KERALA AGRICULTURAL UNIVERSITY
B. Tech. (Agrl. Engg.) 2023 & Previous Admissions
IV Semester Final Examination – June 2025

Fpme.2208   **Fundamentals of Renewable Energy Sources (2+1)**   Marks: 50
Time: 2 hours

I   **Fill in the blanks**   (10x1=10)
1. Ozone layer is a thin layer of ozone (O_3) present in stratosphere which extends from ….,…….. km from the earth.
2. The value of Betz's limit is …………….
3. The terms lift and drag are belongs to ……………
4. Major portion of biogas is ……………..
5. Fatty acid alkyl esters are known as ………………..

State True or False
6. The instrument which measures beam radiation falling on a surface normal to the sun's rays is Pyranometer.
7. The global warming is associated with greenhouse gases.
8. Solar photovoltaic electricity generation is more efficient than solar thermal energy conversion technology.
9. Anaerobic digestion process is done in the presence of oxygen.
10. Biodiesel is produced through fermentation process.

II   **Write short notes on ANY FIVE of the following**   (5x2=10)
1. Define global solar radiation.
2. List out the different renewable energy sources.
3. What is meant by global warming?
4. What is fermentation?
5. List the various types of biogas plant.
6. Define biodiesel.
7. Distinguish horizontal axis wind turbine (HAWT) and vertical axis wind turbine (VAWT).

III   **Answer ANY FIVE of the following**   (5x4=20)
1. Write short notes on various green house gas emissions.
2. Differentiate renewable and non-renewable energy.
3. Explain the working principle of solar still with neat sketch.
4. How do you determine the power availability in wind?
5. Write a short note on Anaerobic digestion process.
6. Distinguish flat plate solar collector and evacuated solar collector.
7. How cooking is done by using solar energy?

IV   **Write an essay on ANY ONE of the following**   (1x10=10)
1. Explain in detail about the different stages of biogas production in a biogas plant.
2. Discuss the working principle of solar photovoltaic electricity generation.

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