

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 : 18 marks are allocated for content and 7 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.

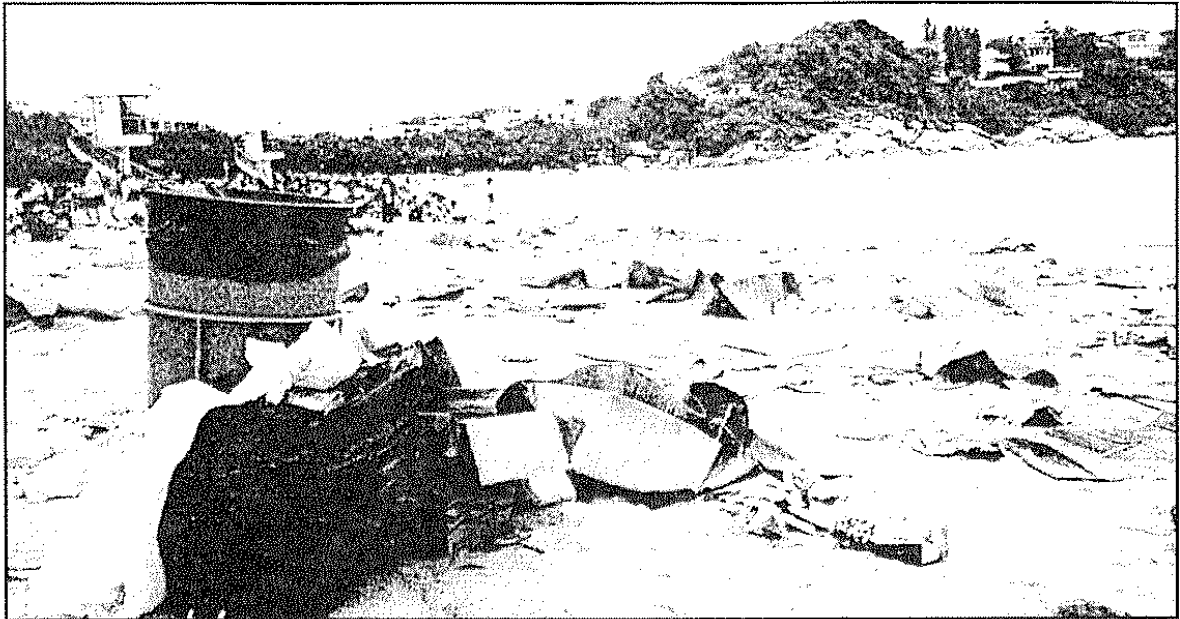
SECTION 1

Answer *all* questions in this section.

1. Consider the following information :

Festival leaves another fine mess

Mid-Autumn revellers bury beaches in 143 tonnes of debris – and not one pays the \$600 penalty



Christine Loh Kung-wai of Civic Exchange took part in the beach clean-up the day after the festival. She said many items recovered weighed very little. 'For these...to take up 143 tonnes — that is quite mind-blowing. As regards the number of fines given...none, that is also quite shocking when concentrated groups of people threw away so much rubbish almost at the same time. Why didn't the government enforce the law when it sought to get Legislative change just in June to increase littering fines?' she said.

(Adapted from a report in *South China Morning Post* on 11 October 2002.)

- (a) What is the issue highlighted in the newspaper cutting? Why is the issue so important in Hong Kong? (6 marks + 4 marks)
- (b) Suggest and justify *two* approaches to solve the problems raised in the above information provided. (8 marks)

2. Consider the following information :

Country/ Region	GNP [#] per capita 1996 (US\$)	Water use per capita per year 1980-96 (m ³)	Energy use per capita 1995 (coal equivalent) (kg)	Carbon dioxide emissions per capita 1995 (metric tonnes)	Energy use efficiency indicator 1999 (oil equivalent used to produce US\$1,000 GDP [†]) (metric tonnes)
China	750	461	707	2.7	0.99
Germany	28,870	580	4,156	10.2	0.13
Hong Kong	24,290	924*	2,212	5.0	0.12
Tanzania	170	40	32	0.1	2.43
USA	28,020	1,839	7,905	20.8	0.26

[#]GNP : gross national product

[†]GDP : gross domestic product

*figure for year 2000

Source : *World Bank Atlas*, 1998 and *Key World Energy Statistics*, 2001 Edition.

- (a) What do you understand by the term sustainable development? Interpret the data in the table with reference to the idea of sustainable development. (3 marks + 7 marks)
- (b) What measures do you think that Hong Kong should take in order to achieve sustainable development? What changes in society would this entail in the first place? (4 marks + 4 marks)

3. Consider the following information :

Nuclear power is extraordinary in both its promise and its peril. In 1994, at Daya Bay, which is located 50 km from Hong Kong Island, two nuclear power plants went on line, each with an approximate capacity of 1,000 megawatts. Seventy percent of the power they generate goes to helping support Hong Kong; this accounts for 13.6 percent of Hong Kong's total electric power consumption. In 2002, the first of four additional projected nuclear power plants, again each with an approximate capacity of 1,000 megawatts, went on line at Lingao, about 1.2 km east of Daya Bay.

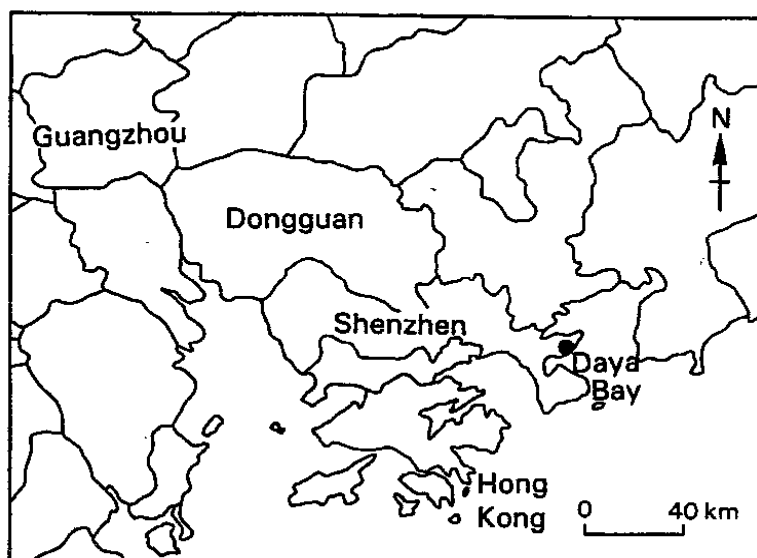


Table 1 : Past and projected development of nuclear power for generating electricity in the Pearl River Delta region (megawatts)

Year	Total Capacity
1994	2,000
2002	4,000
2010	6,000 (planned)

Table 2 : Change in population size of selected cities in the Pearl River Delta region from 1990 to 2000 (millions)

City	1990	2000
Hong Kong	5.70	6.67
Shenzhen	1.67	7.00
Dongguan	1.74	6.44
Guangzhou	6.30	9.94

- From the tables above, explain to what extent there is a relationship between population change and the expansion of nuclear power-based electric generating capacity. (8 marks)
- Evaluate the environmental advantages and disadvantages of nuclear power. Considering the potential threats of terrorist attacks, do you think the expansion of nuclear power is an appropriate strategy or does it place the whole region in grave danger? (6 marks + 4 marks)

SECTION 2

Answer *one* question from this section.

4. Consider the following information :

There are 23 country parks and 15 special areas (four of which are located outside country parks) in Hong Kong. Covering a total area of 41,582 hectares, they comprise scenic hills, woodlands, reservoirs, islands, indented coastlines, marshes and uplands. There are also four marine parks and one marine reserve covering a total area of 2,430 hectares. These comprise scenic coastal areas, seascapes and important biological habitats.

The country and marine parks are carefully protected for the purposes of nature conservation, outdoor recreation, countryside education, tourism and scientific studies.

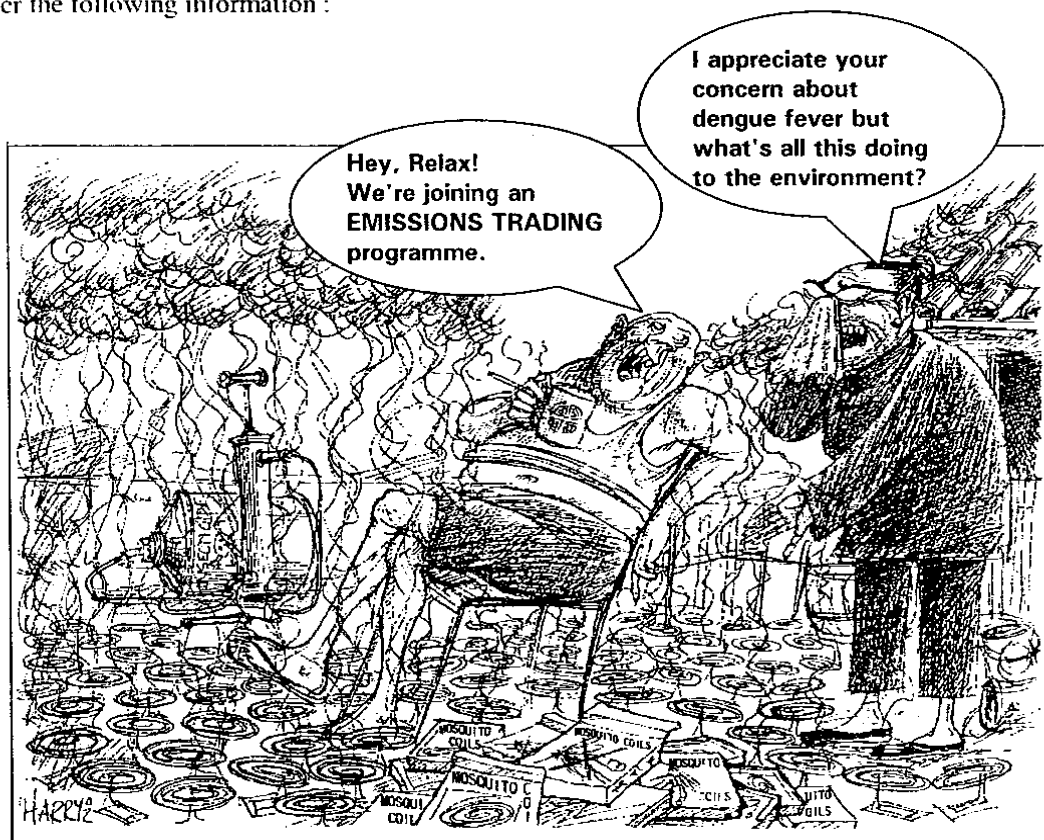
Country parks and special areas are managed on a multi-use basis, involving protection of woodland and vegetation against fire, control of development, tree planting, litter collection, provision of educational and recreational facilities and promoting better understanding of the countryside. Over 11 million visitors were recorded in the year.

In marine parks, fishing is controlled with a permit system and is confined to local villagers and *bona fide* fishermen.

(Adapted from *HONG KONG 2001, 2002*, pp. 300-301.)

- (a) The protected areas mentioned above attract many people for scientific study and recreation as well as for residence and work in nearby areas. What are the likely similarities and differences in environmental values that are found among these different groups? Under what circumstances may these groups come into conflict? (5 marks + 5 marks)
- (b) To what extent should it be the Government's sole responsibility to resolve these conflicts? What other means might be adopted? (4 marks + 4 marks)

5. Consider the following information :



(Adapted from a cartoon in *South China Morning Post* on 30 September 2002.)

A clear opportunity to cut the smog

An emissions trading scheme with China, which allows the trading of 'environmental credits', could help reduce air pollution in Hong Kong and also create a profitable new market.

(Adapted from a report in *South China Morning Post* on 24 October 2002.)

Emissions trading rush is on the way

Mainland officials and businessmen are expected to move quickly to trade in pollution emissions. These are estimated to be worth HK\$13 billion. Most projects in the Mainland have dealt with sulphur dioxide, and emissions rights might trade at 200 yuan per tonne. In the USA, sulphur dioxide trades for up to US\$200 per tonne. Hong Kong will join with Guangzhou and Macau in emissions trading.

(Adapted from a report in *South China Morning Post* on 7 October 2002.)

- (a) What is the issue highlighted in the cartoon? Explain what is meant by emissions trading and how an emissions trading scheme operates. (4 marks + 6 marks)
- (b) What are the essential requirements for emissions trading to be successful in improving air quality? Do you think that emissions trading can solve the problems of air pollution in the Pearl River Delta area? (4 marks + 4 marks)

6. Consider the following information :



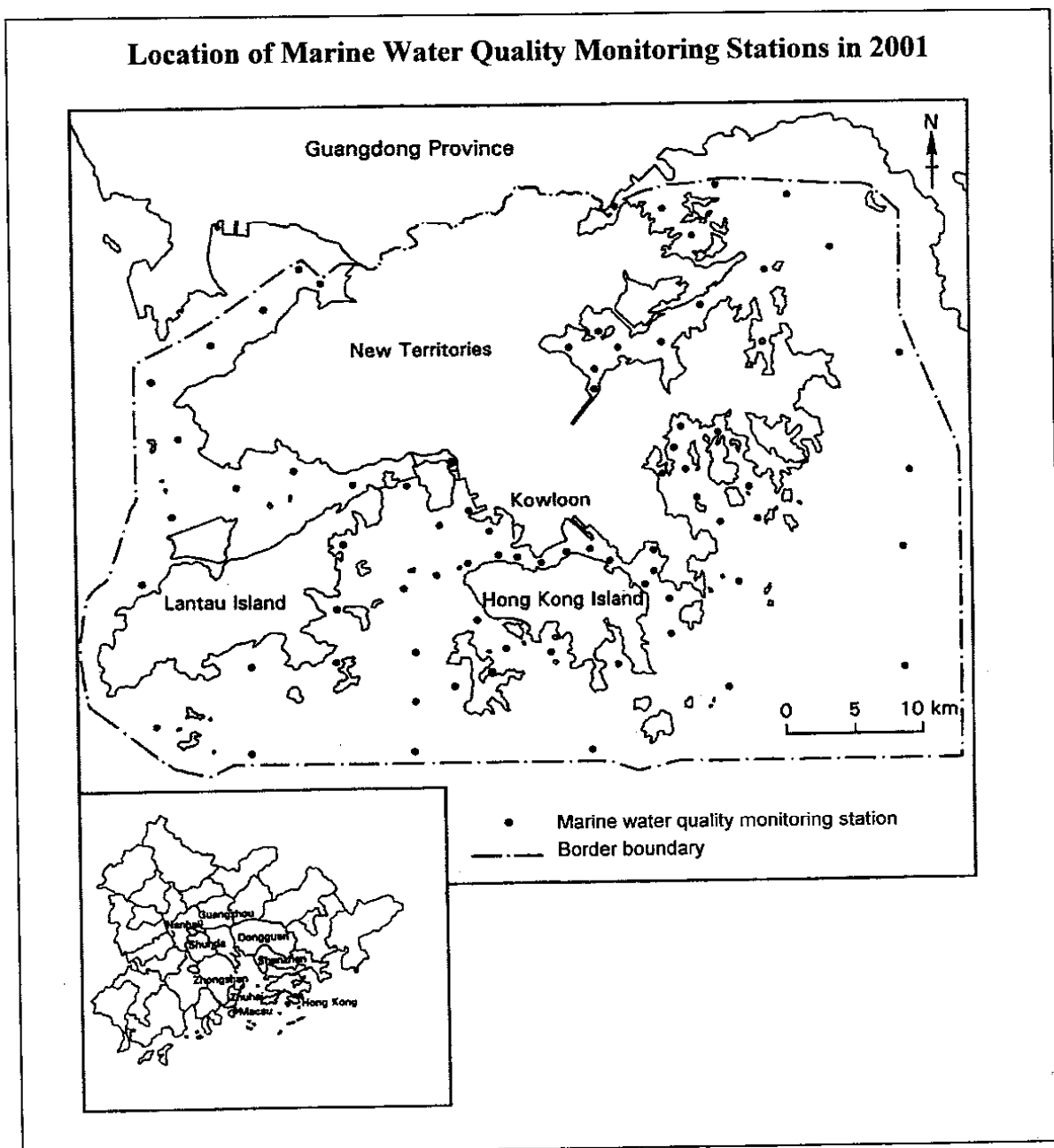
Source : British Council Website
(<http://www.britcoun.org/science/science/posters/poster2.htm>)

Ecologists estimate that at least fifty percent of all the plant and animal species on Earth reside in tropical rainforests.

- (a) Considering how international trade is organised and functions, why is understanding the above information important? What kinds of economic activities affect tropical rainforest gene pools and what ethical issues would arise from such activities? (4 marks + 4 marks)
- (b) Why is the Mai Po Nature Reserve in Hong Kong ecologically important both locally and globally? What would you do to promote the discussion and understanding of the tensions between economic growth and ecological protection among the Hong Kong general public? (5 marks + 5 marks)

7. (a) Five of the most important sources of open-water pollution are : organic pollution; agricultural pollution; runoff; toxic waste; and thermal pollution. Discuss *two* of these in terms of how they affect the environment. With reference to the two pollution sources which you have discussed, how can technology be used to deal with the open-water pollution problems created? (5 marks + 5 marks)
- (b) With reference to the map below, in the case of Hong Kong, what other factors, besides technology, need to be incorporated into a comprehensive solution to deal with the problem of open-water pollution? (8 marks)

The map below shows the location of 76 water quality monitoring stations in Hong Kong open-waters run by the Environmental Protection Department :



(Adapted from *Environment Hong Kong 2002*, Environmental Protection Department, 2002, p. 99.)

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