

7E7044

Roll No. _____

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B. Tech. VII Sem. (Main) Exam., Nov.-Dec.-2016
Electrical Engineering
7EX4A Non Conventional Energy Sources

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks Main : 26

Min. Passing Marks Back: 24

Instructions to Candidates:

Attempt any five questions, selecting one question from 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.

Units 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

- Q.1 (a) Explain the difference between conventional and non-conventional energy sources. [6]
- (b) Give the brief idea about world energy situation. [5]
- (c) Discuss the Indian Energy Scenario in present situation. [5]

OR

- Q.1 (a) Explain different components used and power generation process through Tidal power plants. Also describe single basin and double basin arrangement in Tidal power generation. [8]
- (b) What are the advantages and limitations of tidal power generation? [4]
- (c) What is the future prospects of electrical energy generation in India through Tidal power plants? [4]

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UNIT - II

Q.2 (a) What is the principle of Solar photovoltaic power generation? What are the main elements of a Photovoltaic system? [8]

(b) How solar radiations on tilted surface can be calculated? Discuss its mathematical expressions. [8]

OR

Q.2 (a) What do you mean by concentrating collector? Discuss paraboloidal and heliostat collector configuration. [8]

(b) Explain various components and working principle of solar cell and concept of solar cell array. [8]

UNIT - III

Q.3 (a) Explain following basic electric generation schemes through wind energy; [8]

(i) Constant Speed Constant Frequency

(ii) Variable Speed Variable Frequency

(iii) Variable Speed Constant Frequency

(b) What are the advantages of vertical Axis machines over Horizontal type machines? Describe a rotor for relatively low velocity wind. [8]

OR

Q.3 (a) What do you understand by Geothermal energy? Explain different components and working principle of basic geothermal steam power plant. [8]

(b) Enumerate various advantages and disadvantages of geothermal energy generation. Also explain application and future prospects of geothermal energy in India. [8]

UNIT – IV

- Q.4 (a) Differentiate nuclear fusion and nuclear fission process with example. Also describe process of energy generation through nuclear fission in detail. [8]
- (b) Explain magnetic confinement and inertial confinement phenomenon in detail. [8]

OR

- Q.4 (a) Explain different components and working principle of Tokamak reactor for electrical energy generation. [8]
- (b) What are the various advantages of nuclear fusion? Explain laser fusion reactor in detail. [8]

UNIT – V

- Q.5 (a) Explain the concept of electricity generation through biomass. Describe the different biomass conversion technologies in brief. [8]
- (b) Explain in brief; [4x2=8]
- (i) Deen Bandhu Biogas Plant
- (ii) Pragati Design Biogas Plant

OR

- Q.5 (a) Explain the concept of electricity generation through biogas. Describe fixed dome type biogas plant in detail. [10]
- (b) Explain the Ethanol production process in detail. [6]