

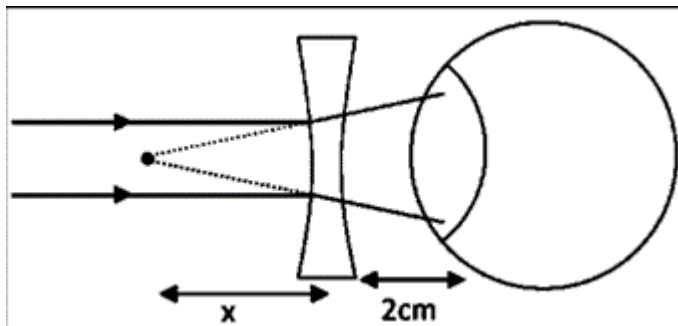
Examrace

AIIMS MBBS Entrance Test 2019 Physics Paper with Answer & Solutions 25 May First Shift Part 1

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Total Number of Questions (54)

Q-1 A person wear normal spectacles in which the distance of glasses and eyes is approximately 2 cm , then power required is - 5D . If he wears contact lens, then the required power is:



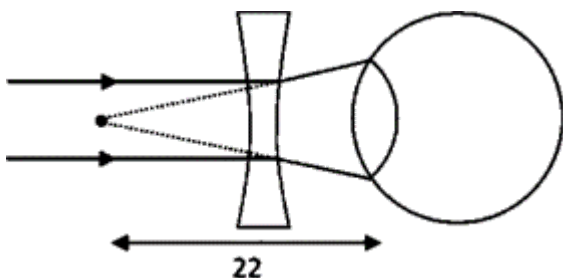
Options:

- (1) -5.2 D
- (2) -4.54 D
- (3) + 5.2 D
- (4) +4.7 D

Answer: (2)

Solutions:

Contact lens is more effective, so its required power is less



For glasses:-

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f} \Rightarrow \frac{1}{-x} - \frac{1}{\infty} = \frac{1}{f}$$

$$f = -x \text{ cm} = -\frac{x}{100}$$

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$$\text{power} = \frac{1}{f} = -\frac{100}{x} = -5 \Rightarrow x = 20\text{cm}$$

If he used contact lens.

Image

$$v = -\infty, u = -22\text{cm}$$

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f} \Rightarrow \frac{1}{-\infty} = \frac{1}{f}$$

$$f = 22, p' = -\frac{100}{22}\text{D} = -4.54\text{D}$$

Q-2: If radius of the earth is 6347 km , then what will be difference between acceleration of free fall and acceleration due to gravity near the earth's surface?

Options:

- (1) 0.3400
- (2) 0.0340
- (3) 0.0034
- (4) 0.24

Answer: (2)

Solutions:

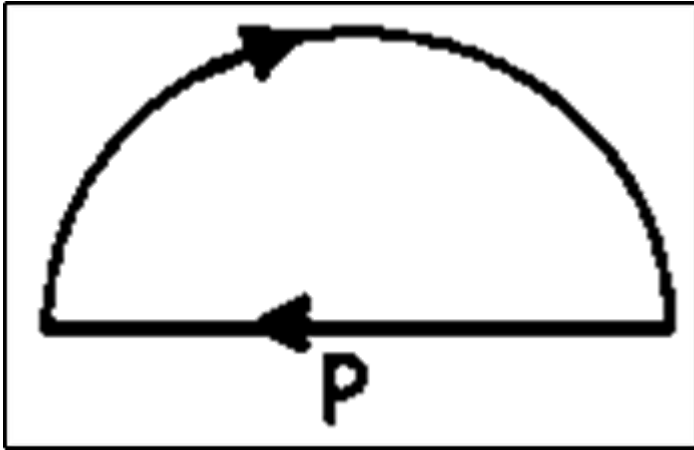
$$g = \frac{GM}{R^2} = 9.8$$

$$g - g_{\text{free fall}} = \frac{GM}{R^2} - \omega^2 R = 9.8 - \omega^2 R$$

$$g - g_{\text{free fall}} \omega^2 R = \left(\frac{2\pi}{T}\right)^2 R$$

$$= \frac{4\pi^2}{(24 \times 60 \times 60)^2} \times 6347 \times 10^3 = 0.03401$$

Q-3: A semi-circular arc of radius r and a straight wire along the diameter, both are carrying same current i . Find out magnetic force per unit length on the small element P, which is at the centre of curvature.



(1) $\left(\frac{\mu_0 i^2}{4r}\right)$

(2) $\left(\frac{\mu_0 i^2}{2r}\right)$

(3) $\left(\frac{\mu_0 i^2}{r}\right)$

(4) $\left(\frac{2\mu_0 i^2}{r}\right)$

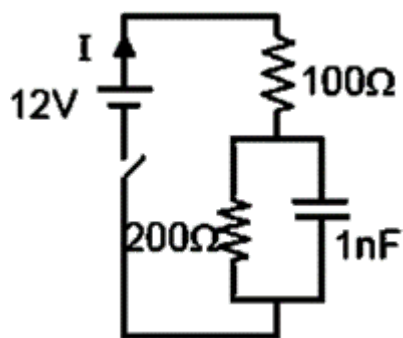
Answer: (1)

Solutions:

$$F = Bil$$

$$\frac{F}{l} = Bi = \left(\frac{\mu_0 i^2}{4r}\right)$$

Q-4: Find the charge in steady state of the capacitor.



Options:

(1) 10 nC

(2) 20 nC

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(3) 30 nC

(4) 40 nC

Answer: Option not match

Solutions:

Capacitor is in parallel to 100Ω resistance of volt will be

$$V = IR$$

$$\left[\frac{12}{300} \right] 200 = 8V$$

$$q = cV = 8 \text{ nC}$$

Option not match

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