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BOARD DIPLOMA EXAMINATION, (C–14)

SEPTEMBER/OCTOBER - 2020

DEEE—FOURTH SEMESTER EXAMINATION

POWER SYSTEMS—I (GENERATION)

Time : 3 hours] [*Total Marks* : 80

PART—A 3×10=30

Instructions : (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. State the need of non-conventional energy sources.

2. List the three methods of energy auditing.

3. List the types of cooling towers in thermal power plants.

4. State the necessity of surge tank and spill gates in hydroelectric power plant.

5. State the factors to be considered for site selection of hydroelectric power plant.

6. List any six components of nuclear reactor.

7. What is chain reaction in connection to a nuclear reactor?

8. Draw the *V-I* characteristics of a solar cell and mention the terms in it.

9. List out three merits of integrated operation of power stations.

10. State the need for energy management.

PART—B

10×5=50

Instructions : (1) Answer *any* **five** questions.
(2) Each question carries **ten** marks.
(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. *(a)* State any five methods of energy conservation. 5

(b) State any five advantages of condensation in thermal power plants. 5

12. Draw the detailed line diagram of a condensing-type thermal power plant and state the function of each component.

13. Discuss about the classification of hydroelectric power plants and their special features in detail.

14. *(a)* List any five demerits of reactors in nuclear power stations. 5

(b) List different fuels used in nuclear power station along with their properties. 5

15. Explain the working principle of solar air heater with a neat sketch.

16. Explain the constructional details and working principle of the wind mill.

17. Calculate the number of units to be consumed so that the annual bill on the basis of two-part tariff is same as that of flat rate tariff for the following data :

(a) Maximum demand = 10 kW

(b) Two-part tariff = ₹ 1,400 per kW of maximum demand plus ₹ 1·80 per unit consumed

(c) Flat rate tariff = ₹ 2·50 per unit

18. *(a)* State the effects of load factor and diversity factor on the cost of generation of electrical energy. 5

(b) State the effects of power factor on electricity charges. 5

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