



C14-EE-403

4463

**BOARD DIPLOMA EXAMINATION, (C-14)**  
**MARCH/APRIL—2017**  
**DEEE—FOURTH SEMESTER EXAMINATION**  
**POWER SYSTEMS—I (G)**

Time : 3 hours ]

[ Total Marks : 80

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**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. List advantages and disadvantages of biomass power plant.
2. State the losses in thermal power station.
3. List advantages of coal pulverisation.
4. State the function of draft tube.
5. Classify hydropower plant based on location.
6. State the properties of uranium.
7. State the function of moderator.
8. List the advantages of solar air heater.
9. Define maximum demand and connected load.
10. What are the causes of low power factor?

**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) Explain construction and working of solar power plant with diagram. 5  
(b) Explain working of atmospheric cooling tower with diagram. 5
12. (a) State the causes of pollution in thermal power plants. 5  
(b) State the methods to control pollution. 5
13. (a) Explain working of medium head hydropower plant with diagram.  
(b) Explain the basic requirements for setting up of hydro-electric power station.
14. Explain the function of nuclear reactor with diagram.
15. Explain working principle of concentrating collectors with diagrams.
16. Explain working principle of photovoltaic cell with diagram.
17. (a) Differentiate between integrated operation and isolated operation of power plants. 5  
(b) State the methods to improve power factor. 5
18. (a) A generating station has a maximum demand of 100 MW. The following data refer to the power station :
- |                                |                         |
|--------------------------------|-------------------------|
| (i) Interest and depreciation  | = 10%                   |
| (ii) Capital cost              | = ₹ 150×10 <sup>6</sup> |
| (iii) Annual cost of fuel oil  | = ₹ 6×10 <sup>6</sup>   |
| (iv) Taxes, wages and salaries | = ₹ 5×10 <sup>6</sup>   |
| (v) Annual load factor         | = 60%                   |
- Calculate (a) fixed cost, (b) running cost, (c) energy generated per annum and (d) cost per unit. 8  
(b) List the advantages and disadvantages of block rate tariff. 2

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