

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 : 2×10
- (a) What is meant by non-renewable energy source?
 - (b) How energy resources are classified?
 - (c) What are the applications of solar energy?
 - (d) Name the types of windmills.
 - (e) What are the different types of renewable energy sources?
 - (f) Define energy utility factor.
 - (g) What is Carbon Capture technology?
 - (h) Name three fossil fuels and explain why they are not renewable.
 - (i) Give three differences between tidal and wave energy.
 - (j) Mention two Piezo Electric Energy Harvesting Application.
 - (k) What are the applications of Biomass?
 - (l) Name any two geothermal resources.
2. Write short notes on **any four** of the following : 5×4
- (a) Solar pond
 - (b) Biomass
 - (c) Electromagnetic energy harvesting
 - (d) Wind turbines
 - (e) Ocean Energy
 - (f) Solar Green House.

Please Turn Over

3. What according to your view are the major challenges in adopting solar power as a household power source? Explain the working of a solar cell. 5+5
 4. Explain the importance of geothermal energy. Briefly describe the working of different kinds of geothermal power plant. 5+5
 5. Discuss different methods of biochemical conversion. Explain the working of a biogas plant with proper diagram. 5+5
 6. Describe with diagram the power electronic interfaces required in a wind energy harvesting system. Briefly describe different Grid Interconnection Topologies used to prepare this harvesting system. 5+5
 7. (a) How hydro electricity is generated? Name three types of hydroelectric power.
(b) Is hydropower a renewable resource? Give some advantages and disadvantages of hydropower. (3+2)+(1+2+2)
 8. (a) What do you understand by Piezoelectric effect? Explain mathematically.
(b) Describe how Piezo electric parameters are used to model Piezo electric generators. 5+5
-