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C23-EE-403

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BOARD DIPLOMA EXAMINATION, (C-23)

MARCH/APRIL—2026

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 merits of conventional energy sources.

2. State the need for energy conservation.

3. State any three factors for selection of site for thermal power plants.

4. State the need of surge tank in hydro power station.

5. State the merits of integrated operation of power plants.

6. Define the terms *(a)* load factor and *(b)* diversity factor.

7. Classify switchgear in power systems.

8. State the properties of SF6 gas.

9. List the types of faults that occur in stator of alternator.

10. State the applications of Induction type over current relay.

PART—B

10×5=50

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

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

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

11. Explain the working of solar power plant with a neat sketch.

12. Explain the working of high head hydroelectric power plant with a neat layout diagram.

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

14. Explain the working of gas power station with neat schematic diagram.

15. A power plant has a rated capacity of 1000 MW. Over a year, the plant generated 6,000,000 MWh of electricity. Determine the capacity factor and plant use factor, if the plant was available for operation 85% of the time.

16. Explain the various types of consumer tariffs.

17. Explain the principle and working of minimum oil circuit breaker with a neat sketch.

18. Explain the differential protection for alternator stator with a neat sketch.

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