

2011

M.Sc.

Part-II Examination

ENVIRONMENTAL SCIENCE

PAPER—VIII

Full Marks : 100

Time : 4 Hours

*The figures in the right-hand margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*Illustrate the answers wherever necessary.*

*Answer Q. No. 1 and any five questions from the rest.*

1. Answer any ten questions of the following : 2×10

(i) Mention two indirect uses of solar energy.

(ii) What do you mean by 'bio diesel'?

(iii) What do you mean by 'thermal neutron'?

(iv) How coal is transported through pipes?

(Turn Over)

- (v) What is the difference between 'wet' and 'dry' natural gas?
- (vi) What do you mean by the statement 'the heat of combustion of anthracite coal is 27 MJ/Kg'?
- (vii) The heat produced on complete combustion of 0.6g of LPG raises the temp. of 500g of water by 16°C. Calculate the calorific value of LPG.  
[Given, Sp. ht. of water = 4.2J/g°C]
- (viii) What do you mean by 'mini hydro' and 'micro hydro' plants?
- (ix) 'A high head installation requires a smaller volume of water than a low head installation to produce an equal amount of hydropower' — Give reasons of the statement.
- (x) What are the social issues regarding ocean energy?
- (xi) What is the principle of a collection device for thermal application of solar energy?
- (xii) Give difference between nuclear fission and nuclear fusion.
- (xiii) What is 'pyrolysis'?
- (xiv) What is eco-friendly car?

- (xv) Why does 'water vapour not considered as an ideal greenhouse gas'?
- (xvi) What is industrial ecology?
2. Write the major positive attributes of hydropower. Give an outline of negative impacts of large wind power project. 8+8
3. Write notes on : (i) OTEC ; (ii) Nuclear power reactor. 8+8
4. What are the environmental impacts of solar energy? Give a brief outline of large scale concentrating solar power technology. 8+8
5. What is 'nuclear fuel cycle'? What are the steps taken in the 'front-end' of the fuel cycle? Mention the functions performed in the 'back-end' of the fuel cycle. 4+6+6
6. What is thermal pollution? What are its effects? Discuss about the control and prevention of thermal pollution. 2+6+8
7. What are the uses and limitations of a biogas plant? Write notes on 'fixed dome type biogas plant'. 8+8

8. What is solar pond? Give with figure the working principle of solar pond. 4+12
9. Write notes on : 8+8
- (i) Geothermal energy ;
  - (ii) Tidal energy.
10. Define : (i) roentgen ; (ii) gray ; (iii) rem ; (iv) sievert. Write the characteristics of hazardous waste with examples. 8+8
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