2011 Managing Environmental Resources

Intermediate 2

Finalised Marking Instructions

Managing Environmental Resources

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SECTION 1

Question 1

(a) **(i)** Solar, wave, geothermal, hydro **(1)**

(ii) Reduce pollution, global warming, running out of fossil fuel, fewer pollutants, renewable obligation **(1)**

(iii) Shower not bath, low energy light bulbs, no stand by, loft insulation, less water in kettle, lights off when not in use, double/triple glazing, high efficiency boiler for central heating (2 for 1 mark) **(1)**

(b) **(i)** Advantage:
Small amount of uranium = large amount of energy, no CO_2 emissions (any one) **(1)**

Disadvantage:
Terrorism, decommissioning contamination eg Chernobyl, uranium will run out/finite resource (any one) **(1)**

(ii) Uranium **(1)**

(iii) France **(1)**

(c) **(i)** 65MW **(1)**

(ii) Wildlife killed/habitat destroyed, food source destroyed, wildlife migrate, disturbance by machinery and effect of oil/diesel spillage from boats, turbidity of water **(1)**

(d) Less obtrusive, more wind to harness **(1)**

Question 2

(a) **(i)** 5.4 units per person **(1)**

(ii) More EC developed then more energy consumption/less EC developed the less consumption/direct relationship **(1)**

(iii) 110 times **(1)**

(iv) Biomass, dung, wood **(1)**

(v) Cooking, heating, lighting, transport (any 2) **(1)**

(b) **(i)** Increase
Greater increase (must show a difference) **(1)**

(ii) 45 billion tonnes, India/China developing industry so CO_2 pollution
If stays the same — due to Denmark Protocol **(1)**

(c) Coal/oil/natural gas/peat/crude oil (any 2) **(1)**

(d) **(i)** Ice caps melting, sea levels rising, islands lost, low-lying land flooded, drought & growth of deserts. **(1)**

(ii) Coral reef beaching & dies, sand eel disappears so puffin numbers decline, polar bears suffering loss of sea ice. Loss of wildlife & food source. Habitat change. **(1)**

Question 3

(a) **(i)** Plant plankton and algae **(1)**

(ii) Cyclops **(1)**

(iii) Otter and trout Any 2nd consumer and its 1st consumer in a food chain **(1)**

(iv) Decrease: more damselflies to eat them **(1)**

(b) Parasitism **(1)**

(c) Photosynthesis **(1)**

Question 4

(a) **(i)** Provides own electricity/sells to National Grid, saving on electricity/money from local swimming pool, sale of excess heat, saving on fertilizer (any 2) **(2)**

(ii) Converting of waste into other useful products **(1)**

(iii) Advantage:
Local hot water for pool, less road congestion behind slurry tanker **(1)**
Disadvantage:
Smell, looks ugly **(1)**

(b) **(i)** Oxygen and carbon dioxide/O_2 and CO_2 **(1)**

(ii) Bacteria/fungi **(1)**

(iii) Not locked up – always available **(1)**

(c) 6·6 or 6·7 **(1)**

Question 5

(a) **(i)** Fresh fish, wood, water, sea, land, air (any 2) **(1)**

(ii) Building, vehicles, boat, machinery, harbour, quay, wharf, road (any 2) **(1)**

(b) **(i)** Crude oil or oil **(1)**

(ii) Biofuel, alcohol from sugar cane, LPG, hydrogen/biodiesel **(1)**

(iii) Catalytic converters, low sulphur fuel, lead free fuel, electric transport, energy efficient cars, car free zones **(1)**

(c) Trees can be replaced/replanted/restocked (1), providing timber etc for future generations (1) (must mention future for second mark) **(2)**

(d) Indicates level of pollution (1), that can be corrected before company fined (1) **(2)**

(e) £381.89/£382 **(1)**

(f) Shower/water butt/half fill kettle/dual flushing toilet/brick in cistern/do not leave the tap running (any 2) **(1)**

Question 6

(a) **(i)** Ragwort **(1)**

(ii) Grey squirrel **(1)**

(iii) Feeds on fir cones found in pine forest **(2)**

(b) **(i)** Species enhancement action plan **(1)**

(ii) Range/variety of different organisms/species **(1)**

(c) Species which was domesticated and is now wild **(1)**

(d) Wildlife Countryside Act 1981 **(1)**

(e) **(i)** Because of extinction **(1)**

(ii) Less wildlife for shooting parties so less revenue for estate, less fish so less breeding fish to restock rivers for fishermen
(must have comparison) **(1)**

(f) 1 : 3 : 6 **(1)**

Question 7

(a)	**(i)**	Any from diagram – Still water pool with sandy bottom	**(1)**
	(ii)	Still pool, little disturbance from fast flowing water	**(1)**
	(iii)	1m	**(1)**
	(iv)	Depth of water, temperature, pH, water flow rate, oxygen content (any 2)	**(1)**
(b)	**(i)**	Graph Must have 0 on scale and % in label Must not be able to see daylight between line where it should be and candidate's line	**(3)**
	(ii)	B (1) – fewer mayfly and stonefly and increased water louse and more rat tailed maggots (1)	**(2)**
	(iii)	Same student sampling, same depth, same net size, same length of time dipping	**(1)**
	(iv)	More than one sample taken/calculate average	**(1)**
	(v)	Scoop net for set time	**(1)**

Question 8

(a) **(i)** Sea loch, urban, coniferous plantation, mountain **(2)**

(ii) 1274/1275 aluminium works, 1275 distillery, 0776/0876 paper mill, forestry **(2)**

(b) **(i)** Follows flat valley in U shaped valley, restricted by river to south, restricted to valley floor due to steep sloping sides **(1)**

(ii) Connection between western and eastern sea waters, aid to vessels to avoid treacherous Pentland Firth and Cape Wrath/shorter **(1)**

(c) Burn = bridge, hill = cutting, flat land = embankment (any 1) **(1)**

(d) **(i)** Graph **(2)**

(ii) 15°C **(1)**

(iii) 1959mm **(1)**

(e) **(i)** Steep slopes, thin acidic soils, poor climate, short growing season, altitude unsuitable for other crops **(2)**

(ii) Cycle trails/mountain biking GR 144764 and GR 168776, walking/footpaths, horse riding, orienteering, West Highland Way = Long Distance footpath GR 120736 **(2)**

(iii) Tree felling and thinning **(1)**

(f) **(i)** Walker/biker = over use of path, gullying, getting knocked down – separate paths/signs saying to ring bell as a warning
Boater/angler = fish scarred – zoned & timed/different days for each to use
Skier/snowboarder/climber/walker = big holes in piste, walker knocked down by skier, avalanches – separate
Bird watcher/climber/mountain biker = noise – no climbing on crags if birds of prey at certain times of the year **(2)**

(ii) All visual pollution, destroys habitat, scares wildlife away = country code, educate the public and use visitor centre
Gullying, redivert footpath, close footpath and make a new one, reseed, pave with cross drains = footpath erosion **(1)**

(iii) Mention facility, at least two user groups for one mark and how they share/use the facility for one mark **(2)**

SECTION 2

Option A

(a) Sustainability

- Definition of sustainability included once for one mark
- Local Authority role
- Must make reference to Agenda 21 – what/where/how implemented
- Non-renewable resources will run out
- Named non-renewable resources eg aluminium must be recycled to preserve its use for future generations – 2 examples maximum

(5)

(b) Local schemes

- Recycling Centres
- Green box pick up/kerbside collections
- Supermarket car park centres/banks
- Composting schemes
- Charity recycling schemes
- Education on recycling

Local depends on candidate's area

(5)

Option B

(a) Beaches

- Conservation groups cleaning up pollution
- Green flag awards to encourage Local administration
- Oil spillage – fine oil companies
- Flotsam/Jetsam – sea tax
- Visitor litter – litter bins
- Animal faeces – dogs/horses – ban them

(5)

(b) Farms

- Fertilizers → algal bloom, eutrophication description
  Cut down use of artificial fertilisers, use more organic ones
- Do not spread when raining
- Pesticides → bio accumulative/build up in food chain
  Use green pesticide/control eg ladybirds
- Buffer zones
- Slurry – do not spread when raining or at certain times

(5)

Option C

(a) 1 mark per technique and 1 for description

- Source on Internet
- Rainfall: gauge = technique, description = use container and measure volume collected over time
- Temperature: max/min thermometer
- Wind direction or speed: vane or anemometer
- Collect data over weeks and average **(5)**

(b) 1 mark for each geological point
1 mark for each soil information and 1 mark how each influences development
eg type of rock(s), impact of ice age

eg Edinburgh

- Volcanic plug/hard rock, left after Ice Age led to development of defined point for surrounding area
- Rich soils of East Lothian developed cereal growing

All dependent on <u>local</u> area. **(5)**

[END OF MARKING INSTRUCTIONS]