An Authentic Practise Book for NEET Exam

NEET

Practice Set 15

Errata

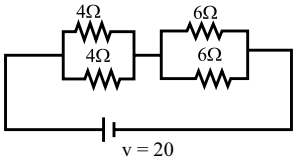
All book errors covered here

Outside NCERT Questions Covered

AimAAIIMS®

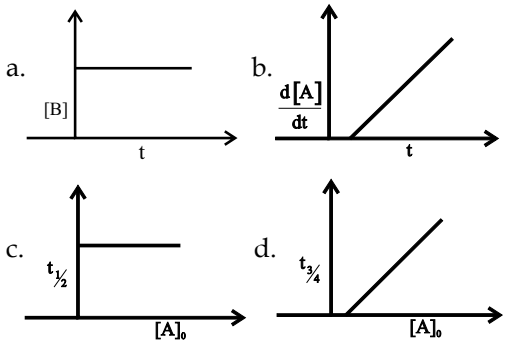
ALTIS VORTEX

Q6. Four resistances are connected in circuit in the given figure. The electric current flowing through 4Ω and 6Ω resistance is respectively



a. 2A, 4A
b. 1A, 2A
c. 1A, 1A
d. 2A, 2A

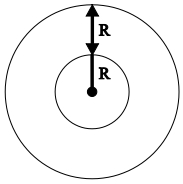
Q70. Which graph represents zero – order reaction [A(g) → B(g)]:



Phase - I

Page. No. 50 Ans. 11.

(a) NCERT (XI) Ch - 8 Pg. 191



$$\text{Gravitational Potential} = \frac{-Gm}{R+h} = -5.4\times10^{7}\,J\,Kg^{-2} \quad (1)$$

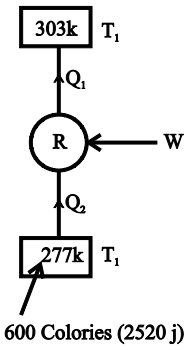
$$g = \frac{Gm}{(R+h)^2} = 6\,m/s^2 \qquad (2)$$

$$(1)/(2) = (R+h) = \frac{5.4\times10^{7}}{6} = 0.9\times10^{7}\,m = 9000km$$

H=9000km-6400km=2600km

Page. No. 51 Ans. 16.

(c) NCERT (XI) Ch - 12 Pg. 308



$$\beta = \frac{Q_2}{W} = \frac{T_2}{T_1 - T_2}$$

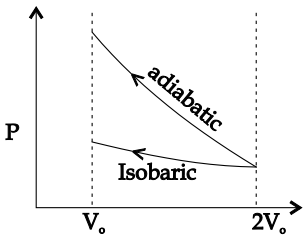
$$\frac{2520}{W} = \frac{277}{303-277}$$

W = 236.5 joule

$$\text{Power} = \frac{W}{t} = \frac{236.5}{1\,sec}\,\text{joule} = 236.5\ \text{watt}$$

Page. No. 51 Ans. 17.

(b) NCERT (XI) Ch - 12 Pg. 307

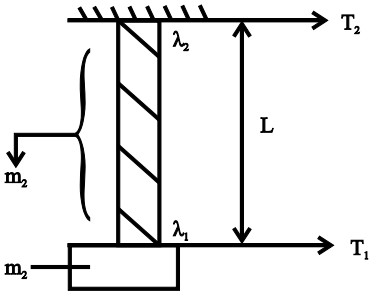


W_{ext} = negative of area with volume axis

$W_{(adiabatic)} > W_{(Isothermal)}$

Page. No. 51 Ans. 19.

(b) NCERT (XI) Ch - 15 Pg. 369



$T_1 = m_2 g$

$T_2 = (m_1 + m_2)g$

We know velocity $\propto \sqrt{T}$

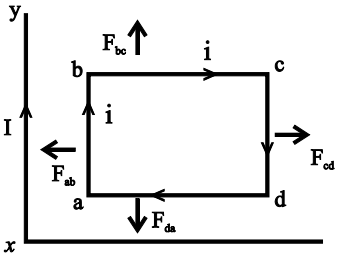
Also $\lambda \propto \sqrt{T}$

$$\frac{\lambda_1}{\lambda_2} = \frac{\sqrt{T_1}}{\sqrt{T_2}} = \sqrt{\frac{m_2}{m_1+m_2}}$$

$$\frac{\lambda_1}{\lambda_2} = \sqrt{\frac{m_1+m_2}{m_2}}$$

Page. No. 52 Ans. 24.

(a) NCERT (XII) Ch - 4 Pg. 154



Force on current carrying wire = $i(\ell \times B)$

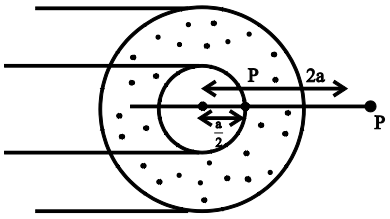
Magnetic filed for ab $\dfrac{\mu_o I}{2\pi\dfrac{L}{2}}$

Magnetic filed for cd = $\dfrac{\mu_o I}{2\pi\dfrac{3L}{2}}$

$F_{net} = F_{ab} - F_{cd} = \dfrac{2}{3}\dfrac{\mu_o I_i}{\pi}$

Page. No. 52 Ans. 25.

(c) NCERT (XII) Ch - 4



Magnetic field at P

$$B_1 = \frac{\mu_o I}{2\pi(2a)} \quad (1)$$

Magnetic field at P1

$$I_{enclosed} = \frac{I}{\pi a^2}\frac{\pi a^2}{4}$$

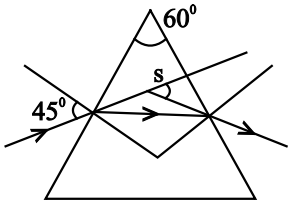
$$= \frac{I}{4}$$

$$B_2 = \frac{\mu_o \frac{I}{4}}{2\pi\frac{a}{2}} = \frac{\mu_o I}{4\pi a} \quad (2)$$

$$B_1 / B_2 = 1$$

Page. No. 53 Ans. 31.

(b) NCERT (XII) Ch - 9 Pg. 331



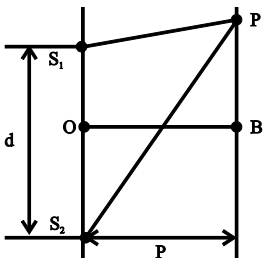
$$S_{min} = 2i - A$$

$$2(45) - 60 = 30$$

$$\mu = \frac{Sm\left[\frac{A + S_{min}}{2}\right]}{Sm\ A/2} = \frac{Sm\ 45}{Sm\ 30} = \frac{1}{\sqrt{2}}2 = \sqrt{2}$$

Page. No. 53 Ans. 35.

(d) NCERT (XII) Ch - 10 Pg. 362



Path difference = $S_2P - S_1P$

$$\sqrt{D^2 + d^2} - D$$

$$D\left\{1 + \frac{1}{2}\frac{d^2}{D^2}\right\} - D$$

$$D\left\{1 + \frac{1}{2}\frac{d^2}{D^2} - 1\right\} = \frac{d^2}{2D}$$

$$\Delta x = \frac{d^2}{2 \times 10d} = \frac{d}{20} = \frac{5\lambda}{20} = \frac{\lambda}{4}$$

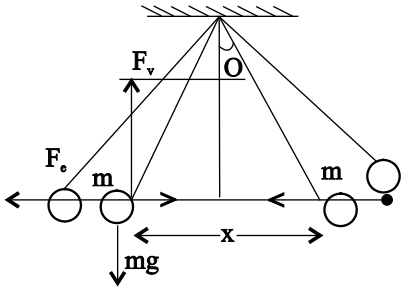
$$\Delta\phi = \frac{2\pi}{\lambda}\frac{\lambda}{4} = \frac{\lambda}{2}$$

So intensity at desired point is

$$I = I_o \cos^2\frac{\phi}{2} = I_o \mathrm{Cos}^2\frac{\pi}{4} = \frac{I_o}{2}$$

Page. No. 55. Ans. 44.

(c) NCERT (XII) Ch - 1 Pg. 10



$F_v = F_{vertical} = Mg$

$F_e = F_{electric}$

$$\frac{Fe}{Fv} = \frac{Fe}{Mg} = \frac{kq^2}{x^2 mg} = \frac{x}{2\ell} = \tan\theta$$

$$\Rightarrow q^2 \propto x^2 \qquad (1)$$

$$\Rightarrow q \propto x^{3k} \qquad (2)$$

Differenciating eq 1 with respect to time

$$2q\frac{dq}{dt} \propto 3x^2\frac{dx}{dt} \qquad \left(\frac{dq}{dt} = I(\text{current}) \quad (\text{here charge leakage})\right)$$

$$2x^{3/2}\frac{dq}{dt} \propto 3x^2 V \qquad \left(q = x^{3/2}\ \text{from}(2),\ \frac{dq}{dt} = \text{constant}\right)$$

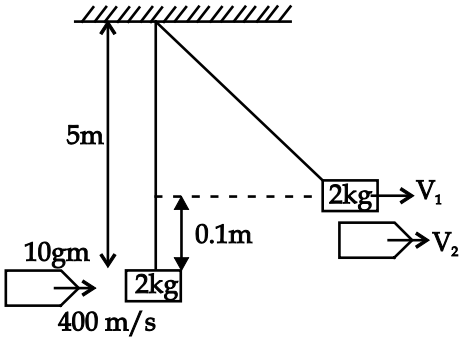
$$x^{3/2} \propto x^2 V$$

$$V \propto x^{-1/2}$$

Phase - II

Page. No. 75 Ans. 3.

(a) NCERT (XI) Ch - 4



Applying momentum conservation

$$\frac{10}{1000}\times 400 + 0 = 2\times v_1 + \frac{10}{1000}\times v_2$$

$$\Rightarrow 4 = 2v_1 + 0.01v_2 \qquad (1)$$

Applying work energy theorem for block

$$W = \Delta KE$$

$$\Rightarrow 2\times 10\times 0.1 = \frac{1}{2}\times 2\times v_1^2$$

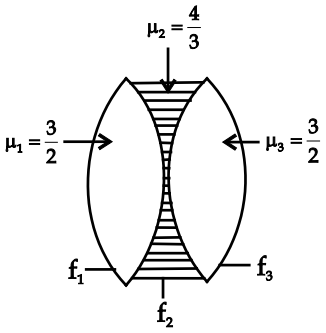
$$\Rightarrow v_1 = \sqrt{2} = 1.4 m/s$$

Putting the value of v_1 in equation (1)

$$4 = 2\times 1.4 + 0.01v_2 \Rightarrow v_2 = 120 m/s$$

Page. No. 79 Ans. 33.

(b) NCERT (XII) Ch - 9 Pg. 329



$$f_1 = f_3 = \frac{R}{2\left(\frac{3}{2}-1\right)} = R = f(\text{given})$$

$$f_2 = \frac{-R}{2\left(\frac{4}{3}-1\right)} = \frac{-3}{2}R = -\frac{3}{2}f$$

$$\frac{1}{f_{eq}} = \frac{1}{f_1} + \frac{1}{f_2} + \frac{1}{f_3} = \frac{1}{f} + \left(-\frac{2}{3f}\right) + \frac{1}{f}$$

$$\Rightarrow \frac{1}{f_{eq}} = \frac{4}{3f} \Rightarrow f_{eq} = \frac{3f}{4}$$