

(b) A thermal energy storage with a storage capacity Q_s of 300 kWh uses water as a storage medium. The water temperature in the storage varies between 80°C in fully charged state and 20°C in fully discharged state. Determine the required mass and volume of water as well as the mass and volume related energy density of storage.

(c) What are the various types of solar thermal power plants ?

3. Answer any two of the following : (5×2=10)

(a) What are the factors which affect the generation of Biogas ?

(b) Compare the fixed dome type plant and movable drum type plant with neat and clean sketch.

(c) What methods are used to overcome the fluctuating power generation of a windmill ? Discuss their merits and demerits.

4. Answer any two of the following : (5×2=10)

(a) What is the difference between a fuel cell and a battery ? Explain the working function of solid oxide fuel cells with neat sketch.

(b) Explain the various methods of tidal power generation. What are the limitations of each method ?

(c) Describe briefly on :

(i) Problems with hydrogen as fuel

(ii) Storage and transportation

(iii) Hydrogen cartridge.

5. Answer any two of the following : (5×2=10)

(a) Explain Seebeck thermoelectric effect. How Seebeck co-efficient vary with temperature ?

(b) What are the advantages and disadvantages of geothermal energy ? Describe a Binary cycle system for liquid dominated system.

(c) What is Ocean Thermal Energy ? Explain the principle of open cycle OTEC system with suitable diagram.