



C14-EE-403

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BOARD DIPLOMA EXAMINATION, (C-14)

MARCH / APRIL - 2019

DEEE - IV 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) Answer should be brief and straight to the point and shall not exceed five simple sentences.

- 1 State the types of conventional and non-conventional energy sources. **3**
- 2 State the need of cooling towers used in thermal power station. **3**
- 3 Define energy audit. **3**
- 4 Define Hydrograph. **3**
- 5 Classify the hydroelectric power stations on the basis of location. **3**
- 6 State any three merits of nuclear power station. **3**
- 7 State the material used for (i) moderator (ii) coolant (iii) control rods. **1+1+1**
- 8 List the six different types of concentrating collectors. **3**
- 9 State any six merits of integrated power station. **3**
- 10 Define the terms : (i) Load factor (ii) Diversity factor. **1½+1½**

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[Contd...

PART - B**10×5=50**

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

- 11** Draw the line diagram (or layout) of a thermal power station and explain the function of each part. **10**
- 12** State and explain the working principle of hydroelectric power station with a legible sketch. **10**
- 13** (a) Derive the water power equation of hydroelectric power station. **5**
- (b) Determine the quantity of water that will flow through the turbine to generate 50 KWH of energy. If the effective head of water is 200 meters and overall efficiency is 70%. **5**
- 14** (a) Explain working of boiler water reactor in nuclear power station with a legible sketch. **6**
- (b) Mention its merits and demerits. **4**
- 15** Explain the construction and working of a wind mill with a legible sketch. **10**
- 16** Explain the construction and working of flat plate collector of a solar power plant with a legible sketch. **10**
- 17** State and explain the three methods of improving the power factor. **1+3+3+3=10**

18 A generating station has a maximum demand $2\frac{1}{2} + 2\frac{1}{2} + 2\frac{1}{2} + 2\frac{1}{2} = 10$ of 100 MW. The following data refer to the power station :

- (i) Interest and depreciation = 10%
- (ii) Capital cost = Rs. 150×10^6
- (iii) Annual cost of fuel oil = Rs. 6×10^6
- (iv) Taxes, wages and salaries = Rs. 5×10^6
- (v) Annual load factor = 60%

Calculate :

- (i) fixed cost
 - (ii) running cost
 - (iii) energy generated per annum
 - (iv) cost per unit.
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