7. What are the factors that describe the importance of wind energy harvesting. Explain in detail. Discuss its disadvantages.   (10×2=20)

[This question paper contains 4 printed pages.]

30 NOV

Your Roll No............

Sr. No. of Question Paper : 1354   **30 NOV 2022**

Unique Paper Code   : 32223905

Name of the Paper   : Renewable Energy and Energy Harvesting

Name of the Course   : B.Sc. (Prog) / B.Sc. (Hons)

Semester   : III/V

Duration : 3 Hours   Maximum Marks : 50

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.

2. Non- programmable scientific calculators are allowed.

3. Question no 1 is compulsory.

4. Attempt any two from Section A and Section B.

5. Attempt five questions in all.

1. Answer any **five** of the following :

     (a) Discuss briefly Flat Plate Collector (FPC) based solar water heaters.

P.T.O.

(b) Write short note on photovoltaic effect in solar cells/ photovoltaic (PV) modules.

(c) Discuss mathematical description of piezo-electricity phenomenon.

(d) A single solar cell (10 cm X 10 cm) produces a voltage of 0.5 V and current up to 2.5A. If solar radiation is 800 W/m^2. What is efficiency of the solar cell?

(e) Write a note on sun tracking systems.

(f) How does a fuel cell differ from traditional methods of energy generation? What are the advantages of fuel cells.

(g) What are the electrical parameters in the generation of power using tidal energy?

(h) Discuss the basic principle of electromagnetic energy harvesting?   (2×5=10)

Section A

(Answer any two)

2. How the performance/efficiency of the solar cell can be improved? Discuss using its I-V characteristics.

3. Discuss essential components of hydroelectric systems. Discus its advantages and disadvantages.

4. Write short note on :

(a) Fill factor of solar cell.

(b) Formation of piezoelectric material.   (10×2=20)

Section B

(Answer any two)

5. What are the main causes of greenhouse effect. Explain the term "carbon footprints".

6. How to investigate the effect of tidal flat on tidal energy? Discuss its limitations.