1. The capacitance per unit length between two coaxial cylinders having radii a & b. (a<b)
   - $\frac{2\pi \varepsilon}{\ln \left( \frac{a}{b} \right)}$
   - $\frac{2\pi \varepsilon}{\ln \left( \frac{b}{a} \right)}$
   - $\frac{2\pi \varepsilon}{\ln (ab)}$
   - None of the above

2. When no time varying fields are present, it is not possible to assign to each position in space a value of electrostatic potential.
   - True
   - False

3. What does the direction of $\nabla \phi$ indicates
   - $\nabla \phi$ do not have any direction
   - Direction in which $\phi$ increases rapidly
   - Direction in which $\frac{d\phi}{dx}$ increases rapidly
   - Direction in which $\frac{d\phi}{dz}$ increases rapidly

4. Scalar Laplacian operation on the scalar field to produce another scalar field is equivalent to
   - Gradient operation followed by divergence operation
   - Divergence operation followed by gradient operation
   - Divergence operation followed by curl operation
   - Curl operation followed by divergence operation

5. The electric field of a point charge $q$, located at the origin is given by
   - $\vec{E} = \frac{q}{4\pi \varepsilon |\vec{r}|^3}$
   - $\vec{E} = \frac{q}{4\pi \varepsilon |\vec{r}|^2}$
   - $\vec{E} = \frac{q}{4\pi \varepsilon \mu |\vec{r}|^3}$
   - $\vec{E} = \frac{q}{4\pi \varepsilon \mu |\vec{r}|^2}$

6. Which of the following statement(s) are true
   - Laplace equation is the simplified equation of Poisson’s equation under no charge condition
   - Poisson’s equation is the simplified equation of Laplace equation under no charge condition
   - Laplace and Poisson’s equation are not related to each other
   - All of the above
7. The tangential component of ‘H’ is continuous across a boundary between two materials with different μ.
   - True
   - False

8. Which of the following statement(s) boundary conditions are true, at the interface between two dielectrics
   - \( E_{T1} \neq E_{T2} \)
   - \( E_{T1} = E_{T2} \)
   - \( D_{N1} = D_{N2} \) (if no charges are present on the interface)
   - \( D_{N1} - D_{N2} = \sigma \) (if charges are present on the interface)

9. Which of the following statement(s) boundary conditions are true, at the interface between two conductors
   - \( J_{N1} = J_{N2} \) (for non time varying currents)
   - \( J_{N2} - J_{N1} = -j\omega\sigma \) (for sinusoidally time varying currents)
   - \( J_{N1} = J_{N2} \) (for sinusoidally time varying currents)
   - \( J_{N2} - J_{N1} = -j\omega\sigma \) (for non time varying currents)