



C09-EE-403

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BOARD DIPLOMA EXAMINATION, (C-09)
MARCH/APRIL—2018
DEEE—FOURTH SEMESTER EXAMINATION
POWER SYSTEMS—I

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. What is the necessity of cooling towers in thermal power stations?
3. State the use of surge tank in hydropower stations.
4. State the various components of a nuclear reactor.
5. State the need for integrated operation of power stations.
6. Define (a) demand factor and (b) diversity factor. $1\frac{1}{2}+1\frac{1}{2}=3$
7. Classify circuit breakers based on arc quenching medium.
8. State the basic requirements of the relay.
9. State the different types of faults occur in alternators.
10. Define tariff and state the different types of tariff.

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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 the factors governing the selection of site for a thermal power station. 6
(b) Explain the methods to control pollution in a thermal power station. 4

12. Explain the construction and working of medium head hydroelectric power station with a neat sketch.

13. Explain the working of nuclear power plant with a block diagram.

14. A generating station has a maximum demand of 100 MW. The following data are referred to power station :

- (i) Interest and depreciation = 10%
(ii) Capital cost = ₹150 10⁶
(iii) Annual cost of fuel oil = ₹6 10⁶
(iv) Taxes, wages and salaries = ₹5 10⁶
(v) Annual load factor = 60%

Calculate the (a) fixed cost, (b) running cost, (c) energy generated per annum and (d) cost per unit generated.

$$2\frac{1}{2}+2\frac{1}{2}+2\frac{1}{2}+2\frac{1}{2}=10$$

15. Explain the principle and working of ABCB.

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16. Explain the construction and working principle of induction-type over current relay with neat sketch.

17. Explain the construction and working principle of Buchholz relay with neat sketch.

18. (a) Compare between nuclear power plant and thermal power plant in various aspects. 5

(b) The maximum demand of a power station is 200 MW. The annual load factor being 60%. Calculate the total energy generated per year. 5
