2013 Managing Environmental Resources

Intermediate 2

Finalised Marking Instructions

Part One: General Marking Principles for Managing Environmental Resources Intermediate 2

This information is provided to help you understand the general principles you must apply when marking candidate responses to questions in this Paper. These principles must be read in conjunction with the specific Marking Instructions for each question.

(a) Marks for each candidate response must always be assigned in line with these general marking principles and the specific Marking Instructions for the relevant question. If a specific candidate response does not seem to be covered by either the principles or detailed Marking Instructions, and you are uncertain how to assess it, you must seek guidance from your Team Leader/Principal Assessor.

(b) Marking should always be positive ie, marks should be awarded for what is correct and not deducted for errors or omissions.

GENERAL MARKING ADVICE: Managing Environmental Resources Intermediate 2

The marking schemes are written to assist in determining the "minimal acceptable answer" rather than listing every possible correct and incorrect answer. The following notes are offered to support Markers in making judgements on candidates' evidence, and apply to marking both end of unit assessments and course assessments.

Part Two: Marking Instructions for each Question

SECTION 1

Question			Expected Answer/s	Max Mark	Additional Guidance
1	**a**	**i**	4·5 - 4·6	**1**	Either accepted (not 4.4)
1	**a**	**ii**	Decreasing / going down / reducing	**1**	
1	**b**		composting	**1**	
1	**c**		**Any two from:** • have a recycling centre • box uplift / roadside collections • cash for waste scheme • fines for overfilled bins • education campaign to recycle	**2**	
1	**d**		These cannot be replaced/are finite/will run out (1) / must leave some for future generations (1)	**2**	Second mark to be awarded only if "the future" is contained in the answer
2	**a**	**i**	1 **Advantage nuclear** Minimal carbon dioxide emissions, high efficiency compared to coal Large amount of energy out for a small amount of fuel **Any one** **Disadvantage nuclear** Safety of nuclear power stations and radioactive waste, storage of radioactive waste, decommissioning nuclear power stations, terrorist attack **Any one** 2 **Advantage Hydro Electric Power** Clean/renewable/no carbon dioxide emissions **Any one**	**1** **1** **1**	
2	**a**	**ii**	Sulphur dioxide/carbon dioxides/oxides of nitrogen	**1**	
2	**a**	**iii**	Scrubbers on chimneys	**1**	

Question			Expected Answer/s	Max Mark	Additional Guidance
2	**a**	**iv**	1 **Wildlife** Acidity in lakes causes fish stocks to decrease because they do not breed/Trees defoliate and die 2 **Buildings** Statues lose shape / Buildings erode/wear away	**1** **1**	
2	**b**	**i**	Visual pollution/blot on landscape, disturbs fishing waters/less trawling, interferes with shipping lanes, disturbance of marine ecosystems, impact on bird populations etc **Any one**	**1**	
2	**b**	**ii**	Tides more reliable	**1**	
2	**b**	**iii**	Wave (power)	**1**	Could accept osmosis
3	**a**	**i**	Plant plankton	**1**	Must have plant
3	**a**	**ii**	• Sandeel • Cod • Mackerel • Seal • Shark **Any one**	**1**	
3	**a**	**iii**	sandeel cod seal **Any one**	**1**	
3	**a**	**iv**	plant plankton → flatfish → *seal* → shark	**1**	Must include arrows Must include plant
3	**a**	**v**	seal and cod compete for the flatfish **or** mackerel and cod compete for the sandeel	**1**	Both consumers to be mentioned as well as food from food web
3	**a**	**vi**	Zooplankton would increase because fewer sandeel to eat them.	**1**	Reason must back up choice to gain mark

Question			Expected Answer/s	Max Mark	Additional Guidance
3	**b**	**i**	30%	**1**	Accept 29·58%
3	**b**	**ii**	**Any two from:** • disease • more sharks • fewer mackerel	**2**	
3	**c**		Light for photosynthesis/most light found in this layer	**1**	
4	**a**	**i**	Feeding	**1**	
4	**a**	**ii**	From fossil fuels to carbon dioxide in the air	**1**	Arrow must go to box and not respiration arrow
4	**b**		Oxygen Water	**1**	
4	**c**		Nutrients must not remain locked up within an organism/to be made available to other organisms	**1**	
4	**d**		Nitrogen	**1**	
5	**a**	**i**	**One mark for each part** Zero must be on the scale Bars the same width and no daylight between where the bar should be and where it is. Key correctly completed.	**3**	
5	**a**	**ii**	Yes – more species in all areas	**1**	More animals is unacceptable
5	**a**	**iii**	more food/shelter/habitats **Any one**	**1**	Not wildlife attracting plants
5	**a**	**iv**	An average reading was taken which implies there was more than one count	**1**	

Question			Expected Answer/s	Max Mark	Additional Guidance
5	**b**		take a quadrat randomly place/count the number of plants within the quadrat	**1** **1**	
5	**c**		Parasitism	**1**	
5	**d**	**i**	Go to 3 Smooth edge Elm **All for 1 mark**	**1**	
5	**d**	**ii**	Similarity – both single leaves Difference – elm has short stalk, silver birch has long one	**1** **1**	 Comparison must be included
6	**a**	**i**	**Any two from:** • high slope/hedgerows • acid bog/fertile plains • machair/marshes • peat bog/road verges • grassland	**1**	
6	**a**	**ii**	Temperature **and** wind	**1**	
6	**b**		Less soil compaction/keep soil aerated/less habitat damage **Any one**	**1**	
6	**c**		Global warming/climate change/melting polar ice caps **Any one**	**1**	
6	**d**		If there are more beetles to eat the pests on the cereals, pesticides will not have to be used which is better for the environment/less pesticide use means less bio-accumulation	**1**	Must explain an advantage
6	**e**		The range of <u>different</u> living species	**1**	

Question			Expected Answer/s	Max Mark	Additional Guidance
6	**f**		LBAP	**1**	
6	**g**		Domesticated	**1**	
6	**h**		Plant new trees/or similar	**1**	
7	**a**	**i**	Oats or seeds	**1**	Not porridge
7	**a**	**ii**	**Any two from:** • machines • mill • transport • roads • building	**1**	
7	**a**	**iii**	Waste husks are used as animal feed	**1**	
7	**b**	**i**	Cases have reduced sides/no tops	**1**	
7	**b**	**ii**	no money spent on gas **or** no money spent on electricity money gained from National Grid	**1** **1**	
7	**b**	**iii**	By using each other's lorries there are no empty journeys therefore less fuel is used	**1**	
7	**b**	**iv**	renewable as made from living things	**1**	
7	**b**	**v**	Management must know the state of the discharge to be able to do something (1) before damage to the environment or a fine (1)	**2**	
7	**c**	**i**	Grow more oats so none need to be imported	**1**	
7	**c**	**ii**	Catalytic converters	**1**	

Question			Expected Answer/s	Max Mark	Additional Guidance
8	**a**		5666 football stadium 5763 park industry	**3**	5 for 3 marks 3/4 for 2 marks 1/2 for 1 mark
8	**b**		Bridging point – number of bridging points over the River Clyde Sheltered port – river straightened and deepened for ships to dock inland Natural route centre – roads converge **Any one**	**1**	
8	**c**		Any suitable historic site – Castle etc, but grid reference must be given	**1**	
8	**d**		1:6	**1**	
8	**e**	**i**	• Faster travelling time to work, do not have to go anti-clockwise to get to western side of Glasgow • Less congestion on local roads so faster for emergency services to reach incident • Less HGVs travelling on roads and causing bottlenecks and jams • Less accidents with less traffic on local roads • Local industry can get faster deliveries • Saves fuel not being stuck in traffic jams etc **Any one**	**1**	
8	**e**	**ii**	Locals v council Building urban motorways generates more traffic/ traffic rises in feeder roads/road crashes/noise pollution/litter on route/costs of closure of schools and libraries by council to pay for up keep. Locals v green groups/loss of countryside/animal habitat/reduction in biodiversity/increase in road kill etc **Any one**	**1** **1**	One mark for naming two appropriate groups and the second mark for a description of the conflict.

Question			Expected Answer/s	Max Mark	Additional Guidance
8	**f**		**Any two from:** • City car club • Park and Ride • Road priority lanes for buses • Congestion charges • Cycling routes • Improve public transport • Improve rail lines and stations • Clean up public transport • Car share schemes etc	**2**	
8	**g**	**i**	land	**1**	
8	**g**	**ii**	**Any two from:** • cheap land on edge of city • easy access via motorway for delivery lorries and workers • proximity to motorway for marketing • room for expansion in the future • workforce nearby in local housing estates	**2**	
8	**h**		**Any two from:** • footpath • disused railway line • minor road	**2**	
8	**i**	**i**	**Any two from:** Science centre + grid reference 565653 Glasgow tower + grid reference 564653 Crane + grid reference 572652 Exhibition centre + grid reference 566655	**1**	
8	**i**	**ii**	Jobs in hotels, shops, income, multiplier effect, local shops trade, builders/plumbers trade, etc	**1**	
8	**i**	**iii**	Own example, (1 mark) must have at least two user groups- (1 mark)	**2**	

Question			Expected Answer/s	Max Mark	Additional Guidance
8	**j**	**i**	• less natural resources needed to construct an entire new one • less energy needed to transport all raw materials in • no new land/countryside built on therefore saving habitat loss etc **Any one**	**1**	
8	**j**	**ii**	Low cost affordable housing for locals to buy or rent	**1**	
8	**j**	**iii**	• advertising health and wellbeing • promoting special offers • education in schools and community centres **Any one**	**1**	
8	**k**	**i**	**Any two from:** • water butt • not fill kettle so much • install a meter • don't use dishwasher • special toilets with one and two flush • take a shower not a bath • turn tap off when you clean your teeth whilst brushing	**1**	
8	**k**	**ii**	**Any two from:** • switch off at socket so no standby • low energy saving light bulbs • loft insulation • double glazing • thermostats	**1**	

SECTION 2

Option A

Question			Expected Answer/s	Max Mark	Additional Guidance
	a		• France – nuclear • Norway – HEP • Denmark – wind • Iceland – geothermal • Sweden – timber/biofuel • Germany – coal/gas Topped up by solar panels, ground source heat, wind turbines in domestic households. **Any 3** Use: • industry (steelworks, chemical works, manufacturing, food processing) • domestic supply (cooking, heating, lighting) • transport (railways, trams) **Any 2**	**5**	
	b		ELDCs – Name of country – Fuel Energy production should include firewood, dung, solar, biofuel (methane/biogas) and wind (Malawi). Mini HEP schemes. **Any 3** Use: • domestic (cooking, lighting, heating) • industry (workshops in shanty towns) **Any 2**	**5**	

Option B

Question			Expected Answer/s	Max Mark	Additional Guidance
	a		Name **1** *(Example)* Oil slick – Gulf of Mexico, Exxon Valdez in Alaska Description **4** *(Example)* • Damage to marine life on sea bed with named species. • Damage to food chain, including example. • Effects on coastline as oil washed up on to beaches. • Decrease in species and biodiversity. • Effects on local industry/economy – fishing, tourism, etc • Cost of clean-up and how oil removed.	**5**	4 clear descriptions of the impacts from the named example.
	b		Definition **1** Pollution levels can be measured directly. The presence or absence of certain living organisms can also act as an indicator of pollution and the level of a specific abiotic factor. Description **4** *(Examples)* **Air pollution** • Lichens are indicators of air pollution • Bushy lichens require clean air and if found growing indicate no pollution • Leafy lichens can survive in areas of light pollution • Crusty lichens can survive in more polluted air • Air pollution caused by SO_2 dissolved in rain water **Water pollution** • Water pollution is caused by the discharge of harmful substances into rivers, lakes and seas. • Mayfly larva requires lots of oxygen and if found indicates clean water • Water louse indicates low levels of oxygen and high water pollution • Rat-tailed maggot or sludgeworm indicate very high pollution as it can survive in very low levels of oxygen.	**5**	One mark awarded for clear definition and one mark for each indicator species with its indication of pollution

Option C

Question			Expected Answer/s	Max Mark	Additional Guidance
	a		• Questionnaire — where they have come from, how they travelled to the area, why they have come, frequency of visit, where they may have stayed, journey time. • Bipolar analysis — scale 1 (poor) to 5 (good) to find out the tourists' opinions on recreational facilities available in the area (indoor and outdoor). • Interview people with a set of questions to get their opinions — all ages to reduce bias. • Recreational index potential — to compare different tourist areas in a resort eg West Beach with East Beach at St Andrews to see which is more popular and why. • Online survey & questionnaire — surveymonkey.com. You can get people's opinions about the resort, tourist facility. **One mark for each technique + description**	**5**	One mark for each technique and one mark for a description of how it was carried out.

Option C

Question			Expected Answer/s	Max Mark	Additional Guidance
	b			5	

Conflict	Resolution
Tourist/Local — Footpath erosion/visual pollution	Paving footpaths/tracks with cross drains, reseeding, new paths
Tourist/Local/farmer — Litter	Bins, education in visitor centres re country code/Scottish Outdoor Access Code
Tourist/Local — Car park and traffic congestion in honeypot areas	Make larger car parks, farmers opening up fields for extra parking at peak holiday times, mountain goat bus – park and ride, radio messages telling people roads congested and parking spaces full so go elsewhere. Publicise other areas not as popular in magazines.
Conflict on water — Fisherman, canoeist, rafter	Certain days for the use of the river exclusive for fishing. Zoning on loch for different water sports, speed limits for power boats, wind sports only on reservoirs used for drinking water.
Farmer/tourist — gates left open and livestock escape, damage to walls crops.	Education in Scottish Outdoor Access code in visitor centre. Signs – please close gates, provide stiles over walls.
Estate manager & gamekeeper — shooting season (deer, grouse)	Hill Phones — radio message left re shooting and which paths are open on the hill to walkers.
Cave conservation & tourist — damage to cave formations and algae growing on formations due to lights.	Use lighting in show cave which is timed to stop algae growing, clean algae off, put signs up asking visitors to the cave not to break formations and take souvenirs. All monitored by tour guide.

One mark for named two groups
One mark for clear description of conflict
One mark for description of resolutions.

[END OF MARKING INSTRUCTIONS]