8E4112

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B. Tech. (Sem. VIII) (Main/Back) Examination, April/May 2012
Electrical Engg.
8EE4 Non Conventional Energy Sources

Time : 3 Hours] [Total Marks : 80
[Min. Passing Marks : 24

*Attempt any **five** questions.*
*Selecting **one question** form **each unit.** All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*
Unit of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)
1. Nil 2. Nil

UNIT - I

1 (a) On the basis of environment and economical aspects, justify the potential and use of non conventional energy sources in power generation in Indian context. 8

(b) What are the reasons of tide and how it can be used for power production ? Draw the layout of a tidal power plant and name its various components (No description). 8

OR

1 (a) What are the three important renewable energy sources used to produce power in India ? Compare them with conventional gaseous based power source. 8

(b) What are the limitations in use of nuclear, tidal and hydro power plants ? What are their present status in India ? 8

UNIT - II

2 (a) Define : Extra terrestrial radiations, solar constant, depiction of solar radiation in the earth's atmosphere and energy emitted by sun. 8

(b) What are the different types of solar collectors used in power production ? Explain with neat sketch the working of a tracking type solar concentrator. 8

OR

2 (a) Describe with neat sketch the working of solar water heating system with back up support used in a hostel. 8

(b) Name three various techniques used for power generation from solar energy. Explain their limitations. 8

UNIT - III

3 (a) How geothermal energy can be harnessed ? Describe with neat sketch the working of a geothermal based power plant. 8

(b) How wind machines are classified ? Explain the conditions and criterion for selection of site for wind farm and the type of wind machine. 8

OR

3 (a) Describe with neat sketch working of a preheat hybrid geothermal power plant. What are its merits and demerits ? 8

(b) Explain the factors on which the wind current depends. How wind blows in coastal areas ? How the wind power is calculated ? 8

UNIT - IV

4 (a) Explain the nuclear fission. What are the necessary requirements for nuclear fusion ? 8

(b) Explain with a neat sketch the working of a basic Tokamak reactor. What are the safety devices used in this reactor ? 8

OR

4 (a) What are the merits and demerits of laser fusion reactor ? Describe the advantages of nuclear fusion. 8

(b) Describe : Plasma confinement, magnetic confinement, inertial confinement and cold fusion. 8

UNIT - V

5 (a) Enumerate the different methods of conversion of plant waste biomass into useful form of energy. Name the equipment used in each case. 8

(b) What are the different technologies for the production of liquid fuels from crop wastes and wild plants ? How these fuels are used for power generation ? 8

OR

5 (a) How cattle wastes can be used to produce gaseous fuel ? Describe with neat sketch the working of a fixed dome biogas plant. List its merits. 8

(b) How liquid bio-fuel are used in running I.C. Engines in India ? Explain with neat sketch one method of ethanol production. What is its scope in India ? 8
