Solutions to VCE Environmental Science End of Year Trial Exam 2006

SECTION A – Multiple-choice questions

Question One

A. bush fires
B. volcanos
C. combustion of coal
D. metal fabrication

Question Two

A. They bring to the pubic attention ideas, concerns and views that may not have been considered at length in the initial consultative process
B. They slow down development and create undue public expense in dealing with their concerns
C. Vocal minorities can unduly influence policy at the expense of the major held view
D. They do not have a role to play, as they lack any credibility and scientific training.

Question Three

A. Promote the governments point of view by explaining the governments position on the proposal
B. Promote a balanced and factual account including aspects from all sides of the debate
C. Look for sensational aspects that would help attract attention for the media outlet
D. Promote public alarm by focusing on the impacts of the project

Question Four

A. Green Globe 21
B. Agenda 21
C. ISO 14001
D. SEPP's

Question Five

A. obesity
B. synergistic
C. mortality
D. acute toxicity

Question Six

A. Life Cycle Analysis

B. Environmental indicators
C. Community consultation
D. Risk Analysis

Question Seven

A. soft malleable metal
B. metallic liquid
C. a colourless gas
D. yellow solid

Question Eight

A. persistence
B. mobility
C. exposure
D. toxicity

Question Nine

A. be unaffected
B. have an allergic reaction
C. suffer chronic toxicity
D. receive an elevated dosage of the toxin

Question Ten

A. high exposure
B. high dosage
C. bioconcentration
D. synergistic action

Question Eleven

A. .025mg
B. .025g
C. .004mg
D. .004g

Question Twelve

A. $2.375\ 10^{-4}$
B. $4.75\ 10^{-4}$
C. $9.5\ 10^{-4}$
D. $2.5\ 10^{-4}$

Question Thirteen

A. a cost analysis of risk mitigation measures
B. an audit, policy, implementation, review and improvement process
C. a human method for the culling of dingoes and other wildlife on the island
D. decisions based around the precautionary principle

Question Fourteen

A. causes birth defects
B. bioaccumulates
C. causes cancer
D. acts as a stimulant

Question Fifteen

A. A source of oil pollution
B. A sink for oil pollution
C. Synergistic effects of oil pollution
D. Bioaccumulation of oil pollution

Question Sixteen

A. can no-longer be used in a productive way
B. it is not naturally found in this system
C. changes the environment in which it is found
D. causes harm to the environment

Question Seventeen

A. Profit margin of the tours
B. Life Cycle Analysis
C. Conservation status of Kangaroos
D. Establishment of regulatory frameworks

Question Eighteen

A. people climbing on the statue
B. acid rain
C. poor craftsmanship
D. airborne Mercury contamination

Question Nineteen

A. highly persistent
B. moderately persistent
C. low persistence
D. not naturally found in the environment

Question Twenty

A. Some plant and animal species can increase in abundance
B. It conforms to all environmental regulatory conditions set out in SEPPs.
C. Life cycle analysis shows that it does not contribute significantly to global warming.
D. It can continue for a long time without serious harm to local ecosystems.

SECTION B – Short answer questions

Question One

a. Name and describe the project, including location, timeline and major objectives.

1 mark for timeline, 1 mark for objectives, 1 mark for accurate description of locality and 1 mark for overall structure of answer. Total 4 marks.

b. Describe two (**2**) environmental impacts and / or risks associated with the project.

1 mark for each risk described. Total 2 marks.

c. Suggest mitigation strategies which are or can be applied to reduce impacts / risks associated with the project.

1 mark for each mitigation strategy described. Total 2 marks.

d. Describe the EES/EIS or ERA or EMP associated with the project or if none have been developed, describe an outline of an appropriate form of a plan.

1 mark for correctly identifying what the question is asking, 1 mark for outlining what is involved for these plans, 1 mark for specifically relating it to the project, 1 mark for the overall structure of the answer. Total of 4 marks.

Question Two

a. What effect does increasing levels of ozone alone have on the plants?

As the Ozone concentration increases so does the death rate among plants in the trail. Total 1 mark.

b. Which gas alone, at similar concentrations to the other, has the greater effect on the plants?

1 mark for correctly identifying Ozone as having the most significant effect, 1 mark for referencing back to data in the table. Total 2 marks

c. What percentage of the plants survived trial 4? Show working out.

*17/50 * 100 = 34%. Total 1 mark.*

d. Explain the results for trials number 7 and 8.

1 mark for including comment about the presence of two pollutants, 1 mark for comment that the combination produces a higher mortality than the individual gases alone, 1 mark for attributing this to a synergistic effect. Total 3 marks.

Question Three

a. Name a pollutant you have studied this year other than Mercury and Sulphur dioxide.

1 mark.

b. Explain why the pollutant named in part a. should be considered a pollutant. You should name two properties that define this material as a pollutant.

1 mark for each property. Total 2 marks.

c. Name a source and transport mechanism for this pollutant.

1 mark for each. Total 2 marks.

d. Describe a management plan, or actions that have been taken, to monitor and control the impact of this pollutant. Include some evaluation of the effectiveness of the measures, referring to any monitoring or evidence available.

1 mark for description of plan, 1 mark for comment on effectiveness, 1 mark for evidence, 1 mark for the structure of the answer. Total 4 marks.

Question Four

a. Identify two key management issues or risks that this project must address.

1 mark for each identified. Total 2 marks.

b. What must occur after the risks have been identified in order to complete a risk management plan?

1 mark for mitigation strategy, 1 mark for review and improvement plan. Total 2 marks.

c. Describe two management tools that should be used to evaluate this proposal and how they would be used?

1 mark for each tool and 1 mark for each description. Total 4 marks.

Question Five

a. What comments can you make about the effectiveness of the pesticide?

1 mark for correctly identifying a decreasing trend of effectiveness, 1 mark for specifically referring to data in the graph. Total 2 marks.

The table shows some of the organisms found in the ecosystem surrounding the crops and the average concentration of a particular pesticide within each organism.

Organism	Concentration of pesticide (parts per million)
Birds	26.40
Predatory insects	2.07
Sap-sucking insects	0.23
Soil	0.04

b. Explain the most likely reason for the differences in the concentration of pesticide.

1 mark for identifying bioaccumulation, 1 mark for using data from the table to support this claim. Total 2 marks.

Question Six

a. Describe an ecotourism activity highlighting at least two reasons why it can be called ecotourism.

1 mark for the description, 2 marks for supporting its claim to be an ecotourism activity, Total 3 marks.

b. Suggest two risks to the environment posed by the activity and what mitigation strategies have been put in place to reduce these risks.

1 mark for each risk, 1 mark for each mitigation strategy. Total 4 marks.

c. Is the activity accredited as an ecotourism activity? Discuss the importance of accreditation.

1 mark if students identify the accreditation as a mechanism of promoting public trust, 1 mark for any other reasonable response. Total 2 marks.

Question Seven

a. The graph above shows the opening of fishing grounds and total annual scallop catches. Explain why the catch shown in the graph dropped rapidly soon after the opening of each new fishing ground.

1 mark for reference to over-fishing, 1 mark for using data to support claim. Total 2 marks.

b. Discuss the positive and negative implications of the scallop fishing example for intergenerational equity.

1 mark for including a definition of intergenerational equity, 1 mark for specifically relating it to the question, 1 mark for positive implications, 1 mark for negative implications. Total 4 marks.

Question Eight

Minamata disease was discovered for the first time in 1956 in the fishing community of Minamata City, Japan. It was the biggest pollution problem to

strike Japan in the 20th century and there have been numerous cases worldwide since. The case was attributed to Methyl Mercury that was generated during the production of acetaldehyde at a local chemical manufacturing facility. It used mercury as catalyst before pumping it into the bay. What is the most likely source of exposure for people of Minamata?
2 marks for identifying fish as the likely for of exposure. Total 2 marks.

a. Is the manufacturing facility an example of a point source or diffuse source of pollution? Explain.

Full marks if they can justify their selection of either a point source or diffuse source. Total 2 marks.

b. What are the health implications of ingesting large amounts of Methyl Mercury?

1 mark for each health implication, if students are vague in their answer then award only 1 mark. Total 2 marks.

c. Suggest what actions could have been put into place when the first cases of poisoning were reported.

Difficult question to grade, however marks should be awarded to students who consider some form of monitoring to find the source of the toxin and to alert the public to the presence of this toxin in their fish. Marks should also be awarded for students who consider the value of an EIA once the source has been found and / or an EMS to help the company avoid further risks to public safety. Total 4 marks.

Question Nine
Renewable energy company, Southern Hydro, is working on plans for a new 130 megawatt (MW) boost to Victoria's electricity supplies, with a major upgrade proposed for Victoria's Kiewa Valley hydro-electricity scheme. The proposed hydro-electric power station is the biggest of its kind planned for Victoria for decades and thanks to the use of new engineering technology, it will not require a new dam to be constructed. Southern Hydro is shortly expected to begin a comprehensive planning approval process that will involve all levels of government. This will include an environmental impact study, fieldwork and extensive community consultation.

a. What steps would need to be followed to produce an Environmental Effects Statement (EES)?

These will vary from authority to authority so some flexibility should be allowed for. In general a sequence involving: Outline of proposal, rationale for undertaking it, alternatives, audit of environment, potential impacts, mitigation strategies, monitoring arrangements, implementation process, overall assessment. Total 3 marks.

a. If the EES for the Southern Hydro scheme is approved, then an Environmental Monitoring Program (EMP) will need to be developed for the project. Name a government agency or regulatory agency that should be involved in the development and monitoring of the EMP. Describe its role.

For an EES in Victoria the agency involved could be the EPA Victoria. They would use environmental indicators to assess the impact of the project on the environment and to make sure it complies with all regulations. Total 2 marks.