

## 14. SOURCES OF ENERGY

| Q. No                           | Question  | Marks |
|---------------------------------|---|-------|
| <b>Multiple Choice Question</b> |   |       |
| Q.42                            | <p>Place X is a metropolitan city with many high-rise buildings and parks. Place Y is an elevated location with cottages and large open spaces.</p> <p>Which of the two places would be LESS SUITABLE to set up a wind energy farm and why?</p> <p>A. Place X, as there are parks.</p> <p>B. Place Y, as it is at an elevation.</p> <p>C. Place Y, as it has large open spaces.</p> <p>D. Place X, as there are high-rise buildings.</p>          | 1     |
| Q.43                            | <p>Mohan owns a large livestock farm near a pond. The farm is on an elevation. It receives a steady wind speed of 10 km/h. The area is sunny for the greater part of the day on most days.</p> <p>Which of the following could be the sources of energy on his farm?</p> <p>P) hydro-electricity</p> <p>Q) biomass</p> <p>R) wind</p> <p>S) solar</p> <p>A. only P and S</p> <p>B. only Q and S</p> <p>C. only Q and R</p> <p>D. only P and R</p> | 1     |
| Q.44                            | <p>The best source of energy to power satellites in space is solar energy.</p> <p>Select the reasons that justify the above statement.</p> <p>P) It is easily available.</p> <p>Q) It is the only inexhaustible form of energy.</p> <p>R) It does not need to be transported as a source of fuel.</p> <p>A. only P and Q</p> <p>B. only Q and R</p> <p>C. only P and R</p>  | 1     |

|  |   |   |
|--|---|---|
|  | D. all- P, Q and R  |   |
| <b>Free Response Question/ Subjective Question</b> |   |   |
| Q.45   | <p>Although wind is present everywhere, wind energy devices are not commonly found in residential areas.</p> <p>State any TWO reasons why harnessing wind energy is NOT a common practice in residential areas.</p>   | 2 |
| Q.46   | <p>Hydropower plants are used to generate electricity, commonly, from waterfalls.</p> <p>In the absence of waterfalls,</p> <p>(a) What kind of setup has to be made to enable a flowing water source to generate electricity?</p> <p>(b) How does the setup mentioned in (a) help to generate electricity?</p>  | 2 |
| Q.47   | <p>A region 'X' along the coast, with large vacant space experiences a wind speed of 32 km/h for most of the year.</p> <p>(a) Describe, briefly, the setup and the process involved in generating electricity using the given wind speed.</p> <p>(b) State TWO factors that make region X a suitable location to set up a wind energy farm.</p> <p>(c) Apart from wind energy, identify TWO forms of energy that can be generated using renewable sources in region X. Justify your answer.</p> | 5 |

### Answer Key & Marking Scheme

| Q. No | Answers   | Marks |
|-------|---|-------|
| Q.42  | D. Place X, as there are high-rise buildings.   | 1     |
| Q.43  | B. only Q and S   | 1     |
| Q.44  | C. only P and R   | 1     |
| Q.45  | <p>1 mark each for any two reasons such as:</p> <ul style="list-style-type: none"> <li>- Devices that harness wind energy require large areas of land which is generally scarce in residential areas.</li> <li>- Buildings in residential areas may block the wind reducing its speed to below 15 m/s required to run a turbine.</li> </ul> <p>(Accept any other valid answer.)</p>   | 2     |
| Q.46  | <p>(a) High-rise dams can be constructed on the river to obstruct the flow and collect water in the reservoirs.</p> <p>(b) Water falling from the high level of the reservoir turns the turbines at the bottom of the dam, converting the potential energy of the falling water into electricity.</p>   | 2     |
| Q.47  | <p>(a) 0.5 marks for each of the following:</p> <ul style="list-style-type: none"> <li>- A wind energy farm OR windmill has to be set up in the open space available near the coast.</li> <li>- The kinetic energy of the wind causes the windmill to rotate.</li> <li>- The rotating windmill turns the turbine of an electric generator thereby generating electricity.</li> </ul> <p>(b) 1 mark for each of the following:</p> <ul style="list-style-type: none"> <li>- High wind speed that can be used to harness more energy.</li> <li>- availability of large open spaces to set up a windmill/ wind energy farm</li> </ul> <p>(c) 0.5 marks each for identifying the two forms of energy and 0.5 marks for the justification:</p> <ul style="list-style-type: none"> <li>- wave energy</li> <li>- tidal energy</li> <li>- Justification: Since the region is located along the coast, it allows for the generation of electricity using tides and wave speed/size of marine water.</li> </ul> | 5     |