

2020

ELECTRONICS — GENERAL

Paper : SEC-A-2

(Renewable Energy and Energy Harvesting)

Full Marks : 80

The figures in the margin indicate full marks.

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

Answer **question nos. 1 & 2**, and **any four** questions from the rest.

1. Answer **any ten** questions from the following : 2×10
- (a) What are renewable energy sources?
 - (b) What is Geo-thermal energy?
 - (c) What are nuclear chain reactions?
 - (d) What is photovoltaic effect?
 - (e) What are wind farms?
 - (f) Mention two organic materials that are used in a biomass plant.
 - (g) What are the constituents of biogas?
 - (h) What is the source of tidal energy?
 - (i) What are the advantages and limitations of small scale hydroelectric power?
 - (j) How is energy continuously being produced in the sun?
 - (k) State one limitation of Nuclear Energy.
 - (l) Why most of the thermal power plants are set near coal mines?
2. Answer **any four** questions from the following :
- (a) Differentiate between conventional and non-conventional energy sources. 5
 - (b) What are the main advantages and disadvantages of ocean wave energy? 5
 - (c) What are fossil fuels? How does their consumption affect the environment? 3+2
 - (d) Explain how hydro and wind energies are the indirect sources of solar energy. 5
 - (e) What is piezoelectric effect? Name two piezoelectric materials. 3+2
 - (f) What do you understand by ocean energy? 5

Please Turn Over

3. (a) Draw the schematic diagram of a solar pond electric power plant. Explain its working.
(b) What are the advantages of flat plate solar collector? (3+3)+4
4. (a) What are the disadvantages of using fossil fuels? How can we overcome them?
(b) Draw a neat diagram of a biogas plant. Describe its construction and working. (2+2)+(3+3)
5. (a) With a neat diagram, explain how wind energy can be converted into electrical energy.
(b) State the essential features of a probable site for a wind farm. (3+3)+4
6. (a) Explain the working of a hydro power plant with a neat diagram.
(b) What are nuclear fission and fusion reactions? (3+3)+(2+2)
7. Write short notes (*any two*) : 5×2
- (a) Linear generators
 - (b) Solar Greenhouse
 - (c) Osmotic power
 - (d) Dry cell.
8. (a) Explain about solar cooker.
(b) Discuss about space cooling and refrigeration system.
(c) State the advantages of photovoltaic solar energy conversion. 4+4+2
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