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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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BOARD DIPLOMA EXAMINATION, (C–16)

OCTOBER—2020

DEEE—FOURTH SEMESTER EXAMINATION

POWER SYSTEM—I (G & P)

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 conventional type of sources.

2. State the need of energy conservation.

3. List the methods to control pollution.

4. What is the use of surge tank in hydroelectric power plant?

5. List the merits of using nuclear energy.

6. State the basic components of wind mill.

7. State the merits of integrated power station.

8. State the purposes of isolator, air break switch and knife switch.

9. List the precautions to be taken for applying differential protection to transformers.

10. State the important features of 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 are the content but not the length of the answer.

11. *(a)* List the requirements for setting up of thermal power station.

(b) Explain about super heater.

12. Explain the working of medium head hydro power station with line diagram.

13. Explain the working of nuclear reactor with neat diagram.

14. Explain the working of solar pump set with block diagram.

15. The maximum demand of a 60 MW power station is 50 MW in a particular day. The power station supplies to various consumers having maximum demands of 6 MW, 8 MW, 16 MW and 20 MW. The daily load factor is 60%. Find *(a)* average load *(b)* energy supplied per day *(c)* demand factor and *(d)* diversity factor.

16. *(a)* Define power factor and explain one method of improving p.f.

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

17. Explain the working of SF_6 circuit breaker with neat diagram.

18. Explain the differential protection for alternators.

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