

**MODEL ACTIVITY TASKS**  
**CLASS – XII**  
**PHYSICS**

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**Chapter : Electrostatics**

*Write the answers to the questions given below :*

1. Show that the electric field intensity  $E$  in vacuum at a distance of  $r$  from the midpoint of a dipole making an angle  $\theta$  with the dipole axis is given by  $E = \frac{1}{4\pi\epsilon_0} \frac{p}{r^3} \sqrt{3 \cos^2 \theta + 1}$  where  $p$  is the dipole moment.
2. How does the electric field intensity change with distance inside and outside of a charged spherical shell ? Explain by using a graphical representation.
3. There are two concentric spherical shells of radius  $r$  and  $R$  ( $R > r$ ). If the outer shell is charged by a positive charge of magnitude  $Q$  and the inner shell is earthed, how much charge will be there on the inner shell ?
4. A charged capacitor is connected with another uncharged capacitor whose capacitance is twice that of the previous one. The added charge gets distributed between the two capacitors. Find the total energy of the two capacitors under these conditions.

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**Students will write answers to these activity tasks in subject specific exercise books at home, and submit the exercise books to respective subject teachers after schools reopen.**  
**Under no circumstance, students will go out of home.**