C16-EE–402

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BOARD DIPLOMA EXAMINATION, (C-16)

AUGUST/SEPTEMBER—2021

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. Classify the sources of electrical energy.
2. List out the benefits of energy conservation.
3. State the need of electrostatic precipitator in a thermal power station.
4. State the need of surge tank in a hydroelectric power station.
5. Write any three merits and risks of nuclear power station.
6. List out the different methods of solar energy storage.
7. Define the terms *(a)* load factor, *(b)* demand factor and *(c)* diversity factor.
8. List the advantages of SF6 circuit breaker.
9. State the different types of faults that occur in an alternator.
10. Classify the relays based on principle of operation.

PART—B

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 working of thermal power station with a line diagram and the write function of each component. 10

12. *(a)* State the factors affecting the site selection for hydroelectric power station. 5

(b) List the advantages of hydroelectric power station. 5

13. Explain the working of nuclear reactor with a neat sketch. 10

14. Explain the construction and working of a wind mill with relevant diagram. 10

15. A single-phase motor takes a current of 10 amperes at a p.f. of 0.707 lag from a 230 volt, 50 Hz supply. What value shunting condenser must have a to raise the power factor to unity? 10

16. *(a)* Explain the effects of load factor and diversity factor on the cost of electrical energy generation. 5

(b) Explain the scheme of surge protection with a neat diagram. 5

17. Explain the working principle of A, B, C, B. with a neat sketch. 10

18. Explain the differential protection scheme of a transformer. 10

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