

**MY EGURU PVT. LTD.**  
**Electrostatics**  
**DPP 9**

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- Q.1** Electric field at a point varies as  $r^0$  for
- (1) An electric dipole
  - (2) A point charge
  - (3) A plane infinite sheet of charge
  - (4) A line charge of infinite length
- Q.2** An electric charge  $q$  is placed at the centre of a cube of side  $a$ . The electric flux on one of its faces will be
- (1)  $\frac{q}{6\epsilon_0}$       (2)  $\frac{q}{\epsilon_0 a^2}$       (3)  $\frac{q}{4\pi\epsilon_0 a^2}$       (4)  $\frac{q}{\epsilon_0}$
- Q.3** For a given surface the Gauss's law is stated as  $\int \mathbf{E} \cdot d\mathbf{s} = 0$ . From this we can conclude that
- (1)  $\mathbf{E}$  is necessarily zero on the surface
  - (2)  $\mathbf{E}$  is perpendicular to the surface at every point
  - (3) The total flux through the surface is zero
  - (4) The flux is only going out of the surface
- Q.4** A cube of side  $l$  is placed in a uniform field  $\mathbf{E}$ , where  $\mathbf{E} = E \hat{i}$ . The net electric flux through the cube is
- (1) Zero      (2)  $l^2 E$       (3)  $4l^2 E$       (4)  $6l^2 E$
- Q.5** Electric charge is uniformly distributed along a long straight wire of radius 1mm. The charge per cm length of the wire is  $Q$  coulomb. Another cylindrical surface of radius 50 cm and length 1m symmetrically encloses the wire as shown in the figure. The total electric flux passing through the cylindrical surface is
- (1)  $\frac{Q}{\epsilon_0}$       (2)  $\frac{100Q}{\epsilon_0}$       (3)  $\frac{10Q}{(\pi\epsilon_0)}$       (4)  $\frac{100Q}{(\pi\epsilon_0)}$

ANSWER KEY

1. (3)
2. (1)
3. (3)
4. (1)
5. (2)