

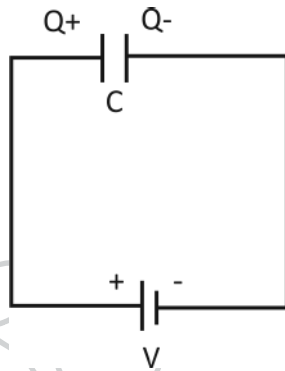
06

TNPSC GROUP II / IIA MAINS SCERT - SCIENCE & TECHNOLOGY QUESTION WITH ANSWER

6. What is Capacitor? Explain its Applications

Capacitor :

- Device used to store electric charge & Electrical energy
- Consists of 2 conducting objects - Plates / sheets separated by some distance.
- Used in many electronic circuits & in a areas of Science & Technology.



- Capacitor connected to battery of potential difference V , electrons are transferred from one plate to the other plate.
- If the battery Voltage is increased, the amount of charges stored in the plates also increase

$$Q \propto V \text{ (or) } Q = CV$$

C - Capacitance

Capacitance (c) :

$$C = \frac{Q}{V}$$

- Capacitance of a Capacitor - Ratio of the magnitude of charge on either of the conductor plates to the potential difference existing between them.

S.I Unit - Coulomb / Volt / Farad (F)

Shapes of Capacitors :

1. Cylindrical
2. Disk

Applications :

1. Ceiling Fan :

- a) The Initial torque is given by capacitor widely known as Condenser.
- b) When Condenser is faulty, there will be no sufficient initial torque to rotate the blades when fan is switched on.

2. Flash Capacitors :

- a) In digital Cameras - for taking photographs
- b) Flash - Energy released from the flash capacitor

3. Cardiac Arrest - Heart defibrillator :

- a) To retrieve the normal heart
- b) Sudden surge of large amount of electrical energy to patient's chest.

4. Automobile Engines :

- a) In Ignition system
- b) To eliminate sparking

5. Power Transmission :

- a) To reduce power fluctuations
- b) To Increase efficiency of transmission

6. Computer Keyboards :

- a) Capacitors with a dielectric is used.
- b) Key pressed - increase in Capacitance - Computer Identifies which key is pressed.

Disadvantages :

- a) Even after the battery / power supply is removed, the capacitor stores charges & energy for sometime.
- b) Advisable not to touch electronic appliances immediately after switched off.