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BOARD DIPLOMA EXAMINATION, (C-16)

OCTOBER/NOVEMBER—2023

DEEE – FOURTH SEMESTER EXAMINATION

POWER SYSTEMS—I (GENERATION AND PROTECTION)

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 basic principle of tidal power plant.

2. State any three advantages of non-conventional energy sources.

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

4. Classify hydro-electric power station based on duty and location.

5. State the need of control rods in a nuclear power plant.

6. State any three considerations of site selection for installing wind mill power plant.

7. Define load factor and diversity factor.

8. State the factors responsible for arc formation in a circuit breaker.

9. State the effects of faults in alternator stator.

10. Define surge.

PART—B

10×5=50

Instructions : (1) Answer *any* **five** questions.

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

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

11. Explain the construction and the working of thermal power plant with a neat diagram.

12. Explain the working of medium head hydro-electric power station with a neat layout diagram.

13. Explain the construction of reactor in a nuclear power station with a neat diagram.

14. Explain the working of solar water heater.

15. Explain the methods of improving power factor.

16. *(a)* The block rate tariff is as follows :

First 50 kWh at	₹3·00 per kWh
Next 50 kWh at	₹2·80 per kWh
Next 40 kWh at	₹2·50 per kWh
Next 30 kWh at	₹2·20 per kWh
Excess over 170 kWh at	₹2·00 per kWh

Determine the cost of electrical energy and average unit cost for consuming 200 kWh.

(b) Explain the working of horn gap lighting arrester.

17. Explain the working of SF_6 circuit breaker.

18. Explain the working of Buchholz relay protection scheme for transformer.

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