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C09-EE-403

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BOARD DIPLOMA EXAMINATION, (C-09)
OCTOBER/NOVEMBER-2018
DEEE - FOURTH SEMESTER EXAMINATION

POWER SYSTEMS – I

Time : 3 Hours] [Total Marks: 80

PART-A

3X10=30

Instructions :
1. Answer **All** questions.
2. Each question carries **three** marks.
3. Answer should be brief and straight to the point and shall not exceed five simple sentences.

1. State the disadvantages of Solar Power Generation.
2. List the various types of dust collectors in thermal power plants.
3. State the functions of Fore bay in a Hydro Electric Power Station.
4. State the function of reflector in a Nuclear Power Station.
5. Define the following terms (a) Load factor and (b) Diversity factor.
6. What is meant by load dispatching?
7. State the properties of SF_6 circuit breaker
8. Write the requisite conditions for operation of a relay.
9. List the different types of faults in transformers.
10. Briefly explain about stator earth fault protection scheme in an alternator.

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PART-B

10X5=50

Instructions :

1. Answer any **Five** questions.
2. Each question carries **ten** marks.
3. Answer 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 neat layout diagram.
12. (a) Write in brief about maintenance activity carried in a Hydro power plant.
    (b) Derive water power equation.
13. Explain the Fission and Fusion reactions with Mass-Energy balance equations.
14. A generating station has a maximum demand of 100 MW. The following data referred to power station is given:
    a) Interest and depreciation = Rs. 10%
    b) Capital cost = Rs. 150×10^6
    c) Annual cost of fuel = Rs. 6×10^6
    d) Taxes, wages, salaries = Rs. 5×10^6
    e) Annual load factor = 60%

    Calculate : (a) Fixed cost (b) Running cost
    (c) Energy generated per annum and (d) Cost per unit
15. A generating station has two alternators of ratings 4000kVA and 6000kVA and of percentage reactances as 10% and 8% respectively and connected to the common bus-bars. The load is taken to the feeder through a 12000 kVA transformers of 5% reactance. What should be the short circuit kVA and the approximate rating of circuit – breaker if a fault occurs on the feeder.
16. Explain the construction and working principle of an Impedance relay with neat sketch.
17. Explain the scheme of protection against excessive heating in the stator of an alternator.
18. (a) Compare nuclear and gas power plants in various aspects.
    (b) Explain the advantages of two-part tariff.

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