C16-EE-**402**

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BOARD DIPLOMA EXAMINATION, (C-16)

MARCH / APRIL — 2021

DEEE — FOURTH SEMESTER EXAMINATION

POWER SYSTEMS - I
(GENERATION & PROTECTION)

Time : Three Hours] [*Maximum Marks* : 80

PART-A 3×10=30

Instructions : (*i*) Answer **all** questions.
(*ii*) Each question carries **three** marks.
(*iii*) 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 advantages of tidal power.
3. State the methods to control the pollution in thermal power plant.
4. Classify the Hydro electric power plant based on :
(*a*) Available water head
(*b*) Location
5. State the different materials used for :
(*a*) Control Rods
(*b*) Reflector
(*c*) Coolant in nuclear power plants
6. State the working principle of photo voltaic cell and mention materials used for photovoltaic cell.
7. Write any three merits of integrated operation of power stations.
8. Define Switch gear. Classify the Switch gear.
9. What are the different types of faults occurred in an alternator and mention the causes for occurring the faults.
10. List the types of lightning arresters.

PART-B

10×5=50

Instructions : (*i*) Answer any **five** questions.

(*ii*) Each question carries **ten** marks.

(*iii*) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. (*a*) State the requirements of selection of site for thermal power plants.

(*b*) State the need of cooling towers and list the types of cooling towers used in thermal power plants.

12. Briefly explain the functions of fore bay and spill gates.

13. Explain the working of moderate type of nuclear power station with a neat sketch.

14. Explain the working principle of wind mill with a neat sketch.

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

Time (hours)	12 AM to 5 AM	5 AM to 8 AM	8 AM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM
Load (MW)	20	60	100	120	80	20

Plot the load curve and determine :

(*a*) Maximum Demand

(*b*) Average Load

(*c*) Load Factor

(*d*) Diversity Factor

16. Explain the working principle of Minimum Oil Circuit Breaker (MOCB) with a neat sketch.

17. Explain the differential protection of transformer with a neat sketch.

18. (*a*) What are the disadvantages (effects) of low power factor. Mention the methods to improve the power factor.

(*b*) Explain the working of rod gap lightning arrester with a neat diagram.

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