

Unit-5

S.No	Questions	BT	CO	PO
Part -A (Short Answer Questions)				
1.	Define a Hybrid Energy System (HES).	L2	CO5	1
2.	Why are hybrid energy systems required?	L1	CO5	1
3.	What are the advantages of hybrid renewable energy systems?	L1	CO5	1
4.	List different types of hybrid energy systems.	L1	CO5	1
5.	Define Solar PV/Wind hybrid system.	L1	CO5	1
6.	What is the function of charge controller in a hybrid system?	L1	CO5	1
7.	Define standalone hybrid system.	L1	CO5	1
8.	What are the challenges in integrating renewable energy sources to the grid?	L1	CO5	1
9.	What is power conditioning in hybrid systems?	L1	CO5	1
10.	Mention two advantages of grid-connected hybrid systems.	L1	CO5	1

S.No	Questions	BT	CO	PO
Part -B (Long Answer Questions)				
1.	Explain the need for Hybrid Energy Systems and discuss their advantages and limitations.	L3	CO5	2
2.	Describe different types and configurations of Hybrid Energy Systems with neat diagrams.	L3	CO5	2
3.	Explain the working principle of Solar PV/Wind Hybrid Energy System.	L3	CO5	3
4.	Draw and explain the architecture of a Solar-Wind Hybrid System.	L4	CO5	3



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5.	Discuss the components and operation of a standalone solar-wind hybrid energy system.	L2	CO5	2
6.	Explain the importance of power electronic converters in hybrid energy systems.	L3	CO5	3
7.	Discuss synchronization and protection issues in grid-connected hybrid systems.	L2	CO5	2
8.	Explain the economic and environmental benefits of hybrid renewable energy systems.	L2	CO5	2
9.	Draw the block diagram of a hybrid solar PV/wind energy system and explain each component.	L3	CO5	3
10.	Explain the importance of power electronic converters in hybrid energy systems.	L4	CO5	2