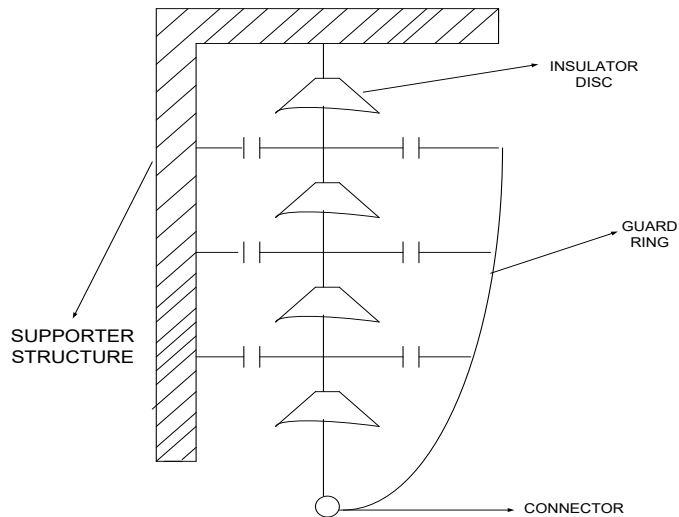


EXPERIMENT: 5

OBJECTIVE:

To study the voltage distribution along a string of suspension insulators.

CIRCUIT DIAGRAM:



PROCEDURE:

Connect the circuit as shown in fig and measure the potential difference across each unit in the following cases

- (1) With earth capacitors and guarding rings
- (2) Without guarding rings
- (3) Without earth capacitors and guarding rings

OBSERVATIONS:

S.NO	Voltage across unit	Efficiency

COMMENTS:

The observations shows that in practical cases ,the potential drop increases when we move towards the line conductors from the tower .this is due to formation of shunt capacitors.

- (1) In ideal case, leakage current to earth should be zero but this is not possible in case of a.c due to conduction displacement current.
Each insulator disc forms a capacitor between two metal fittings. It has also its self inductance
- (2) If only mutual capacitance is present, then the potential difference between each unit will be equal, but as the tower is conductor, there forms a capacitance between metal fittings of insulator and towers. This is called shunt capacitance.
- (3) Due to presence of shunt capacitance, certain displacement current passes through it and hence potential difference across units are not equal.
Desired properties of insulator is
 - (1) It should be hard
 - (2) It should be of high di-electric strength

η =voltage across whole string/(n*voltage across disc nearest to conductor)

RESULT:

- (1)The voltage distribution across the disc is not uniform, because of
Shunt capacitance
- (2) The voltage across insulator near the conductor is maximum.
- (3)The unit near conductor suffers maximum electrical stress