2004-ASL
LS (ES)

HONG KONG EXAMINATIONS AND ASSESSMENT AUTHORITY

HONG KONG ADVANCED LEVEL EXAMINATION 2004

LIBERAL STUDIES (ENVIRONMENTAL STUDIES) AS-LEVEL

8.30 am – 11.00 am (2½ hours)

This paper must be answered in English

1. This paper consists of **Section 1** and **Section 2**. Section 1 carries 75% of the module marks, and Section 2 carries 25%.

2. **Section 1** consists of three questions, ***all*** of which are to be answered. **Section 2** consists of four questions, of which candidates may attempt any ***one***.

3. Each question is worth 25 marks: 20 marks are allocated for content and 5 marks for effective communication.

4. The maximum content marks are indicated in brackets at the end of each question and sub-question. They are a guide to the length of answer required, which may vary from one to several paragraphs.

5. Candidates are reminded that this subject emphasises the ability to present and support points of view in a clear, concise and logical manner, rather than the ability to recite facts.

SECTION 1

Answer *all* the questions in this section.

1. Consider the following information:

Source 1: Recovery Rate of Recyclable Plastic Waste

Country/Economy	Year	Percentage of recyclable plastic waste recovered
Hong Kong	2002	26
Australia	2000	16
Japan (household) (industrial)	2000	35 25
USA	2000	5
Germany	1999	65
UK	2001	7

Source: *Environment Hong Kong 2003*, Environmental Protection Department, 2003. (http://www.epd.gov.hk/epd/misc/ehk03/eng/waste/7_4.html)

Source 2: A project to investigate an economical method for manufacturing panels using plastic waste

There are now about 555,000 tonnes of waste plastics generated in Hong Kong each year. A science team at the Hong Kong University of Science and Technology (HKUST) is examining how plastic waste can be used to manufacture moulds for making concrete panels (e.g., walls) in buildings. At present the construction industry uses 35 million square metres of concrete panels and this requires the use of 1.5 million square metres of moulding most of which is made of wood. A change to plastic would save over 0.5 million trees.

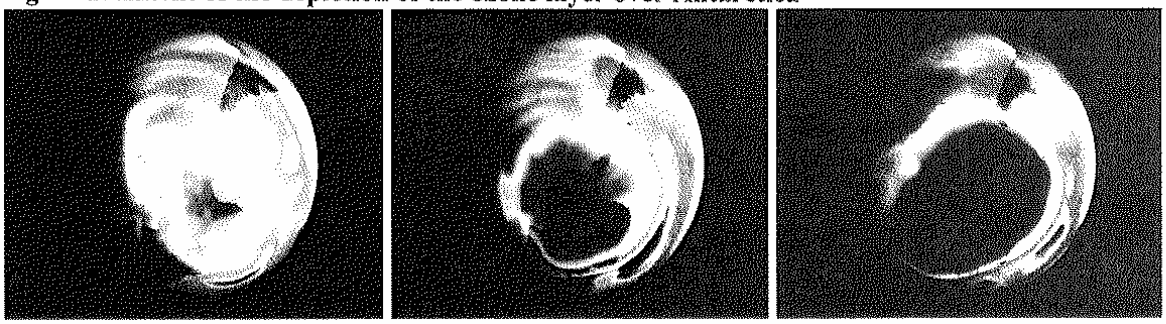
Note: Adapted from a project brief in Environment, Transport and Works Bureau Website, 2003. (http://www.etwb.gov.hk/boards_committees/ecfc/index02/list/list_64/index.aspx?langno=1&nodeid=106)

(a) With reference to Source 1, comment on the performance of Hong Kong in the recovery of recyclable plastic waste. Suggest possible reasons for the similarities and differences in the recovery rate of recyclable plastics among the countries and economy cited. (5 marks + 5 marks)

(b) What is the issue raised in the project brief shown in Source 2? To what extent is the proposal by the HKUST science team consistent with an ecologically sustainable future? (5 marks + 5 marks)

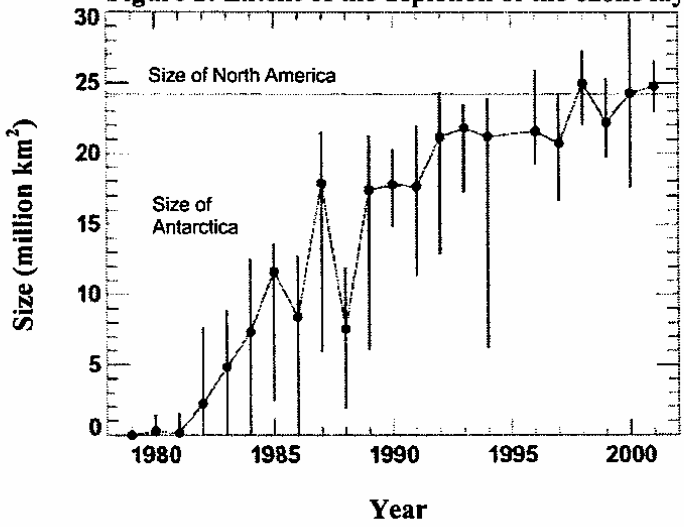
2. Consider the following information:

Figure 1: Extent of the depletion of the ozone layer over Antarctica



18 September 1979 | 21 September 1988 | 10 September 2000

Figure 2: Extent of the depletion of the ozone layer over Antarctica



Source: NASA Goddard Space Flight Center, 2003. (http://www.gsfc.nasa.gov/topstory/20020926ozonehole.html)

(a) In the last two decades, the thinning of the ozone layer has been monitored over Antarctica. Comment on the changing extent and characteristics of the thinning over time as shown in Figures 1 and 2, and discuss the causes leading to the changes. (5 marks + 5 marks)

(b) Discuss the effectiveness and limitations of measures adopted by international organisations to address the problem of ozone layer depletion. What actions can individuals take to help alleviate this problem? (6 marks + 4 marks)

3. Consider the following information:

Source 1

In 2003, cholera bacteria were found in the water used in the fish tanks of some shops selling fresh seafood. This water was taken from the sea. The Hong Kong Special Administrative Region Government suggested that companies supplying the water should be licensed in order to control water quality.

Source 2

Hong Kong

- Population: 6.8 million
- Produces 2.4 million cubic metres of sewage each day
- 30% of sewage untreated
- $31.8 billion spent on sewage projects since 1989
- Served by 200 sewage handling facilities
- 5% of households not served
- 30% of beaches unsuitable for swimming; 4 closed
- Marine life in Victoria Harbour restricted to small species that require limited oxygen supply

Note: Adapted from *South China Morning Post*, 4 March 2003.

(a) Based on the above information, identify and discuss the nature of the problem and explain how the problem may have arisen. (5 marks + 5 marks)

(b) What solutions are implied in the information above and explain how successful you think they will be. To what extent would these be considered as long-term remedies? (5 marks + 5 marks)

SECTION 2

Answer *one* question from this section.

4. Consider the following information:

> A major development in the global mining industry in the last decade is the rapid development of China in the world market. From a small but significant exporter of minor mineral commodities such as tungsten, China is now a significant influence in most of the major mineral markets.
>
> China, for example:
>
> - recorded a double-digit annual growth through the 1990s in mineral use;
> - accounted for one-third of world growth in copper use (1990 - 2000);
> - accounted for 40% of world growth in aluminium use (1990 - 2000);
> - needed to import more than 60% of the copper for its industries;
> - is the largest steel producer and consumer in the world; and
> - exported 75 million tonnes of coal in 2002, doubling its share of the world's traded coal market from 6% in 2000 to 12% in 2002.

Note: Adapted from *Mining, Minerals and Sustainable Development*, p.48, 2002.

(a) Describe and identify the major factors affecting the trends indicated above concerning China's recent consumption and production of mineral resources. What may be the environmental consequences of such mineral consumption and production patterns over the next few decades for China? (6 marks + 6 marks)

(b) Hong Kong is also a significant user of mineral resources. Hong Kong culture has been called 'materialistic'. What is meant by this term? What can Hong Kong do to help contribute to achieving the larger goal of sustainable development with respect to the utilisation of mineral resources? (3 marks + 5 marks)

5. Consider the following information:

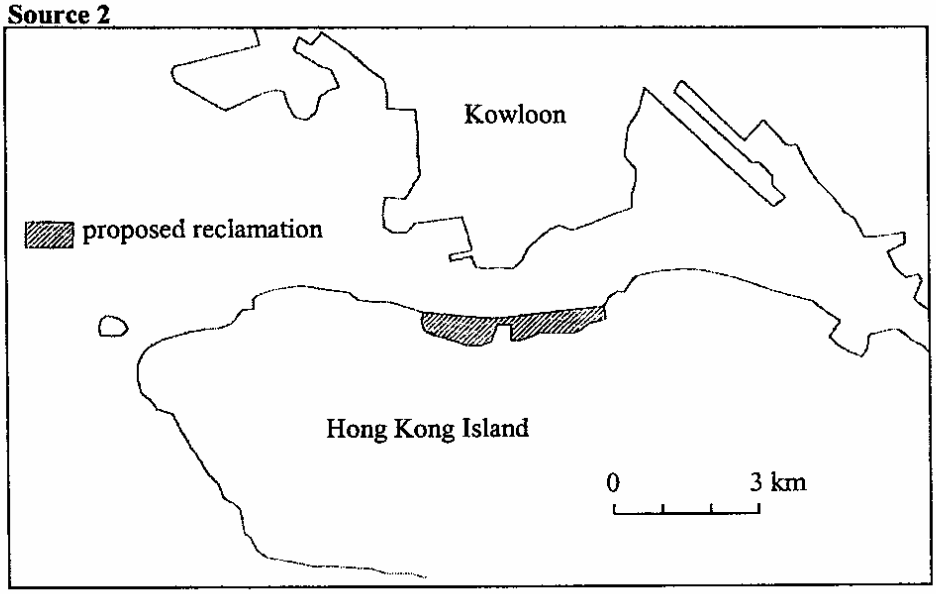
Source 1

Transport chaos predicted if central bypass is halted

If reclamation work for the planned Central—Wan Chai reclamation bypass is halted, in eight years, the driving time from Kennedy Town to Central will increase from 3 minutes to 20 minutes. The vehicle congestion index on Gloucester Road would jump from 1.0 at present to 1.2 in 2011 if the bypass is not built. It would be 0.9 if the bypass is constructed. A transport expert said that the Hong Kong Special Administrative Region Government should adopt more creative policies to address the traffic congestion problem, as in other big cities around the world.

Note: Adapted from *South China Morning Post*, 3 October 2003.

Source 2



(a) What are the respective arguments of the proponents and opponents of the Central—Wan Chai reclamation project? Explain the environmental values of these two groups. (5 marks + 5 marks)

(b) What alternative solutions might be suggested to help address the transport problems that the Central—Wan Chai reclamation and the bypass are expected to solve? To what extent would these alternatives affect the harbour environment? (5 marks + 5 marks)

6. Consider the following information:

Source 1

Most of the vegetables consumed in Hong Kong come from the Pearl River Delta region. Some environmental non-governmental organisations in Hong Kong are worried about the level of use of pesticides because farmers in Guangdong are using excessive amounts to maintain their profits.

Much of the pesticides applied are washed into the ecosystem; but some remain as residue in the vegetables.

At times, the residue of pesticides left on the vegetables reaches levels that are harmful to human health. Even though vegetables transported into Hong Kong are checked at the border and samples are taken for testing (see Source 2), contaminated vegetables do sometimes get through to the markets and are consumed in Hong Kong.

Source 2

	Year		
	2000	**2001**	**2002**
Number of vehicles carrying vegetables inspected at Man Kam To Food Control Office	79,304	75,353	67,075
Number of food samples taken for testing	59,991	57,906	55,515

Source: Food and Environmental Hygiene Department, 2003.
(http://www.fehd.gov.hk/statistics/safefood/safefood.htm)

(a) Discuss the problems described in Source 1. These problems reflect both economic and ecological attitudes. Discuss the tensions that may arise between the two attitudes.
(5 marks + 5 marks)

(b) One solution to the problem of pesticides on vegetables is to replace the present system of industrial farming with organic farming. To what extent do you think this alternative would be feasible for firstly, the Pearl River Delta region and secondly, Hong Kong? (5 marks + 5 marks)

7. Consider the following information:

Tapping the Heat of the Earth's Crust
Trial may unleash a potent source of renewable energy

Engineers in central Australia are preparing to test whether rocks can unleash 'green' energy at volumes equivalent to about half of Kuwait's oil reserves. The key to the process lies in special hot rocks with temperatures of more than 250°C that are located no more than five km below the Earth's surface. Water is pumped down into the rocks. This water is heated by the rocks and the water is then pumped back to the surface.

Note: Adapted from 'Outbreak Australia sizzles with hidden power', Environmental News Network, 22 August, 2003. (http://www.enn.com/news/2003-08-22/s_7743.asp)

(a) Discuss the advantages and disadvantages of geothermal energy as a source of 'green' energy. (5 marks + 5 marks)

(b) Geothermal energy is not available in Hong Kong. Discuss the viability of two other forms of 'green' energy that Hong Kong could develop. (5 marks + 5 marks)

END OF PAPER