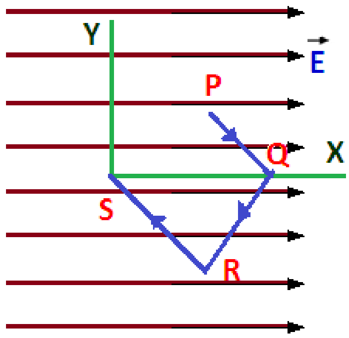
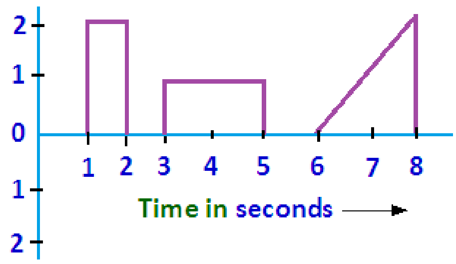
A few sample MCQs on the Syllabus of Class – XII in +2 Levels:



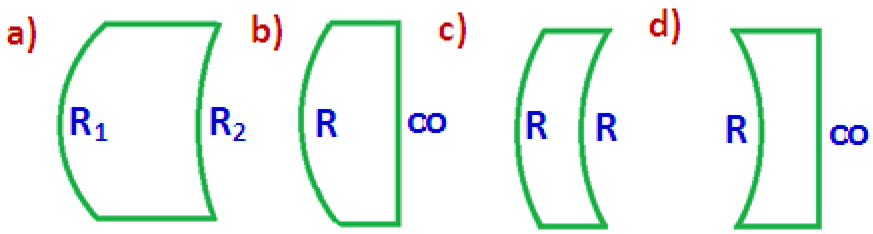
1. Point charge q moves from point P to point S along the path $PQRS$ (as shown in figure) in a uniform electric field E pointing co-parallel to the positive direction of X-axis. The coordinates of the points P, Q, R and S are $(a, b, 0), (2a, 0, 0), (a, -b, 0)$ and $(0, 0, 0)$ respectively. The work done by the field in the above process is given by the expression (a) qEa (b) – qEa (c) $qEa\sqrt{2}$ (d) $qE\sqrt{(2a)^2 + b^2}$

2. A fully charged capacitor C with initial charge q_0 is connected to a coil of self inductance L at $t = 0$. The time at which the energy is stored equally between the electric field and magnetic field is (a) $\frac{\pi}{4}\sqrt{LC}$ (b) $2\pi\sqrt{LC}$ (c) $\sqrt{LC}$ (d) $\pi\sqrt{LC}$

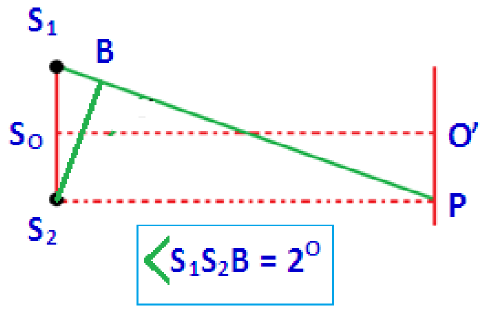


3. The plot represents the flow of current through a wire at three different times. The ratio of charges flowing through the wire at different times is (see figure) (a) 2:1:2 (b) 1:3: (c) 1:1: (d) 2:3:4

4. Which one of the following spherical lenses does not exhibit dispersion? The radii of curvature of the surfaces of the lenses are as given in the diagrams:

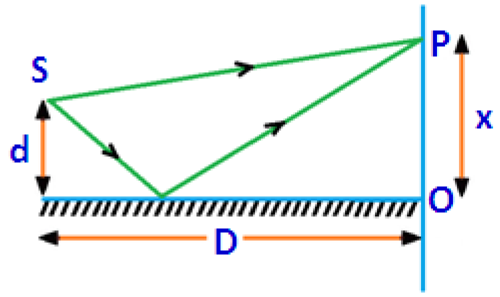


5. A short linear object of length L lies on the axis of a spherical lens of focal length f at a distance u from the lens. It's image has an axial length L' equal to (a) $L[\frac{f}{u-f}]^{1/2}$ (b) $L[\frac{(u+f)}{f}]^{1/2}$ (c) $L[\frac{f}{u-f}]^2$ (d) $L[\frac{f}{u+f}]^2$

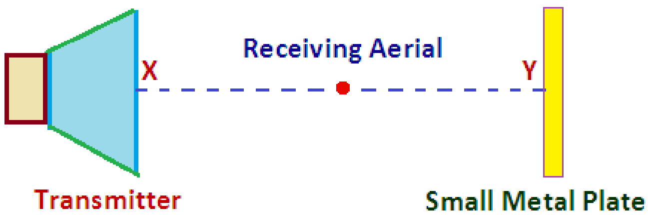


6. In the given figure, O' is the position of first bright ring towards right from OP is the position of 5th bright fringe on the other side of O with respect to O'. If wavelength ofused light is 6000Å, then value of S_1B will be (a) 2.4×10^{-4} m(b) 2.4×10^{-2} m(c) 2.4×10^{-3} m(d) 2.4×10^{-6} m

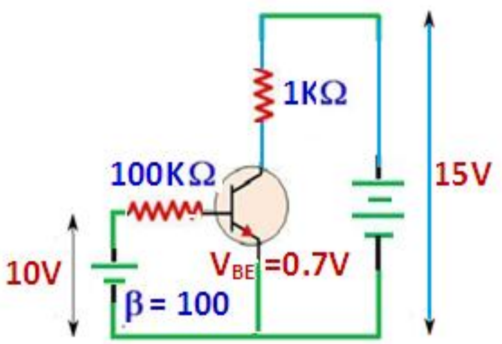
7. A narrow slit S transmitting light of wavelength λ isplaced a distance d above a large plane mirror asshown. The light coming directly from the slit and thatafter reflection interferes at P on the screen placed at a distance D from the slit. What will bex, for which first maxima occurs? (a) $\frac{4d}{\lambda D}$(b) $\frac{\lambda D}{4d}$(c)$\frac{2d}{D}$(d) $\frac{D}{2d}$



8. A transmitter of 3×10^{-2} m electromagnetic waves and a small plate are set up as shown. A receiving aerial is connected to a stable amplifier and a meter. (The speed of electromagnetic radiation is$3.0 \times 10^{8}\ \text{ms}^{-1}$). Which of the following is then true? (1) When the receiving aerial is moved along the line XY, a maximum response is noted every 1.5×10^{-2} m (2) The frequency of wave is 10^{10} Hz (3) When the receiving aerial is placed at a suitable point behind the plate but on the line XY produced a response can again be note because diffraction occurs at the edges of the plate (a) if 1, 2, 3 are correct (b) if 1, 2 only correct (c) if 2, 3 only correct (d) if 1 only correct



9. A capacitor is being charged by an external source. Kirchhoff's first rule is applicable at each plate if 'current' means (a) displacement current (b) majority current (c) conduction current (d) both conduction and displacement current



10. A transistor CE circuit is shown in the figure (i) The base current I_B in mA is (a) 0.093 (b) 0.05 (c) 10 (d) 0.5 (ii) Collector current I_C in mA is (a) 15 (b) 9.3 (c) 100 (d) 1000