 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

			Mary No.			
Page 2	2	Mark Scheme	Syllabus & er			
		GCE AS LEVEL – May/June 2014	8291 730			
General no	otes		Phil			
Symbols us	ed in E	Environmental Management mark schemes.				
1		Mark Scheme   Syllabus     GCE AS LEVEL – May/June 2014   8291     s   In Environmental Management mark schemes.     separates alternatives for a marking point – other valid ways of expressing the same dea are also credited				
• ን	sepa	eparates points for the award of a mark				
[3]	indic	ndicates the number of marks available				
italic	credi					
		alic text is also used for comments about alternatives that should be accepted, ignored or rejected				
ora		reverse argument – shows that an argument from an alternative viewpoint will be edited				
AW		ternative wording, sometimes called 'or words to that effect' – <i>N</i> is used when there are many different ways of expressing the same idea				
( )		vord / phrase in brackets is not required to gain man	ks but sets the context of th			
	e.g.	response for credit e.g. (nuclear) waste – nuclear is not needed but if it was described as a domestic waste then no mark is awarded				
<u>volcanic</u>	unde	underlined words – the answer must contain exactly this word				
ecf	f error carried forward – if an incorrect answer is given to part of a question answer is subsequently used by a candidate in later parts of the question, thi that the candidate's incorrect answer will be used as a starting point for markir parts of the question		of the question, this indicate			

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Daup 3	Mark Scheme	Syllabus er		
Page 3	GCE AS LEVEL – May/June 2014	8291		
	Section A	Canno		
lakes Grou	age 3   Mark Scheme   Syllabus     GCE AS LEVEL – May/June 2014   8291     Section A     P Run-off: water which is not absorbed into the soil/flows over the surface of soil into streal lakes and rivers;     Groundwater: store of water/water held by soil and bedrock;     Infiltration: movement of water down through the soil/water draining into ground water.			
Awa	rd one mark for each term.	[3]		
roots roots wate	Interception by plant; roots; by increasing infiltration into soil; increase groundwater store; roots absorb water from the soil; water is stored in the plant; water moves through plants to the leaves; transpiration; water vapour creates a humid atmospheric store.			
Awa	rd a max. of four marks for description of the vegetation ro	ble only. [6]		
	Change in state described and explained; evaporation; condensation; freezing, melting; sublimation.			
	rd one mark for each description of the change e.g. liquid k for each explanation.	water to water vapour and one		
state e.g. l	Award one mark where the state of water in the water store is identified but no charstate. e.g. liquid in: soil, groundwater/rivers/lakes/sea			
•	in: atmosphere/clouds l ice in: ice caps/glaciers.	[4]		
· · · · · · · · · · · · · · · · · · ·	Increase in temperature; melting of ice; decrease in ice caps/polar ice/glaciers; rise in sea level; increase in evaporation; increase in atmospheric water; in increase in run-off; increase groundwater; flooding.	crease in precipitation;		
	Expect reference to change in data from Fig. 1.2 (percenta marks.	ages), if no data, max. of four [5]		
	For example: Deforestation; decrease in evapotranspiration; extraction of groundwater from aquifers; reduce groundwa	ater flow. [2]		
		[Total: 20]		



(c) The consequences of siash-and-burn techniques for ecosystems are almost always destructive;
as population size and density increase there is increased demand;
for more land and resources;
e.g. biomass is extracted and even after one harvest of wood or charcoal, the residual soil

e.g. biomass is extracted and even after one harvest of wood or charcoal, the residual soil value is heavily diminished for further growth of any type of vegetation;

there may be several cycles of slash-and-burn within a few years;

the fallow period declines; nutrient-poor soil becomes degraded;

without the trees, the soil quality soon becomes too poor to support crops;

there may be a change in agricultural practice;

farming becomes more intensively practiced/agricultural improvements;

or move on to a virgin forest and repeat the process;

resulting in large-scale erosion;

since there are no roots or temporary water storage in nearby canopies to arrest the surface run-off, any small remaining amounts of nutrients are washed away; resulting in desertification.

Please use level descriptors 1

[10]

[Total: 20]

#### Section B

3 (a) Initial correlation 1970 to 1985; with increase in oil trade and oil spills to 1975; decrea both to 1985:

www.papaCambridge.com after 1985, there is a steady increase in oil trade; an overall decrease in oil spills fluctuations.

Explanation of the trends in the increase of oil trade and decrease in oil spills: e.g. greater safety measures, improved navigation.

A balance between description of trends and explanation is required.

## Please use level descriptors 1

[10]

## (b) The question requirements are:

- to consider marine pollution hazards
- to describe the difficulties in controlling marine pollution
- to describe and evaluate measures to control pollution
- to use examples

Indicative content:

#### Difficulties include:

lack of control; although there is legislation it is not enforced;

accidental spillages, intentional dumping; illegal dumping;

dispersal due to winds and ocean currents;

polluting rivers carrying industrial, domestic and agricultural waste run through different countries; all nations are responsible but agreement is difficult;

air masses disperse gases and particulates that are deposited at sea.

#### Measures include:

legislation to reduce pollution; e.g. The International Convention for the Prevention of Pollution from Ships prescribes the minimum distances from shore that pollutants can be dumped; often ineffective as it cannot be rigidly enforced;

decomposition by bacteria; but the process is slow; some form of direct clean-up is needed; oil spills are contained by floating booms then removed by pumps;

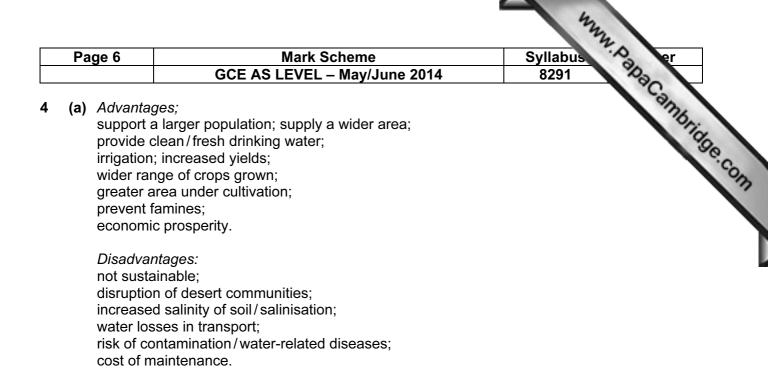
slicks can be sprayed with chemical dispersants or by burning the oil;

dispersants although effective on the surface cause the oil to sink and pollute the seabed; time is the main factor in ecological recovery.

Please use level descriptors 2

[30]

[Total : 40]



A balance between advantages/disadvantages is required together with use of data from Fig 4.1 or reference to a similar project.

Please use level descriptors 1

[10]

(b) The question requirements are:

- to consider ways of achieving a sustainable supply
- to assess the sustainable supply of water in both MEDCs and MEDCs
- to use examples

Indicative content:

The answer should contain an assessment of the nature of supply and demand, the volume and quality of the water supply, water as a scarce commodity, how present supplies are obtained; the impact of future demand, resulting from increases in population; urbanisation, climatic change on how it might be supplied.

The main difference between LEDCs and MEDCs is largely a matter of the scale of the demand and ability of nations to meet their demand, actual methods are not always unique to one group of nations.

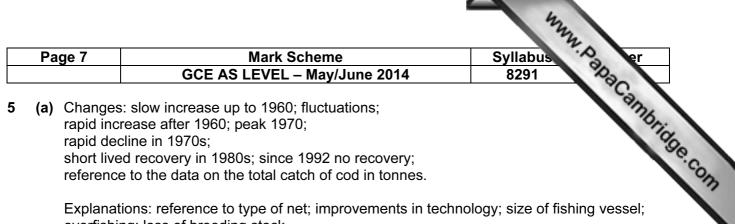
Current sources, e.g. river, groundwater, recycled water, desalinisation,

Future supplies that would include expanding current methods and adopting new methods.

Please use level descriptors 2

[30]

[Total: 40]



short lived recovery in 1980s; since 1992 no recovery; reference to the data on the total catch of cod in tonnes.

Explanations: reference to type of net; improvements in technology; size of fishing vessel; overfishing; loss of breeding stock.

A balance between description of changes and explanation is required.

## Please use level descriptors 1

[10]

- (b) The question requirements are:
  - to consider the threats to marine ecosystems
  - to describe and evaluate conservation measures
  - to use examples

Indicative content:

These threats can include:

Overfishing, e.g. North Sea, Grand Banks, S.E. Pacific. Fishing for herring, cod, etc. disrupts the local marine chains, anchovies, local bird life (albatross);

fish netting, contributes to accidental catches (e.g. dolphins, porpoise, shark),

oil spillage contaminates the whole food webs, marine and terrestrial, e.g. Exxon Valdez, industrial spillage can contaminate fishing grounds,

coral reefs damaged through blasting, overfishing, tourism, coral mining, pollution, sediment from agriculture, mineral dredging,

global warming can affect sea temperatures and have a knock-on effect in increasing the strength of storms causing reef erosion.

For the second part of this question candidates need to choose schemes that are aimed at the conservation of marine ecosystems.

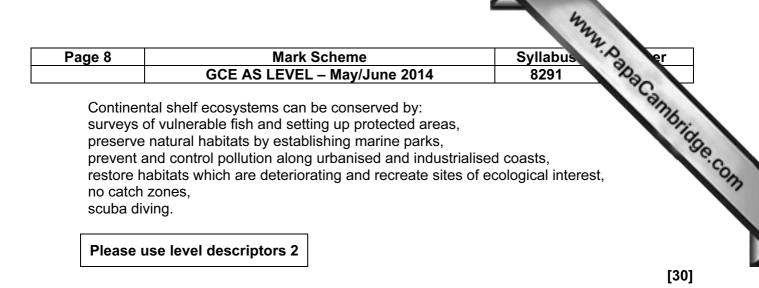
Coral reefs:

ecotourism in which tourists are advised, escorted and educated in limited numbers, park designation.

visitor controls (honey-pot sites and restricted zones),

restrictions on fishing (catch, net size, bans),

legislation on extractive activities, e.g. mining and dredging.



[Total: 40]

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## Section A and Section B, part (a) descriptor levels:

Descriptor	Award Mark
Consistently meets the level criteria	Mark at top of level
Meets the criteria, but with some inconsistency	Middle, mark to just below top mark
Meets most of level criteria, but not all convincingly	Just below middle, mark to just above bottom mark
On the borderline of this level and the one below	Mark at bottom of level

## Level descriptors 1

#### 6-8 marks/8-10 marks

The response:

- contains few errors
- shows a very good understanding of the question
- shows a good use of data or the information provided, where appropriate
- provides a balanced answer

### 3-5 marks/5-7 marks

The response:

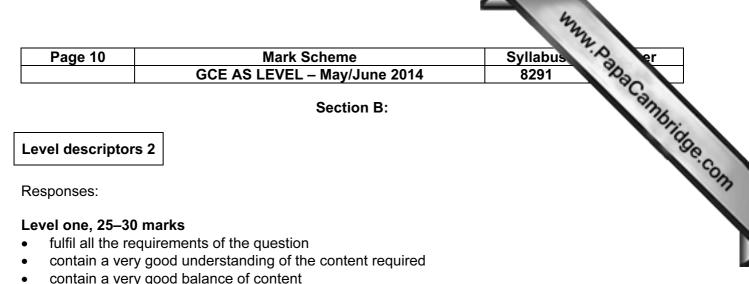
- may contain some errors
- shows an adequate understanding of the question
- shows some use of data or the information provided, where appropriate
- may lack balance

#### 1–2 marks / 1–4 marks

The response:

- may contain errors
- shows limited understanding of the question
- shows little or no use of the data or information, where appropriate
- lacks balance

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- contain a very good balance of content
- contain substantial critical and supportive evaluations
- make accurate use of relevant vocabulary

## Level two, 19-24 marks

- fulfil most of the requirements of the question
- contain a good understanding of the content required
- contain a good balance of content
- contain some critical and supportive evaluations
- make good use of relevant vocabulary

## Level three, 13–18 marks

- fulfil some requirements of the question
- contain some understanding of the content required
- may contain some limited balance of content
- may contain brief evaluations
- make some use of relevant vocabulary

## Level four, 6–12 marks

- fulfil limited requirements of the question
- contain limited understanding of the content required
- may contain poorly balanced of content
- may not contain evaluations
- make limited use of relevant vocabulary

## Level five, 1–5 marks

- fulfil a few of the requirements of the question
- contain a very limited understanding of the content required
- are likely to be unbalanced and undeveloped
- evaluative statements are likely to be missing
- make no use of relevant vocabulary