	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE **Regular and Supplementary Summer 2024** **Course: B.Tech.** **Branch: Electrical Engineering and Allied** **Semester : IV** **Subject: Advance Renewable energy Sources** **Subject Code: BTEEPE405C** **Max Marks: 60** **Date: 24/06/2024** **Duration: 3 Hours**		
	Instructions to the Students: *1. All the questions are compulsory.* *2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.* *3. Use of non-programmable scientific calculators is allowed.* *4. Assume suitable data wherever necessary and mention it clearly.*		
Q. 1	**Solve Any Two of the following.**		**12**
A)	What are the merits and demerits of nonconventional energy sources?	Remember	**6**
B)	Explain the construction and working of hydrogen-oxygen fuel cell.	Understand	**6**
C)	Write short note on Demand side management & Supply side management.	Understand	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	Draw and explain wind power generation curve and also explain the terms 1. Cut-in speed 2. Cut-out speed 3. Rated speed 4. Tip speed ratio.	Remember	**6**
B)	Demonstrate HAWT in detail with neat and clean diagram and also explain 1. Stall Control 2. Pitch Control and 3. Yaw control in HAWT.	Remember	**6**
C)	State and explain at least twelve points for site selection of Wind power plant.	Remember	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	Define: 1. Irradiance 2. Insolation 3. Fill Factor 4. Diffused Radiation 5. Beam Radiation 6. Extra-Terrestrial radiation.	Remember	**6**
B)	What are the different types of solar collectors? Explain in detail Power Tower Receiver	Understand	**6**
C)	The efficiency of solar cell is 20% and its surface area is $4cm^2$ find electrical energy generated in 1 sec by 3000 cells connected in solar panel, if 640J of solar energy is incident on 1 m^2 area in 1sec.	Apply	**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	What is the difference between Synchronous generator and induction generator? Illustrate working principle of Induction Generator by using torque speed characteristics.	Understand	**6**
B)	Illustrate Anaerobic type biochemical conversion process followed by following points 1. Hydrolysis 2. Acidogenesis 3. Acetogenesis 4. Methanogenesis	Understand	**6**
C)	Draw a neat labelled diagram and explain Gasification process of biomass	Understand	**6**

Q. 5	**Solve Any Two of the following.**		**12**
A)	Explain Superconducting Magnetic storage system with a block diagram.	Remember	**6**
B)	Differentiate between Flywheel and Battery	Remember	**6**
C)	A family used 8kW of power was direct solar energy incident on the horizontal surface at an average rate of 200 W/m^2 is 20% of this energy can be converted to useful Electrical energy. How large an area is needed to supply 81 W electric output?	Apply	**6**
	*** End ***		