

2014

**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) What do you mean by 'energy prosperity-environmental dilemma'?
- (ii) How can the waste heat of the solar power station be used?
- (iii) Write two environmental impacts of large scale exploitation of wind energy.
- (iv) Write the components of oceanic energy resource.

(Turn Over)

- (v) What do you mean by 'geologic disposal of radioactive waste' ?
- (vi) Write D-D type fusion nuclear reaction.
- (vii) Why does water vapour not considered as ideal green house gas ?
- (viii) Mention two physical effects of thermal pollution.
- (ix) What do you mean by an aerobic digestion ?
- (x) Define the time constant related to the renewability of biomass.
- (xi) What is MHD power generator ?
- (xii) What is OTEC ?
- (xiii) 'A high head installation requires a smaller volume of water than a low head installation to produce an equal amount of hydro power' — do you agree ? Give reasons for your answer
- (xiv) What is chain reaction in nuclear fission ?
- (xv) Mention two names each for woody biomass and non-woody biomass.
- (xvi) What do you mean by the statement the 'heat of Combustion of anthracite coal is 27 MJ/kg' ?

2. Write notes on : 8+8
- (a) Solar Pond ;
- (b) Hot spring.
3. (a) Give a brief outline regarding formation coal.
- (b) Mention the names of fractions obtained by refining of crude petroleum oil ? 10+6
4. (a) What is tidal energy ? What are its advantages and disadvantages ?
- (b) What is geothermal energy ? Write merits and limitation of geothermal energy ? 8+8
5. Describe in brief (with schematic diagram) a liquid flat plate collector. What are its advantages and disadvantages. 10+6
6. Define biomass. Write the general methods which are commonly used to produce electricity from biomass. What are the advantages of biomass energy ? 2+8+6
7. With illustrations write important interactions of energy systems with the environment. How is lithosphere affected by coal energy sectors. 10+6

8. (a) Write different units of radioactivity. What are the units used to measure the health risk through ionization.

4+4

(b) What is nuclear fuel cycle? Give the flow diagram for the cycle.

2+6

9. Write Notes on :

8+8

(i) Solar photovoltaic system ;

(ii) Negative impacts of large hydro project.

10. (a) How is Solvent Refined Coal (SRC) obtained ?

(b) Discuss the merits of biodisel over fossil fuel.

8+8