18002

BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – Dip.EE-2024
Course Name – Transmission and Distribution of Power
Course Code - DEE30105
(Semester III)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Identify from the following components is responsible for stepping up the voltage in a substation

a) Circuit Breaker b) Transformer
c) Isolator d) Lightning Arrester

(ii) Select form the following safety measures is most crucial during the installation of underground cables

a) Proper grounding techniques b) Regular maintenance schedules
c) Ensuring adequate insulation thickness d) Monitoring temperature fluctuations

(iii) Select the parameter that determines the ability of a transmission line to store energy.

a) Resistance b) Conductance
c) Inductance d) Capacitance

(iv) Choose the high voltage transmission lines insulators.

a) Pin type insulators b) Suspension type insulators
c) Both a & b d) None of these

(v) Select the following is a disadvantage of underground cables compared to overhead lines.

a) Lower installation cost b) Ease of maintenance
c) Limited heat dissipation d) Higher susceptibility to lightning strikes

(vi) Select from the following D.C. distribution system is the simplest and lowest in first cost.

a) Radial system b) Inter-connected system
c) Ring system d) All of the Above

(vii) Choose the feeder is designed mainly from the point of view of

a) Its current carrying capacity b) Voltage drop in it
c) Operating frequency d) Operating frequency

(viii) Identify the main drawback of the underground system over the overhead system is

a) Exposure to lightning
b) Heavy initial cost
c) Exposure to atmospheric hazards such as smoke, ice, wind, etc.
d) Inductive interference between power and communication circuit

(ix) By increasing the Transmission voltage to double its original value, identify the same power can be dispatched keeping the line loss

a) Equal to its original value
b) Half of the original value
c) Double the original value
d) One-fourth of the original value

(x) Identify the effect of temperature rise in overhead lines

a) Increase the sag and decrease the tension
b) Decrease the sag and increase the tension
c) Increase both
d) Decrease both

(xi) Choose the ACSR is used in place of copper in overhead lines because

a) Higher current carrying capacity
b) Being lighter in weight
c) Economy
d) Higher tensile strength

(xii) Identify from the following properties has got higher value for aluminum in comparison to that of copper

a) Electrical resistivity
b) Melting point
c) Thermal conductivity
d) Specific gravity

(xiii) Identify the purpose of Steel poles for transmission lines need protection against

a) Borer
b) Termites
c) Corrosion
d) All of these

(xiv) Choose for high-voltage transmission lines, conductors are suspended from towers to

a) Increase clearance from ground
b) Reduce clearance from ground
c) Take care of increase in length
d) Reduce wind and snow effects

(xv) Identify The highest transmission voltage used in India is

a) 400 kV
b) 220 kV
c) 132 kV
d) 765 kV

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Explain how the electrical breakdown can occur in an insulator. (3)
3. Differentiate between HVAC and HVDC transmission. (3)
4. Define bundle conductor. (3)
5. Define disruptive voltage. (3)
6. Explain in your own words why the Ferranti effect occurs. (3)

OR

Explain the impact of proximity effect in the transmission line. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Discuss why the ACSR conductor used for transmission and distribution line. (5)
8. Identify the types of Underground Cable. (5)
9. Explain why the capacitance effect is taken into account in a long line. (5)
10. Analyze the limitations of the nominal T and π (pi) methods when applied to medium transmission line problems, and differentiate these methods in terms of their accuracy and practical applicability. (5)
11. Compare and contrast the different types of underground cables based on voltage levels. (5)
12. Design a simple model to explain the ABCD parameters of a short transmission line and demonstrate their practical use in analyzing power transmission. (5)

OR

Illustrate the circuit model of a transmission line using circuit constants and explain how these constants influence power transmission performance. (5)

****