1. The magnetic flux through the surface is equal to
   - Surface integral of $B$ over that surface.
   - Surface integral of $H$ over that surface.
   - Line integral of $B$ over that surface.
   - Line integral of $H$ over that surface.

2. The direction of the force, acting on the wire of length $\mathbf{dl}$ carrying a current $I$ in a magnetic field $\mathbf{B}$ is
   - Perpendicular to both $\mathbf{dl}$ and magnetic field
   - Parallel to both $\mathbf{dl}$ and magnetic field
   - Perpendicular to $\mathbf{dl}$ and parallel to magnetic field
   - Parallel to $\mathbf{dl}$ and perpendicular to magnetic field

3. The magnetic field arising from the current in a long straight wire has
   - The form of circles centered on the wire.
   - Direction same as the direction of the current.
   - Direction opposite to the direction of the current.
   - Magnetic field and the current are not related to each other

4. A current element is located at the origin and is directed in the $+y$ direction. By inspection determine the direction of $d\mathbf{H}$ at (a) $(1,0,0)$ (b) $(0,0,1)$
   - (a) $-z$ direction (b) $x$ direction
   - (a) $+z$ direction (b) $-x$ direction
   - (a) $+x$ direction (b) $-z$ direction
   - (a) $+z$ direction (b) $+x$ direction

5. Identify the magneto Static Curl equation among the options given here
   - $\nabla \times \mathbf{B} = \mu_0 \mathbf{j}$
   - $\nabla \times \mathbf{B} = 0$
   - $\nabla \times \mathbf{H} = \mathbf{j}$
   - $\nabla \times \mathbf{H} = 0$

6. Determine the polarisation of the wave represented by the equation
   $$\mathbf{E} = E_0 \left( e_x - j e_y \right) e^{-jkz}$$
   - Circularly polarised in the clockwise direction
   - Circularly polarised in the anti-clockwise direction
   - Linearly polarised
   - Elliptical polarisation
7. Find the phasor representing $\vec{E}$ field for a linearly polarised plane wave with $\vec{E}$ in the direction of $\hat{e}_x - \hat{e}_y$, propagating in the $-z$ direction

- $\vec{E} = \frac{E_0}{\sqrt{2}} (\hat{e}_x - \hat{e}_y) e^{jkz}$
- $\vec{E} = \frac{E_0}{\sqrt{2}} (\hat{e}_x - \hat{e}_y) e^{-jkz}$
- $\vec{E} = \frac{E_0}{\sqrt{2}} (-\hat{e}_x - \hat{e}_y) e^{jkz}$
- $\vec{E} = \frac{E_0}{\sqrt{2}} (-\hat{e}_x - \hat{e}_y) e^{-jkz}$

8. For the data given in question 7, find the phasor representation for $\vec{H}$ field.

- $\vec{H} = \frac{E_0}{\sqrt{2}\eta} (\hat{e}_x - \hat{e}_y) e^{jkz}$
- $\vec{H} = \frac{E_0}{\sqrt{2}\eta} (\hat{e}_x - \hat{e}_y) e^{-jkz}$
- $\vec{H} = \frac{E_0}{\sqrt{2}\eta} (-\hat{e}_x - \hat{e}_y) e^{jkz}$
- $\vec{H} = \frac{E_0}{\sqrt{2}\eta} (-\hat{e}_x - \hat{e}_y) e^{-jkz}$

9. A plane wave in vacuum with angular frequency $\omega$ propagate in the direction if the unit vector $\vec{u} = A\hat{e}_x + B\hat{e}_y$ where $A=0.65$ and $B=0.76$. The electric field points in the $z$-direction and has amplitude $E_0$. The phase angle at the origin is zero. Find the phasor $E_z$

- $\vec{E} = E_0 \exp[-j\omega\sqrt{\mu\epsilon}(0.65x + 0.76y)]$
- $\vec{E} = E_0 \exp[-j\omega\sqrt{\mu\epsilon}(-0.65x + 0.76y)]$
- $\vec{E} = E_0 \exp[-j\omega\sqrt{\mu\epsilon}(0.65x - 0.76y)]$
- $\vec{E} = E_0 \exp[-j\omega\sqrt{\mu\epsilon}(-0.65x - 0.76y)]$