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C16–EE–**402**

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BOARD DIPLOMA EXAMINATION, (C–16)

SEPTEMBER/OCTOBER - 2020

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. List any six sources of electrical energy.

2. State the need of electrical energy conservation.

3. List any three requirements to set up a thermal power plant.

4. State the need of a surge tank in hydroelectric power plant.

5. State any six merits of nuclear energy.

6. List any six basic components of a wind mill.

7. Define *(a)* load factor and *(b)* maximum demand.

8. State any three properties of SF_6 gas.

9. List any three possible faults and their effects occur in a transformer.

10. State any six features of a 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 criterion for valuation is the content but not the length of the answer.

11. Explain the working of thermal power plant with a line diagram.

12. Explain the working of medium head hydroelectric power plant with a diagram.

13. Explain fission and fusion reactions of nuclear energy.

14. Explain the working of solar water heater with a diagram.

15. The load on a power plant on a particular day is as follows :

Time	12 a.m. to 6 a.m.	6 a.m. to 10 a.m.	10 a.m. to 2 p.m.	2 p.m. to 6 p.m.	6 p.m. to 9 p.m.	9 p.m. to 12 a.m.
Load (MW)	30	60	40	80	100	40

Plot *(a)* load curve and *(b)* load duration curve and determine *(c)* energy generated, *(d)* load factor and *(e)* diversity factor.

16. Explain the working of a minium oil circuit breaker.

17. Explain the split-phase protection of an alternator against inter-turn short-circuits.

18. *(a)* Explain the effects of power factor on electricity tariff. 5

(b) Explain the working of a horn-gap lightening arrestor with a diagram. 5

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