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C16-EE–503

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BOARD DIPLOMA EXAMINATION, (C-16)

OCTOBER/NOVEMBER—2023

DEEE – FIFTH SEMESTER EXAMINATION

POWER SYSTEMS—II (T, D AND 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. What is skin effect?

2. Compare solid and stranded conductors in any three aspects.

3. Write the methods for reducing corona effect in transmission lines.

4. Write any six advantages of HVDC transmission system.

5. Define sag. What are the factors affecting sag?

6. Classify cables based on voltage rating.

7. State the need of auxiliary supply in substation.

8. Distinguish between primary and secondary distribution.

9. Write the advantages of Ring Distribution system over Radial Distribution System.

10. State the different schemes of protecion for bus-bar.

PART—B

10×5=50

Instructions : (1) Answer *any* **five** questions.

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

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. *(a)* Derive the expression for percentage voltage regulation in transmission line. 5

(b) A 3-phase overhead transmission line delivers 4000 kW at 11 kV at 0·8 p.f. lagging. The resistance and reactance per phase are 4 Ω and 6 Ω respectively. Calculate percentage regulation. 5

12. *(a)* What is corona effect? What are the effects of corona? 5

(b) Explain about charging current in transmission line and power loss due to it. 5

13. In a 33 kV, 3-phase overhead line, there are 3 units in the string of insulators. If the capacitance between each insulator pin and earth is 10% of selfcapacitance of each insulator, find *(a)* the distribution of voltage across each insulator and *(b)* string efficiency. 10

14. *(a)* State the causes of failures of insulators in transmission and distribution lines. 5

(b) Explain any two methods of improving string efficiency. 5

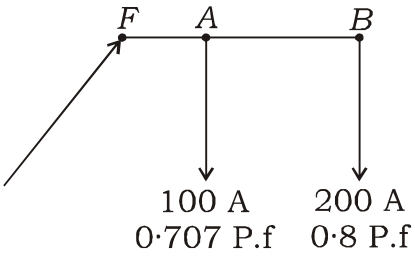
15. Describe the construction of the following underground cable with neat sketch : 10

(a) HT cable

(b) EHV cable

16. Write the purpose of *(a)* switch gear, *(b)* protective relays, *(c)* busbars, *(d)* lightning arresters and *(e)* insulators. 10

17. A two wire AC feeder is loaded as shown in the figure below. The power factors are lagging and are referred to the voltage at the respective load points. The section impedance FA = (0·02 + j0·04) ohm and AB = (0·03 + j0·06) ohm. If the voltage at the far end (B) is to be maintained at 230 volt. Calculate the voltage at the supply end (F). 10



18. Explain the differential protection for parallel feeders of transmission line with sketch. 10

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