



Class 12th Physics (Electrostatics and Current)

Time allowed: 1 hour

Maximum marks: 50

General Instructions

1. All questions are compulsory. There are 18 questions in all.
2. This question paper has five sections: Section A, Section B, Section C, Section D and Section E.
3. Section A contains five questions of one mark each, Section B contains five questions of two marks each, Section C contains two questions of three marks each, Section D contains one value based question of four marks and Section E contains five questions of five marks each.

SECTION A

- Q.1>** Name the colors corresponding to the digits 8 and 9 in the color code scheme for carbon resistors.
- Q.2>** State the condition in a cell can deliver maximum power.
- Q.3>** Define current density and mention its SI unit
- Q.4>** What is the angle b/w Electric field and Dipole moment when the torque acting on it is half the maximum value?
- Q.5>** Mention one way of making a potentiometer more sensitive.

SECTION B

- Q.6>** Which physical quantity has SI unit as (a) Cm (b) Vm
- Q.7>** Explain why a good voltmeter should have very high resistance?
- Q.8>** Draw R-T graph for semiconductors and explain the behavior.
- Q.9>** On the same graph plot the variation of E versus R of a point charge and of a dipole.

Q.10> Why do the IV characteristics of conductors deviate from straight line behavior at high values of current.

SECTION C

Q.11> Derive an expression for the potential energy of a dipole placed in an electric field.

Q.12> A potentiometer of length 200cm having resistance 10ohm is connected to a supply of 3 volt using a series resistor of 290 ohm. An unknown emf gives a balance point of 40cm. Find the unknown emf. (b) Mention one case in which you will fail to obtain a balance point.

SECTION D

Q.13> Rani’s mother who was illiterate was folding her synthetic saree. She saw a spark coming out of it .She got frightened and called Rani. Rani being a science student gave the reason behind it. After knowing the reason her mother calmed down.

- What value was displayed by Rani
- Explain the cause of sparking.

SECTION E

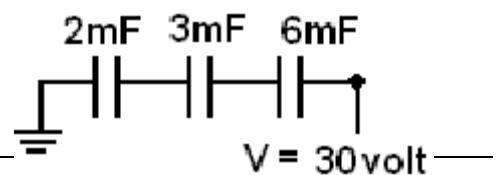
Q.14> Draw a labeled circuit diagram for the comparison of emf of two primary cells. Write the necessary formula.

Q.15> What is the principle of a capacitor? Derive an expression for the capacitance of a parallel plate capacitor with air between the plates.

Q.16> Define electric flux. A wire of length 10m is shaped into a circle and is placed in a uniform electric field of 10N/C. Find the flux. How would the flux change if the wire is reshaped into a square?

Q.17> State the theorem which relates the electric field with the charge enclosed. Using this theorem derive an expression for the electric field inside and outside a hollow charged shell.

Q.18> Find the charge and energy stored on the 6mF capacitor.





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