22419

23242

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) List the standard voltage levels used in electrical power transmission in India.

b) State the classification of transmission line depending on transmission voltage and line length.

c) State the necessity of transposition of conductors in transmission lines.

d) State any two disadvantages in EHVAC transmission.

e) Draw a neat diagram of interconnected distribution system.

f) State any two advantages of ACSR conductor.

g) State any four components of transmission line

Marks

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

a) Draw equivalent circuit diagram and vector diagram of nominal π method for medium transmission line.

b) Draw single line diagram of generation, transmission and distribution in power system.

c) Draw symbols for following.

i) Circuit breaker.

ii) Lightning arrestor.

iii) Isolator

iv) Shunt reactor

d) List any four advantages of EHVAC transmission.

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

a) State any four factors considered while designing of feeder and distributor.

b) State any four parameters considered in selection of line support in transmission line.

c) State the properties of conductor used in transmission line. (any four)

d) State proximity effect. State any two points how proximity effect can be reduced?

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

a) Give the classification of HVDC transmission system. Draw layout of homopolar HVDC transmission system.

b) Classify underground cable and overhead line according to

i) Cost

ii) Maintenance

iii) Safety

iv) Fault clearing

c) State the need of flexible AC transmission system and list the types of FACT controllers.

Marks

d) Compare indoor and outdoor substation on basis of

i) Maintenance cost

ii) Space required

iii) Cooling

iv) Fault finding

e) State the function of following substation equipments

i) Insulator

ii) Shunt reactor

iii) Current transformer

iv) Circuit breaker

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

a) State any four factors on which skin effect depend. What is the effect of skin effect on transmission efficiency and voltage regulation.

b) State characteristics of high voltage power transmission.

c) Compare nominal T and nominal π method of analysis of transmission line.

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

a) Compare EHVAC and HVDC transmission system. (any six points)

b) State the classification of substation according to service requirement and draw a single line diagram of 11 kV/400V distribution sub station.

c) A 3 ϕ over head line is being supported by three disc insulators. The potential across the line unit is 17.5 kV. Assume the shunt capacitance between each insulator and metal work of tower to be $1/10^{th}$ of capacitance of insulator. Calculate

i) Line voltage

ii) String efficiency