B.E. (Electrical Engineering (Electronics & Power)) Semester Third (C.B.S.)

Non Conventional Energy Sources Paper - II

P. Pages : 2 **KNT/KW/16/7223**

Time : Three Hours * 0 9 1 0 * Max. Marks : 80

Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.
10. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Explain the various reasons for the variation in solar radiation reaching the earth surface then received at the outside of atmosphere. **5**

b) Explain the following terms with respect to solar power plant: **8**
- i) Solar constant
- ii) Hour Angle
- iii) Declination Angle
- iv) Tilt Angle.

OR

2. a) What is the difference between pyrheliometer & pyranometer? **6**

b) Explain the advantages & disadvantage of concentrating collectors over flat plate type collectors. **7**

3. a) Describe the principle & working of solar pond for solar energy collection & storage. **7**

b) What are the different methods of solar energy storage. Explain any one in detail. **7**

OR

4. a) Explain energy balance equation & collector efficiency to assess the performance of solar collector. **7**

b) Give the advantages of using selective absorber coating for concentrating collector. suggest the names of such material. **7**

5. Write short notes on.

i) Working of solar distillation tower. **5**

ii) Solar pumping **4**

iii) Solar photovoltaic **4**

OR

6. a) Describe solar water heating system. State the advantages of this system. **7**

b) Explain the principle for green house system with neat sketch. **6**

7. a) What are the different parameters to be considered for selecting site for wind energy conversion system (WCES)? **7**

b) Describe with neat sketch, the working of wind energy conversion system with main components. **6**

OR

8. a) How are the wind conversion systems classified? **6**

b) Prove that in case of horizontal axis turbine, maximum power can be obtained. **7**
When

$$\text{Exit velocity} = \frac{1}{3} \text{ wind velocity}$$

and

$$P_{max} = \frac{8}{27} \rho A V_i^3$$

9. a) Describe 'closed cycle' ocean thermal energy conversion (O.T.E.C) system with its advantages over 'Open cycle system'. **7**

b) What is the difference between power from waves and power from tides. **7**

OR

10. a) What are the different components of a Tidal power plant? Explain its working. **7**

b) Compare the double basin arrangement with single basin arrangement in tidal power generating system. **7**

11. a) Describe MHD closed cycle system with advantages & disadvantages. **8**

b) What are the main applications of a geothermal energy Generator. **5**

OR

12. Write short notes on.

i) Biomass conversion techniques. **5**

ii) Anaerobic Digestion **4**

iii) Process of photosynthesis. **4**

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