

**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 concerning electric minibuses :

**Table 1**

<b>ELECTRIC VEHICLES : 100 YEARS IN THE MAKING</b>	
1900s	The electric vehicle (EV) was a top attraction at the 1st New York Auto Show. Worried about the 'explosive' internal combustion engine (ICE), consumers preferred electric cars.
1930s	Battery technology fell behind that of the ICE. By 1933, EVs had disappeared.
1970s	The oil crisis. The U.S. and other governments restarted research into electric vehicles and battery technology.
1980s	Vehicle emissions and other environmental issues became a concern. EV development began in earnest.
1990s	California's historic 'Clean Air Act' attempted to rid the State of all internal combustion vehicles by the 21st Century. Every major international carmaker had an EV or hybrid gasoline-electric vehicle (HEV) under testing or on the market.

**Table 2**

<b>SOME FACTS ABOUT MINIBUS IN HONG KONG</b>		
	Diesel minibus	Electric minibus
Emission free	No	Yes
First Registration Tax	4%	Nil
Annual License renewal	\$10,994	\$1,314
Average fuel/energy cost per km	\$1.30	\$0.65
Average maintenance cost per km	\$0.77	\$0.46
Torque	360Nm	419Nm
Top speed	120km/h	90km/h
Mileage per each petroleum refill/charging	Approximate 700 km	120 km
No. of petroleum stations/charger stations	178	0
Price per vehicle	\$328,000	\$568,800

- (a) Referring to Table 1, what factors do you think are decisive in the development of electric vehicles? Explain your answer. (6 marks)
- (b) Referring to Table 2, explain whether you think that minibus drivers would want to use electric vehicles instead of their existing diesel vehicles. (6 marks)
- (c) Discuss to what extent electric vehicles are not environmentally friendly. (6 marks)

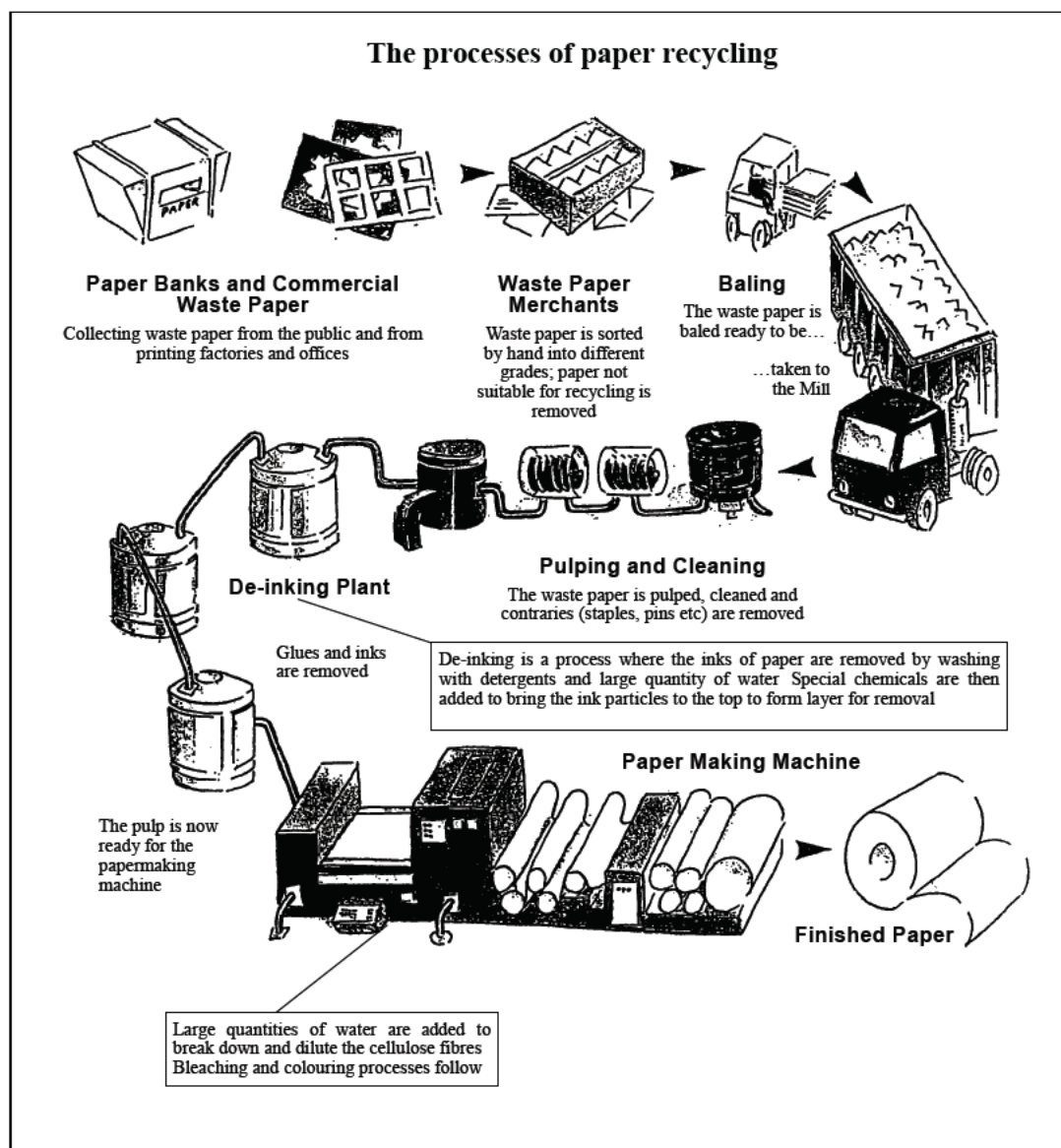
2. Consider the following information :

Country/Region	Number of nuclear power plants still operating	Number of major nuclear accidents (1957-1999)
U.S.A.	110	6
France	57	1
Japan	53	1
U.K.	35	2
Russia	29	5 (in the former U.S.S.R.)
Canada	21	0
Germany	20	0
South Korea	11	0
India	10	0
Taiwan	6	0
The mainland of China*	3	0

\*The mainland of China started to consider using nuclear energy by the end of 1970s as there was a sharp increase in the demand for energy for industrial development. Besides, the burning of coal emits a great quantity of sulphur dioxide into the atmosphere, intensifying the effect of acid rain. In September 1999, the government announced that it would build a fourth nuclear power plant.

- (a) What is the relationship between the number of nuclear power plants still operating and major nuclear accidents as shown by the data? Discuss what factors potentially contribute to nuclear accidents. (3 marks + 6 marks)
- (b) With reference to the above information and your understanding of new technologies for developing alternative sources of energy, do you support the building of the fourth nuclear power plant in the mainland of China? Give reasons. (9 marks)

3. Consider the following information :



### Facts about pulp & paper

Trees used in the paper industry are usually coniferous softwoods such as spruce and pine. Wood used by the paper industry comes almost entirely from managed forests, where new trees are replanted after the trees are cleared.

Hardwoods from tropical rainforests are not suitable for papermaking. Over 80% of the world's deforestation is caused by the need for fuel for local use, or for land for living or for farming.

Cellulose fibres cannot be re-used indefinitely. Every time the fibres are recycled they lose some of their essential properties. After being re-used perhaps half a dozen times, the fibres are no longer useful for making paper.

Referring to the information provided, discuss whether you think the recycling of waste paper is environmentally friendly. (18 marks)

## SECTION 2

Answer *any one* question in this section.

4. Consider the following article :

### Green town planning 'way of future'

The building of new towns through the redevelopment of slums would provide a 'green' focus to make Hong Kong a better place to live.

The concept of pollution free towns would incorporate virtually all levels of town planning including new towns, urban redevelopment and redevelopment of the former Kai Tak airport site.

New towns would spread along pedestrianized promenades with transport underneath. They would be linked up with the rest of Hong Kong mainly by railway.

Electric transport would be available, while as much greenery as possible would be grown on promenades.

The idea is that once you step out of your home you can stroll on the promenade as far as you wish without even seeing a petrol or diesel vehicle.

Urban renewal would also take on this concept, with thousands of old buildings being pulled down and the sites regrouped under a single plan, incorporating the same green focus.

Similar 'green towns' have existed in many European countries such as Sweden and Italy for a long time. People will enjoy their lives more. The additional time and money needed to plan and build these towns is worth spending because people's living standards will improve.

In the light of the above article, discuss whether you think the proposed 'green towns' are 'green' enough. What factor do you think is most important for the building of a 'green town'? Explain your answer.

(9 marks + 9 marks)

5. Consider the following information :

Litterbug A :	'Littering is no big deal, everyone else does.'
Litterbug B :	'I can't afford to litter. I dropped a cigarette end and was charged a \$600 fine. It was a good lesson for me. I don't want to go to Court again, so I won't litter again.'
A government official :	'We need more prosecutions. We need to remind people not to litter.'
An environmental activist :	'People feel it is someone else's job to clean up. We need to change the way people feel about their neighbourhood, and to make people feel they have ownership of their community.'

<i><b>LITTERING : FINE FACTS</b></i>	
Hong Kong	Around \$430. Fines do not increase for multiple offences. There were more than 40,000 prosecutions for littering in 1998.
Singapore	S\$1,000 (about HK\$4,600) for first offence. S\$2,000 for repeated offenders plus a corrective work order. This order requires litterbugs to wear bright jackets and spend a few hours cleaning up a public place.
Britain	Fixed penalty of GBP25 (about HK\$312).
United States	Fines ranging from US\$50 to US\$3,000 (about HK\$390 – HK\$23,200). Additional penalties usually include community service; in Georgia, offenders' names are published. Shopkeepers are legally responsible for the area in front of their premises.

Despite 27 years of the Keep Hong Kong Clean Campaign and 16,600 litterbins on the streets, littering is still a serious environmental problem in Hong Kong. Referring to the above information, discuss why people in Hong Kong litter and what measures you think should be taken to improve the situation.

(6 marks + 12 marks)

6. Consider the following information :

**(A) Information extracted from newspapers**

**Ocean temperatures rise, people face hunger**

Two environmental groups in the United States pointed out the following in a recent report :

- Global warming has left animals in different parts of the world with a shortage of food, for example, salmon in the Pacific.
- The melting of ice at the Poles affects numerous species of mammals and birds.
- As industrial countries use more and more mineral fuels and emit carbon dioxide and other gases, the world temperature continues to rise. It reached a record in 1997 and 1998; some animals are now forced to migrate to cooler regions.
- The change in sea-water movements named 'El Nino' and 'La Nina' occurred five times between 1990 and 1997. However, a few hundred years ago they occurred only once every two to fifteen years.

**Global warming will affect tourism**

- Winter will be shortened in skiing regions.
- Holiday resorts in the Mediterranean will become hotter.
- The airplane is the most rapidly growing source of global warming. The number of passengers is expected to increase from 594 million in 1996 to 1600 million in 2020.

**(B) Suggestions from the World Wide Fund for Nature**

- Use recycled resources to replace mineral fuels.
- In order to improve the efficient use of energy, especially in tourist holiday resorts, governments should amend ordinances concerning buildings.

- (a) Are the concerns pointed out in the newspapers above real threats or are they just the excessive concerns of environmentalists? Explain your answer. (9 marks)
- (b) To what extent are the suggestions proposed by the World Wide Fund for Nature likely to be effective in helping resolve the issue of global warming? (9 marks)

7. Consider the following information :

<b>Actions of people</b>	<b>The damage to the environment</b>
Discharging effluent with a high nitrogen and phosphorus content into the ocean.	There are now 50 'dead zones' in the oceans which support little life.
Changing the nature of half of our land, e.g. reclaiming swamps, turning grassland into farmland and forests into cities.	Species now facing extinction : <ul style="list-style-type: none"><li>• 24% of the 4,500 species of mammals;</li><li>• 12% of the 9,500 species of birds;</li><li>• 6% of the 100,000 species of plants.</li></ul>
Continuing exploitation of nature by people over the next half century.	Up to 70% of animal and plant species will become extinct.

- (a) What can you conclude from the above information? (6 marks)
- (b) Suggest and explain **three** measures which you think should be given priority in saving species from extinction. (12 marks)

**END OF PAPER**