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C09–EE–403

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BOARD DIPLOMA EXAMINATION, (C–09)

OCT/NOV—2017

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 disadvantages of tidal power plant.

2. State the advantages of pulverization of coal in thermal power station.

3. State the function of spill gates in hydroelectric power stations.

4. Define the terms 'nuclear fusion' and 'nuclear fusion'.

5. Define TARIFF.

6. State the factors affecting the cost of generation.

7. State the types of faults in power system.

8. Classify the different types of relays on the basis of working principle.

9. Write a short note on stator earth fault protection system in alternator.

10. State the various schemes of protection systems used in transformers.

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)* Explain the factors affecting the selection of site for thermal power plant. 6

(b) State the purpose of energy auditing and mention its advantage. 4

12. *(a)* State the factors to be considered while selection of site for hydroelectric power station. 6

(b) A hydroelectric power plant operates under an effective head of 50 metres and a discharge of 94 m^3/sec. Determine the power developed. Overall efficiency is 75%. 4

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

14. The load on a power plant on particular day is as follows is the load demand of a residential consumer :

Sl. No.	*Time*	*Load* (in MW)
1.	12 midnight to 5 a.m.	20
2.	5 a.m. to 8 a.m.	60
3.	8 a.m. to 6 p.m.	100
4.	6 p.m. to 8 p.m.	120
5.	8 p.m. to 10 p.m.	80
6.	10 p.m. to 12 midnight	20

Plot the load curve and determine—*(a)* maximum demand, *(b)* average load, *(c)* load factor and *(d)* diversity factor.

15. Explain the working of SF_6 circuit breaker with a neat sketch.

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

17. Explain the construction of Buchholoz relay with a neat sketch.

18. *(a)* Explain the main controls of gas power plants. 5

(b) Compare between isolated and integrated operation of power stations. 5

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