


Name:			
Enrolment No:			
<b>UNIVERSITY OF PETROLEUM AND ENERGY STUDIES</b> <b>End Semester Examination, May 2022</b>			
<b>Course:</b>	<b>Hybrid Renewable Energy Technology</b>	<b>Time</b>	<b>: 03 hrs.</b>
<b>Program:</b>	<b>B. Tech Electrical Engineering</b>	<b>Max. Marks:</b>	<b>100</b>
<b>Course Code:</b>	<b>EPEG 4024 P</b>		
<b>Instructions: Kindly go through the choices between questions wherever applicable.</b>			
<b>SECTION A</b> <b>(5Qx4M=20Marks)</b>			
S. No.		Marks	CO
Q 1	Describe the Electrochemical storage of a storage system.	4	CO1
Q 2	Briefly explain about the tools for the demonstration and assessment of additionally.	4	CO2
Q 3	Explain the Need & development of renewable energy sources	4	CO2
Q 4	How a carbon network is working between Buyers and Sellers. Explain the role of the parties involved in carbon trading.	4	CO3
Q 5	Get across the role of CO <sub>2</sub> reduction potential of renewable energy with an example.	4	CO4
<b>SECTION B</b> <b>(4Qx10M= 40 Marks)</b>			
Q 6	Illustrate the following: <ul style="list-style-type: none"> <li>• Environmental Benefit and purification of Hydrogen.</li> <li>• Hydrogen Production Units in India.</li> <li>• Hydrogen Management, Transportation and Limitations.</li> </ul>	10	CO4
Q 7	Elucidate the importance of Super Capacitor and Fuel Cells application in EV's, battery system	10	CO2
Q 8	Simplify the benefits of fuel cells and how a fuel cell is different from a battery? Enlist the types of fuel cells are available and the details of different types of PEM fuel cells.	10	CO3
Q 9	Explicate with a case study of the optimization of power system. As a designated entity how the determination of Load Demand of consumers being made.	5+5	CO4
<b>SECTION-C</b> <b>(2Qx20M=40 Marks)</b>			
Q 10	Expound the MPPT for Solar PV system in the following categories: <ol style="list-style-type: none"> <li>a. Why MPPT is required</li> <li>b. What is the biggest advantage of using a MPPT device?</li> <li>c. Which is better MPPT or PWM?</li> </ol>	4Q*5M	CO5

	d. Why do we need a solar charge controller?		
Q 11	Unfold 'India's National Hydrogen Mission and Prospects for Cooperation with GCC'. What are the Different Types of Fuel Cells? Explain any two of them with proper schematic diagram Or, How does a fuel cell differ from traditional methods of energy generation? Explain the importance of Environmental Benefits if Hydrogen Energy.	<b>10+10</b>  <b>10+10</b>	<b>CO4</b>  <b>CO4</b>