

2017

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 : 10×2
- (i) What do you mean by 'bio-diesel'?
 - (ii) Write the basic difference between 'mini hydro' and 'micro hydro' plants.
 - (iii) "All energy directly or indirectly originates from nuclear energy"— Explain.
 - (iv) Mention the types of mirrors used in solar electric power station.

(Turn Over)

- (v) Give a schematic diagram of a 'solar air heater'.
- (vi) What is meant by 'refining' of petroleum?
- (vii) Draw a graph on spectral characteristics of solar radiation.
- (viii) What is PV Cell?
- (ix) Name the energy sources in order of their consumption.
- (x) How is the tidal energy converted to electrical energy?
- (xi) What is LED?
- (xii) Give an outline of the electromagnetic spectrum of solar radiation.
- (xiii) Mention the types of hydropower system with brief description.
- (xiv) Mention the merits of small hydroelectric power plant.
- (xv) What is 'acid mine drainage'?
- (xvi) Write difference between nuclear fission and nuclear fusion.
2. What is nuclear reactor? Mention the functions of materials used in a common nuclear reactor. Give a brief note on 'decommissioning of nuclear power reactor'.
- 2+8+6

3. Mention the principle of anaerobic digestion. Write the merits of 'anaerobic digestion project'. Give flow chart of mesophilic process. 5+8+3
4. (a) Give an outline regarding impacts on environment due to large scale exploitation of wind energy.
- (b) Write briefly on large scale exploitation of hydroenergy and its impacts. 8+8
5. What is 'thermal pollution'? What are the sources of thermal pollution? Write the effects of thermal pollution. Discuss about the control and prevention of thermal pollution. 2+4+4+6
6. (a) Give an outline on advantages and disadvantages of renewable, nonrenewable and sustainable energy sources.
- (b) What are the advantages and disadvantages of tidal energy? 12+4
7. Draw a diagram of photovoltaic water pumping system. How can storage of solar energy be achieved? 8+8

8. Give the method of transformation of energy in hydel power project. What is the life span of a hydroelectric power project? What are the advantages of hydro power plants over thermal power plant. 6+2+8
9. Write an essay on the energy use pattern and its potential impact in different countries of the world. 16
10. How are petroleum and natural gas formed? What are the limits and alternatives of fossil fuels? Mention some environmental issues related to fossil fuels. 3+8+5
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