



5465A

C16S-EE -303

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BOARD DIPLOMA EXAMINATION, (C-16S)

NOVEMBER-2019

DEEE- III SEMESTER EXAMINATION

POWER SYSTEMS-I (GENERATION)

Time : 3 Hours ]

[Total Marks: 80

PART-A

3X10=3

- Instructions :**
1. Answer **All** questions.
  2. Each question carries **THREE** marks.
  3. Answer should be brief and straight to the point

1. List non conventional energy sources.
2. State limitations of Conventional and Non-Conventional types of sources.
3. Mention the requirement for site selection of thermal power plant.
4. State the need of Energy Auditing.
5. State the need of (i) Surge Tank (ii) Fore bay, (iii) Spill gates.
6. List the various risks involved in using nuclear energy.
7. Mention the materials used for (i) Coolant (ii) reflector (iii) Control rods.
8. State the principle of conversion of solar radiation into heat.
9. Differentiate between isolated operation and integrated operation of power stations.
10. Define the terms (i) Load Factor (ii) Maximum demand.

**PART-B**

10X5=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 detailed line diagram of a condensing type thermal power station and explain working of each component of thermal power station in brief.

12. Explain the working principle of pumped storage Hydro Power Station.

1369

13. (a) Derive waterpower equation. (5M)

(b) A Hydro electric power plant operates under an effective head of 100meters and discharge of  $94 \text{ m}^3/\text{sec}$  Determine the power, take efficiency 100% and Density of water is  $1000\text{kg}/\text{m}^3$  (5M) <http://www.sbtetonline.com>

14. Explain the working of a moderate type nuclear power station with diagram. (4+6M)

15. State the principle and working of photo-voltaic cell.

16. Explain the working principle of the wind mill with neat diagram.

17. (a) Define Diversity Factor (3M).

(b) A 15MW power station generates  $50 \times 10^6$  units of energy per annum. Determine its load factor. If the load factor is improved to 60%, Calculate the energy generated by power station (7M).

18. (a) Mention the methods to improve Power Factor (4M).

(b) The daily load of a factory is 100 KW for first 2 hours, 80KW for next 5 hours, 50 KW for next 8 hours & 10 kW for remaining time. If the tariff is Rs.500 per KW of maximum demand per annum plus Rs. 2.00 per kWh. Find the electricity bill per year.

(6M)