22419

22223

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following: **10**

a) State the characteristics of high voltage for power transmission. (any two)

b) Give the classification of transmission line based on length of transmission line and voltage.

c) State the application of HVDC transmission line. (any two)

d) State the skin effect of transmission line. Where this effect occurs.

e) Define primary and secondary distribution system.

f) Give advantages and disadvantages of distribution substation. (any two each)

g) State any two properties of insulating material used for overhead insulator.

Marks

2. Attempt any THREE of the following: **12**

a) Draw single line diagram with components of electric supply of transmission and distribution system.

b) Draw circuit diagram and vector diagram of short transmission line.

c) Draw and explain monopolar HVDC transmission system.

d) State the requirement of line support used in transmission and distribution system.

3. Attempt any THREE of the following: **12**

a) Give the voltage level of following:

i) Primary transmission

ii) Primary distribution

iii) Secondary transmission

iv) Secondary distribution

b) State the meaning of FACTS and explain in brief.

c) List the factors to be considered while designing feeders and distributors with their function in brief.

d) Draw and explain construction of underground cable.

4. Attempt any THREE of the following: **12**

a) Explain any four advantages of high voltage power transmission.

b) Explain various line parameters of transmission line.

c) State the limitations of EHVAC transmission line.

d) Explain with diagram ring type distribution system.

e) Explain shackle type insulator with neat sketch.

Marks

5. Attempt any TWO of the following: **12**

a) A 3-ph line of 6 km length 5000 kW at a p.f of 0.8 lagging to a load the resistance and reactance per km of each conductor are 0.3 Ω and 0.6 Ω respectively. If the voltage at the supply end is maintained at 11 kV. Calculate the received end voltage.

b) Explain the Ferranti effect and corona effect. Discuss any two methods of reducing corona.

c) Draw the symbols and state their function of components used in substation. (any six)

6. Attempt any TWO of the following: **12**

a) Compare nominal I and nominal II method of medium transmission line. (any six)

b) Draw single line diagram for 33/11 kV distribution substation. List out components used in it and function of each components.

c) Each line of 3-ph system is suspended by a string of 3 similar insulator. If the voltage across the line unit is 20kV, Calculate the line to neutral voltage. Assume that the shunt capacitance between each insulator and earth is $1/10^{th}$ of the capacitance of insulator itself. Also find the string efficiency.

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