22419

21222

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

15 minutes extra for each hour

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) Write the standard transmission voltages in INDIA.

b) Define –

(i) Transmission efficiency

(ii) Voltage regulation in transmission lines

c) State any four factors on which skin effect depends.

d) Give any two limitations of EHVAC w.r.t. distribution system.

e) Compare feeder and distributor on any two parameters.

f) Draw the simple arrangements for radial distribution system.

g) State any two advantages of ACSR conductors.

P.T.O.

Marks

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

a) "Electric power is to be transmitted at high voltage." Justify this statement.

b) Explain the effect of load power factor on performance of the transmission line.

c) Draw a neat sketch of Bipolar HVDC transmission system. State any two merits of the same.

d) Compare overhead system with underground system on the following parameter –

(i) Useful life

(ii) Maintenance cost

(iii) Interference with communication lines.

(iv) Conductor size

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

a) Describe with neat sketch the construction method of 33KV distribution system.

b) Explain the features of wireless transmission of electrical power.

c) Draw the typical layout diagram of 11 KV/400 sub station.

d) Draw a neat sketch of pin insulator. State any two causes of failure with its limitations.

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

a) Compare primary transmission and secondary transmission system. (any four points)

b) Describe the need for transposition of conductor with sketch.

c) Give the comparison between HVDC and EHVAC transmission on any four points.

d) Classify distribution substation on basis of –

(i) Service requirement

(ii) Constructional feature

e) A 3 phase overhead transmission line is being supported by 3 disc insulators. The potential across top unit and middle units are 8 KV and 11 KV.
Calculate :-

(i) Line voltage

(ii) String efficiency

Marks

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

a) In medium transmission line, for nominal T method, show the derivation for sending end voltage with the help of neat phasor diagram.

b) Draw a neat block diagram of HVDC system. Also give any two advantages and limitations of the same.

c) A single phase AC distributor 'AB' 300 meter long is fed from end A and loaded as under :-

(i) 100 A at 0.707 pf lagging 200 m from point A.

(ii) 200 A at 0.8 pf lagging 300 m from point A.

The load resistance and reactance of distributor is 0.2 Ω and 0.1 Ω per km. Calculate the total voltage drop in the distributor. The load power factors refer to the voltage at the far end.

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

a) A 3 phase, 50 Hz overhead transmission line has the following distributed parameters. R = 30 Ω, Inductive reactance = 60 Ω and capacitive susceptance = 4×10^{-4} mho. If load at the receiving end is 75 MVA at 0.8 pf lagging with 132 KV between lines,

Calculate :

(i) Regulation

(ii) Efficiency of transmission for this load.

Use nominal 'π' method.

b) Describe ring main system of distribution with diagram. Also state any two advantages of ring distribution load.

c) With the help of neat diagram explain draw in system for laying of underground system. Also give any two disadvantages of this system.

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