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Question Paper Code: AEEB14



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

B.Tech IV Semester End Examinations (Regular/Supplementary) - July, 2021

Regulation: R18

ELECTRICAL POWER GENERATION SYSTEMS

Time: 3 Hours

(EEE)

Max Marks: 70

Answer FIVE Questions choosing ONE question from each module
(NOTE: Provision is given to answer TWO questions from any ONE module)

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

UNIT – I

1. (a) Draw the general layout of thermal power plant and explain the working of different circuits. [7M]
(b) Explain construction and working principle of PWR with a suitable diagram. [7M]
2. (a) Explain in detail about pressurized fluidized bed combustion. [7M]
(b) Explain open cycle and closed cycle gas turbine power plant. [7M]

UNIT – II

3. (a) What are the factors to be considered while selecting a site for hydroelectric power plant and the selection factors of a hydraulic turbine. [7M]
(b) Explain the concept of pumped storage systems in hydroelectric power plants. [7M]
4. (a) Describe about the functions of surge tank and penstock in hydro electric power station. [7M]
(b) Explain the two types of water turbines used in hydroelectric power plants. [7M]

UNIT – III

5. (a) Explain about the extraterrestrial and terrestrial radiation falling on horizontal surface. [7M]
(b) Explain in detail about the efficiency and performance of PV cell. [7M]
6. (a) Elucidate about the global and diffuse components of solar radiations. [7M]
(b) Estimate radiation falling on a tilted surface of solar panel. [7M]

UNIT – IV

7. (a) Describe the construction and working of horizontal axis wind turbine(HAWT). [7M]
(b) Explain in detail about the yaw control. What are the advantages of wind power systems? [7M]
8. (a) Define tip speed ratio and determine the necessary equations. [7M]
(b) Describe permanent magnet generator and an induction generator with neat figures. [7M]

UNIT - V

9. (a) What are the objectives of tariff and explain its types. [7M]
 (b) A generating station has a maximum demand of 25MW, a load factor of 60%, a plant capacity factor of 50% and a plant use factor of 72%.
 Find i) The reserve capacity of the plant ii) The daily energy produced and iii) Maximum energy that could be produced daily if the plant while running as per schedule, were fully loaded. [7M]
10. (a) A generating station has the daily load cycle as shown in Table 1.

Table 1

Time (Hours)	0—6	6—10	10—12	12—16	16—20	20—24
Load (MW)	40	50	60	50	70	40

- Draw the load curve and find (i) Maximum demand (ii) Units generated per day (iii) Average load and (iv) Load factor [7M]
- (b) A power station has to meet the following demand : Group A : 200 kW between 8 A.M. and 6 P.M. Group B : 100 kW between 6 A.M. and 10 A.M. Group C : 50 kW between 6 A.M. and 10 A.M. Group D : 100 kW between 10 A.M. and 6 P.M. and then between 6 P.M. and 6 A.M. Plot the daily load curve and determine (i) Diversity factor (ii) Units generated per day (iii) Load factor [7M]

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