

**B.Sc. Semester III (Honours) Examination, 2021 (CBCS)**

**Subject: Physics**

**Paper: SEC-I (Renewable Energy)**

**Time: 2 Hours**

**Full Marks: 40**

*The questions are of equal value. Candidates are required to give their answers in their own words as far as practicable.*

Answer any **eight** of the following questions:

5 x 8 = 40

1. Briefly discuss the basic components of wind energy conversion system. What are yaw control and pitch control?
2. What are the factors that affect the overall efficiency of a wind turbine? Is windmill is same as wind turbine? Define tip speed ratio (TSR) of a wind turbine.
3. What are the major components of bio gas? Briefly discuss the method of production of bio gas from organic waste. What is fermentation?
4. How do we use ocean for energy? Discuss the principle of generating tidal energy with diagram. What is tailrace?
5. What do you mean by renewable and non-renewable energy? Give example. Discuss the advantages and disadvantages of renewable energy sources.
6. What is solar pond? How energy is extracted from solar pond? Define solar tracking system.
7. What are the causes that makes interior of the earth hot? Why heat extraction from geothermal sources is called heat mining? Discuss the impact of geothermal energy extraction on environment?
8. Define thermonuclear reaction. Nuclear fission or fusion –which is more effective and why? Define fossil fuel. Give example.
9. What is piezo electric effect? Name two materials that exhibit piezo electric property. How human power can be used to harvest piezo electric energy?
10. What does energy harvesting mean? Why is energy harvesting important? State the principle of electromagnetic energy harvesting.

**B.Sc. Semester III (Honours) Examination, 2021 (CBCS)**

**Subject: Physics**

**Paper: SEC-1 (Weather Forecasting)**

**Time: 2 Hours**

**Full Marks: 40**

*The questions are of equal value. Candidates are required to give their answers in their own words as far as practicable.*

Answer any **eight** of the following questions:

5 x 8 = 40

1. Define the atmosphere. Explain its importance to human life.
2. Distinguish between troposphere and stratosphere. Why vertical movement of air is small in the stratosphere? What causes the temperature to increase in the stratosphere?
3. What is the difference between condensation and precipitation? Why do the tropics have more precipitation than other locations? How does hail form?
4. Discuss at least five main threats of climate change.
5. What are clouds and how they are classified? What causes thunderstorm?
6. What is the “greenhouse effect”? Why is it called the “greenhouse” effect? What is the enhanced greenhouse effect?
7. What is ozone layer and why it is important? How is stratospheric ozone formed?
8. What is monsoon, SO, El Nino, La Nina and ENSO?
9. What is lightning? What type of electricity is lightning? How does the Earth benefits from lightning?
10. What is forecasting? What are short-range, medium-range and long-range weather forecasting? What is Geostationary orbit of a Satellite?