C20-EE–303

7247

BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2023

DEEE - THIRD SEMESTER EXAMINATION

POWER SYSTEM—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 necessity of developing non-conventional methods of energy generation.

2. List the main components of wind power plant.

3. State any three factors required for selection of site for a thermal power station.

4. State the need of pulverization of coal.

5. State the function of economiser.

6. State the function of spill gates in hydroelectric power plant.

7. Write any three advantages of hydroelectric power plant.

8. List any three nuclear fuels.

9. List the main controls of gas turbine.

10. Define diversity factor.

PART—B

8×5=40

Instructions : (1) Answer **all** questions.

(2) Each question carries **eight** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. *(a)* Explain the methods of pollution control in thermal power plants.

(OR)

(b) Explain the function of air preheater and cooling tower in a thermal power plant.

12. *(a)* Explain the working of medium head hydroelectric power plant with a layout diagram.

(OR)

(b) Calculate the average power in kW that can be generated in a hydroelectric project from the following data :

Catchment area = 5×10^9 m^2

Available head = 30 m

Annual rain fall = 1.25 m

Overall efficiency = 70%

If the load factor is 40%, what is the rating of generators installed?

13. *(a)* Explain the working of moderator type nuclear power station with a neat diagram.

(OR)

(b) Explain the measures to control the radioactivity in nuclear power plant.

14. *(a)* Explain various types of consumer tariffs.

(OR)

(b) Explain any two methods to improve low power factor.

15. *(a)* Explain isolated operation and integrated operation of power stations.

(OR)

(b) A generating station has the following daily load cycle :

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)* units generated per day, *(ii)* average load and *(iii)* load factor.

PART—C

10×1=10

Instructions : (1) Answer the following question.

(2) The question carries **ten** marks.

(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

16. Explain how air preheater and super heater improves the efficiency of thermal power stations.

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