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SF-8356

B. E. - III (Sem. - VI) (Mechanical) Examination

May/June – 2011

Alternate Energy Sources

Time : **3** Hours] [Total Marks : **100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ B. E. - 3 (SEM. - 6) (MACHENICAL)

Name of the Subject :

☛ ALTERNATE ENERGY SOURCES

☛ Subject Code No. : 8 3 5 6 ☛ Section No. (1, 2,.....) : Nil

Seat No. :

Student's Signature

(2) Attempt **all** questions.

(3) Figures to **right** indicate full marks.

(4) Draw neat sketches wherever necessary.

(5) Assume suitable data if necessary.

1 (a) Attempt the following : **18**

(i) State material used for following in solar collection system : absorber plate, insulation, reflector

(ii) What are heliostats ? Explain with neat sketch.

(iii) Define day length, zenith angle, altitude angle.

(iv) Sketch different types of solar dryers.

(v) Define power coefficient, tip speed ratio, solidity

(vi) State limitations of flat plate collector.

2 (a) Write brief note on concentrating type collector. **8**

(b) With neat sketch explain construction and working of solar dryer. **8**

OR

2 (a) With neat sketch explain construction and working of sunshine recorder. **8**

(b) Differentiate between liquid flat plate collector and air flat plate collector. **8**

3 (a) How are wind mills classified ? Explain in detail. 8

(b) State and explain site selection consideration for wind energy generation. 8

OR

3 (a) Write brief note on present status of wind energy in India. 8

(b) What are the methods used to control fluctuation of power in wind turbine projects ? 8

4 Answer the following : **20**

(i) What is Hybrid cycle of OTEC Plant ?

(ii) List different methods of transportation of Hydrogen. Explain any one.

(iii) What is the working principle of OTEC Plant ?

(iv) What is Energy Management and Energy Audit ?

(v) What are the sources of Hydrogen ?

(vi) What is Magnetically Induced Ionization ?

(vii) What is the basic principle of Tidal Power Plant ?

(viii) List various applications of hydro thermal resources.

(ix) Explain photo synthesis process.

(x) List various resources of biomass.

5 Answer the following :

(a) List different methods for Production of Hydrogen. Explain any one. 7

(b) Explain "Liquid metal MHD System" with neat sketch diagram. 8

6 Answer the following :

(a) Explain various methods in detail for energy conversion from biomass. 7

(b) Explain scope of energy management in residential buildings. 8

OR

6 (a) List advantages and disadvantages of biomass over solar energy. 7

(b) A hot water geothermal plant of the total flow type receives water at 225°C. The pressure at turbine inlet is 10.5 bar. The plant uses a direct contact condenser that operates at 0.35 bar. The turbine has polytrophic efficiency of 0.65, for a cycle net output of 10 MW, calculate hot water flow (kg/hr), condenser cooling water flow (kg/hr), if such water is available at 27°C, the cycle efficiency and the plant heat rate. 8