AIM:

a)To perform the bulk and surface resistivity measurements of the electrodes to determine their electrical properties.
b)To measure the surface resistance of electrodes having different thickness of graphite coating.

Procedure:

For Bulk Resistivity

1) Sandwich the sample electrodes between two conductive plates, usually copper plates.
2) Solder two cables over the copper plates and connect them to high voltage power supply.
3) After applying a bias voltage across the plates, current is measured and hence the resistance is determined.

For Surface Resistivity

1) Place the set-up of a jig with two brass bars and soft padded conducting edges over the sample.
2) The length of the brass and the separation should be kept about 5cm.
3) Apply the DC bias voltage on the jig.
4) Measure the leakage current across the terminals of the jig and then determine the surface resistivity of the sample.

For Coating the Glass Electrodes

1) Mix the graphite paint with thinner.
2) Clean the glass electrode with alcohol.
3) Spray the mixture uniformly on the glass electrode with spray gun.
4)Measure the surface resistance with the jig.

Significance:

1) Bulk resistivity effects the localisation of charges, the rate handling capacity and the time resolution of the RPC detectors.
2) Uniformity of surface is needed to avoid localisation of excess charge and to prevent alternating leakage path during the avalanche process.
3) Graphite coating serves the purpose for applying high voltage and prevents the lateral spread of the signal.

Results:

1) The expected bulk resistivity of glass electrodes should be in the order of 10^{12} Ω –cm in the operating region at about 5kV.

2) The expected surface resistivity of glass electrodes should be of the order of 10^{11} -10^{12} Ω/square.

3) The expected surface resistance of graphite coating should be of the order of 0.1-1MΩ.