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BOARD DIPLOMA EXAMINATION, (C–09)
OCT/NOV—2015
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. State the disadvantages of Thermal Power Stations.

3. Classify the hydro-electric power stations on the basis of location.

4. State the use of Moderator in Nuclear Power Station.

5. State the factors affecting the cost of generation.

6. State the need of integrated power station.

7. State the advantages of Air Blast circuit breaker.

8. State the uses of impedance relays.

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

10. State the different types of faults occur in alternators.

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 main controls of *(i)* boiler, *(ii)* turbine, *(iii)* condensers, *(iv)* alternators. 8

(b) State the causes of pollution in thermal power plant. 2

12. Explain the working of hydro-electric power station with a neat sketch.

13. Explain the scheme of maintenance of nuclear power plant.

14. The following is the load demand of a residential consumer :

Sl. No.	Time	Load (in watt)
1	12 midnight to 6 a.m.	60
2	6 a.m. to 6 p.m.	No load
3	6 p.m. to 7 p.m.	180
4	7 p.m. to 9 p.m.	300
5	9 p.m. to 12 midnight	120

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

15. The plant capacity of a 3-phase generating station consists of two 8000-kVA generators of reactance 12% each and 6000-kVA generator of reactance 15%. The generators are connected to the station bus-bars from which load is taken through three 5000-kVA step-up transformers each having a reactance of 5%. Determine the maximum fault MVA of the circuit breakers on *(i)* low-voltage side *(ii)* high-voltage side.

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

17. Explain the split-phase protection of alternator against inter-turn faults.

18. *(a)* State the merits and demerits of nuclear power plant. 5

(b) State the advantages the two-part tariff. 5

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