

Unit-V

S.No	Questions	BT	CO	PO
Part – A (Short Answer Questions)				
1	What is meant by EES (Energy Storage Systems)?	L1	C05	PO1
2	What are the two categories of EES market potential studies discussed in the chapter?	L1	C05	PO1
3	What is the estimated total market potential for EES according to the Boston Consulting Group (BCG)?	L1	C05	PO1
4	Which EES technologies are considered most suitable for conventional stabilization applications?	L1	C05	PO1
5	What assumptions were made by Panasonic while estimating the Li-ion battery market?	L1	C05	PO1
6	What is the present pumped hydro storage capacity in Germany mentioned in the study?	L1	C05	PO2
7	Why is long-term energy storage important for renewable energy integration?	L1	C05	PO1
8	What is the Vehicle-to-Grid (V2G) concept?	L1	C05	PO1
9	What is the storage capacity of Germany's natural gas grid?	L1	C05	PO1
10	Name any two electrochemical EES technologies expected to be widely used in the future.	L2	C05	PO1
Part – B (Long Answer Questions)				
11	a) Explain the EES market estimation carried out by Sandia National Laboratory (SNL) and discuss its findings regarding market size and benefits.	L2	C05	PO2
	b) Describe the Boston Consulting Group (BCG) study on EES market potential by 2030. Explain the major application groups and profitability analysis.	L2	C05	PO3
12	a) Discuss the Panasonic Group's estimation of the future Li-ion battery market and the assumptions used in the simulation.	L1	C05	PO2
	b) Explain the role of Energy Storage Systems in supporting the large-scale integration of renewable energy sources.	L1	C05	PO1
13	a) Describe the EES market potential estimation for Germany by Fraunhofer. Discuss the storage requirements for hourly, daily, weekly, and monthly energy demands.	L1	C05	PO1
	b) Explain the concept of storing large amounts of energy in gas grids using Hydrogen (H ₂) and Synthetic Natural Gas (SNG). Discuss its advantages and limitations.	L2	C05	PO1
14	a) Discuss the Siemens study on EES market potential in Europe under a 100% renewable energy scenario.	L2	C05	PO2

	b)	Explain the International Energy Agency (IEA) estimation of future EES requirements. How does renewable energy penetration affect storage demand?	L2	C05	PO2
15	a)	What is Vehicle-to-Grid (V2G) technology? Explain its benefits, challenges, and impact on future energy storage requirements.	L1	C05	PO3
	b)	Discuss the future market potential of Energy Storage Systems. Explain the major conclusions and future prospects of Li-ion batteries, CAES, RFB, H ₂ , and SNG technologies.	L3	C05	PO2
16	a)	Explain the EES market estimation carried out by Sandia National Laboratory (SNL) and discuss its findings regarding market size and benefits.	L3	C05	PO2
	b)	Describe the Boston Consulting Group (BCG) study on EES market potential by 2030. Explain the major application groups and profitability analysis.	L2	C05	PO2

