

AU/ME - 702 (A)  
B.E. VII Semester Examination. December 2014  
Renewable Energy System  
Time : Three Hours  
Maximum Marks : 70

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Note: i) Attempt any five questions as per choice given. [www.rgpvonline.in](http://www.rgpvonline.in)  
ii ) Draw neat diagrams in support of your answer.  
iii ) Assume suitable data if any.

1. a) Discuss about beam and diffuse radiation. Discuss about solar constant.
- b) Determine the local solar time and declination at a location Latitude 23 degree and 15 minutes North, Longitude 77 degree 30 minute East at 13.30 IST on June 19. Equation of time correction is given from standard table =  $-(1' 01'')$ .

OR

2. a) What is the use a Pyrheliometer and a Pyranometer'? Describe the principle of Pyrheliometer.
- b) Draw a neat diagram showing all components of a flat-plate solar collector. explain the function of each.

3. a) Discuss the Weibull. Rayleigh and normal distribution of Wind.
- b) Describe working of a Wind Energy Conversion System (WECS) with components.

OR

4. a) Derive the expression for maximum power development due to wind.
- b) Discuss various characteristics of wind. How they can be measured'?

- 5 a) Discuss in detail, operation and maintenance of biogas plants.
- b) Compare biomass gasification and biogas generation? Draw any one type of biogas digester.

OR

6. a) Compare various biomass conversion routes in brief.
- b) State various types of biogas gasifier. Sketch and discuss any one type.

7. a) Discuss types of hydro power plants.
- b) Discuss principle of tidal energy conversion with neat sketch.

OR

- 8 a) Briefly compare types of hydro turbines. [www.rgpvonline.in](http://www.rgpvonline.in)
- b) Draw a component layout of a hydro power plant. Discuss in brief.

9. a) Classify geothermal sources. State its applications. [www.rgpvonline.in](http://www.rgpvonline.in)
- b) Define fuel cell. State its types. Discuss basic thermodynamics of fuel cell.

OR

10. a) Write a short note on hydrogen production and storage.
- b) Give a brief note on prospects of geothermal energy in context to India.

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