6635

C16-EE–503

6635

BOARD DIPLOMA EXAMINATION, (C-16)

AUGUST/SEPTEMBER—2021

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. Compare the DC 2 wire system with single phase AC 2 wire system for the volume of copper required.

2. Write briefly about the effects of supply frequency on transmission lines.

3. Define short, medium and long transmission lines.

4. Write any three advantages of HVDC transmission.

5. State the need of cross arms.

6. Compare underground cables with overhead lines in any three aspects.

7. Compare the indoor substation and outdoor substation in any three aspects.

8. Distinguish between primary distribution and secondary distribution.

9. Classify the distribution systems based on the scheme of connections.

10. What is the necessity of bus bar protection?

PART—B

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 3 phase 50 Hz overhead transmission line delivers 10 MW at 0·8 p.f lagging at 66 kV. The resistance and inductive reactance of the line per phase are 10Ω and 20Ω respectively while capacitive admittance is 4×10^{-4} mho. Calculate the following : 10

(a) Sending end current

(b) Sending end voltage (line to line)

(c) Sending end power factor

(d) Transmission line efficiency using nominal T-method.

12. State Ferranti effect and compute the rise in voltage at the receiving end due to Ferranti effect. 10

13. In a 33 kV overhead line, there are 3-units in the string of insulators. If the capacitance between each insulator pin and earth is 10% of self-capacitance of each insulator. Find the voltage across each insulator and string efficiency. 10

14. *(a)* Define the sag and explain the factors affecting the sag. 5

(b) State any five causes of failures of insulators in transmission lines. 5

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

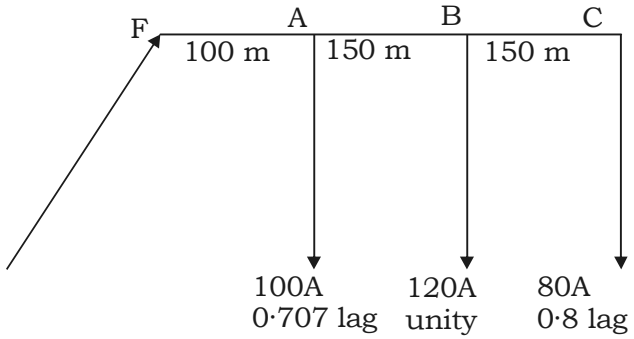
(a) H.T. cable

(b) EHV cable

16. *(a)* State the relative merits of indoor substation and outdoor substation. 5

(b) Explain substation auxiliary supply. 5

17. For the single phase AC distributor as shown in fig. Calculate the total voltage drop. The resistance and reactance are 0·25Ω and 0·125Ω for 1000 m for to and fro. 10



18. Explain the protection of ring main feeder using directional relays. 10

★★★

*

*

*