

JEE-MAIN EXAMINATION – JANUARY 2026

(HELD ON WEDNESDAY 28th JANUARY 2026)

TIME : 9:00 AM TO 12:00 NOON

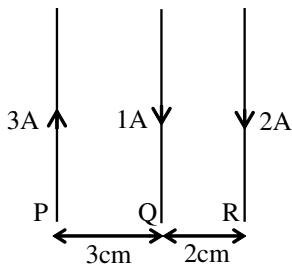


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34. Three long straight wires carrying current are arranged mutually parallel as shown in the figure. The force experienced by 15 cm length of wire Q is _____.



$$(\mu_0 = 4\pi \times 10^{-7} \text{ T.m/A})$$

(1) 6×10^{-7} N towards P
 (2) 6×10^{-6} N towards R
 (3) 6×10^{-7} N towards R
 (4) 6×10^{-6} N towards P

Ans. (2)

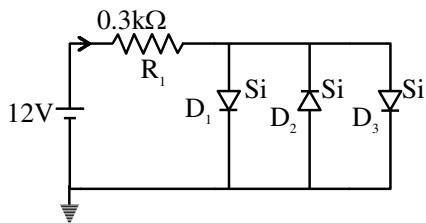
$$\text{Sol. } F_{\text{net}} = \frac{\mu_0}{2\pi} I_0 \left(\frac{I_1}{d_1} + \frac{I_2}{d_2} \right) \ell$$

$$F_{\text{net}} = 2 \times 10^{-7} \times 1 \left(\frac{3}{3} + \frac{2}{2} \right) \times \frac{15 \times 10^{-2}}{10^{-2}}$$

$$= 4 \times 15 \times 10^{-7}$$

$$F_{\text{net}} = 6 \times 10^{-6} \text{ N}$$

35. Assuming in forward bias condition there is a voltage drop of 0.7 V across a silicon diode, the current through diode D_1 in the circuit is _____ mA. (Assume all diodes in the given circuit are identical)



(1) 20.15
 (2) 11.7
 (3) 17.6
 (4) 18.8

Ans. (4)

$$\text{Sol. } 12 - 0.3 \times 10^3 I - 0.7 = 0$$

$$\frac{11.3}{0.3 \times 10^3} = I$$

$$37.66 \times 10^{-3} \text{ A} = I$$

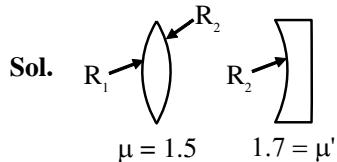
Current through diode D_1 , $I_1 = I/2$

$$I_1 = 18.83 \text{ mA}$$

36. The magnitudes of power of a biconvex lens (refractive index 1.5) and that of a plano-concave lens (refractive index = 1.7) are same. If the curvature of plano-concave lens exactly matches with the curvature of back surface of the biconvex lens, then ratio of radius of curvature of front and back surface of the biconvex lens is _____.

(1) 5 : 2
 (2) 5 : 12
 (3) 12 : 5
 (4) 2 : 5

Ans. (1)



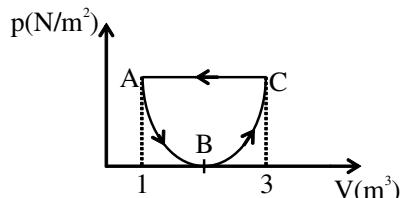
$$|P_A| = |P_B|$$

$$0.5 \left(\frac{1}{R_1} + \frac{1}{R_2} \right) = \frac{0.7}{R_2}$$

$$\frac{5}{R_1} = \frac{2}{R_2}$$

$$\frac{R_1}{R_2} = \frac{5}{2}$$

37. In the following p - V diagram the equation of state along the curved path is given by $(V - 2)^2 = 4ap$ where a is a constant. The total work done in the closed path is



(1) $-\frac{1}{a}$
 (2) $+\frac{1}{3a}$
 (3) $\frac{1}{2a}$
 (4) $-\frac{1}{3a}$

Ans. (4)



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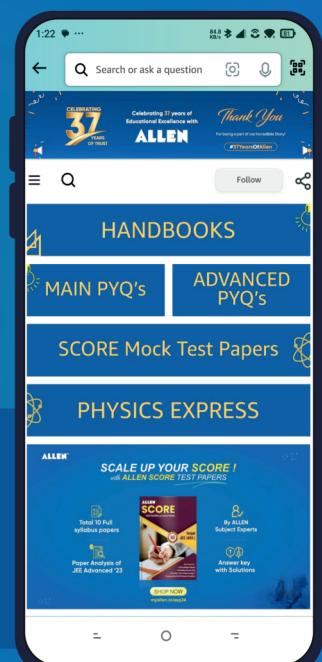
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