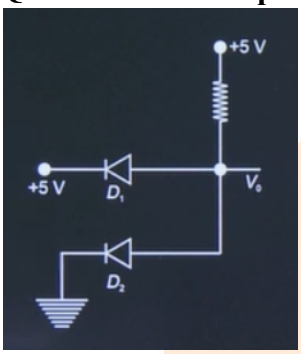
JEE-Main-08-04-2025 (Memory Based)
[EVENING SHIFT]
Physics

Question: Find output voltage in the given circuit.



Options:
(a) +5 volt
(b) Zero
(c) 10 volt
(d) -5 volt
Answer: (b)

Question: A fractional errors in x, y and z are 0.1, 0.2 and 0.5 respectively. Find maximum fractional error in $x^{-2}y^{\frac{3}{2}}z^{\frac{-2}{5}}$.
Options:
(a) 0.2
(b) 0.7
(c) 0.6
(d) 0.3
Answer: (b)

Question: For a nucleus of mass number A and radius R, mass density ρ. Then choose the correct option
Options:
(a) $\rho \propto A^{1/3}$
(b) ρ is independent of A
(c) $\rho \propto A$
(d) $\rho \propto A^3$
Answer (b)

Question: A convex lens (f = 30 cm) is in contact with concave lens (f = 20 cm). Object is placed on the left side at a distance of 20 cm. Find the image distance.
Options:
(a) 10 cm
(b) 20 cm
(c) 15 cm
(d) 25 cm
Answer: (c)

Question: There are two charged sphere of radius R and 3R. When the sphere are made to touch each other and then separate, the surface charge density becomes r_1 and r_2 respectively. Find $\frac{r_1}{r_2}$.
Options:
(a) 1/9
(b) 1/3
(c) 3
(d) 9
Answer: (c)

Question: Given $\lambda = \frac{2nC}{m}$ (linear charge density) is for Q wire which is passing through body diagonal of a closed cube of side length √3 cm. Find flux through the cube.
Options:
(a) 1.44π
(b) 0.72π
(c) 2.16π
(d) 6.84π
Answer: (c)

Question: A monatomic gas is stored in a thermally insulated container. The gas is suddenly compressed to $\left(\frac{1}{8}\right)^{th}$ of its initial volume. Find ratio of final pressure to initial pressure.
Options:
(a) 8
(b) 16
(c) 4
(d) 32
Answer: (d)

Question: Two balls are projected with same speed at different angles. If maximum height of 1st is 8 times maximum height of 2nd ball. Find the ratio of their time of flight.
Options:
(a) 1 : 2√2
(b) 2√2 : 1

(c) 2 : 1
(d) 4 : 1
Answer: (b)

Question: A uniform disc of radius r is rotating about an axis passing through diameter with angular speed 800 rpm. A torque of magnitude 25π Nm is applied on the disc for 40 sec. If final angular speed of disc is 2100 rpm. Find radius of the disc if mass is 1 kg.
Options:
(a) 40/3
(b) $20\sqrt{\frac{3}{13}}$
(c) $20\sqrt{\frac{2}{13}}$
(d) $10\sqrt{\frac{3}{2}}$
Answer: (b)

Question: Water falls from 200 m height. What is increase in temperature when it touches the bottom. (Assume that all the heat goes into same amount of mass which was falling).
Options:
(a) 0.7°C
(b) $\frac{10}{21}$°C
(c) $\frac{20}{21}$°C
(d) $\frac{11}{10}$°C
Answer: (b)

Question: Bulk modulus of a liquid is 2×10^9 Pa initial and final pressure are 1 atm and 5 atm respectively. Find initial volume of the liquid if change in volume is 0.8 cm³.
Options:
(a) 2×10^3 cm³
(b) 4×10^3 cm³
(c) 2×10^{-4} cm³
(d) 4×10^{-3} cm³
Answer: (b)

Question: The amplitude and phase of the wave when two travelling waves given as

$y_1(x,t) = 4\sin(\omega t - kx)$ **and** $y_2(x,t) = 2\sin\left(\omega t - kx = \frac{2\pi}{3}\right)$

Options:

(a) $6, \frac{2\pi}{3}$

(b) $6, \frac{\pi}{3}$

(c) $2\sqrt{3}, \frac{\pi}{6}$

(d) $\sqrt{3}, \frac{\pi}{6}$

Answer: (c)

Question: An electron is released in the field generated by a non- conductivity sheet of uniform surface charge density σ. The rate of change of de-Broglie wavelength associated with electron waves inversely as nth power of distance travelled. Find the value of n

Options:

(a) -1/2

(b) -1

(c) -1/4

(d) 4

Answer: (b)

Question: A force $\hat{6k}$ is applied for $\frac{5}{3}$ seconds on a body of mass 2 kg. If initial velocity of body was $\hat{3i} + \hat{4j}$. Then find final velocity of the body.

Options:

(a) $\hat{3i} + \hat{j} + \hat{5k}$

(b) $\hat{3i} + \hat{4j} + \hat{5k}$

(c) $\hat{3i} + \hat{2j} - \hat{3k}$

(d) $\hat{3i} + \hat{4j} - \hat{5k}$

Answer: (a)

Question: A rod of linear mass density 'λ' and length 'L' is bent into the form of a ring of radius R. Moment of inertia of ring about any of its diameter is

Options:

(a) $\frac{\lambda L^3}{12}$

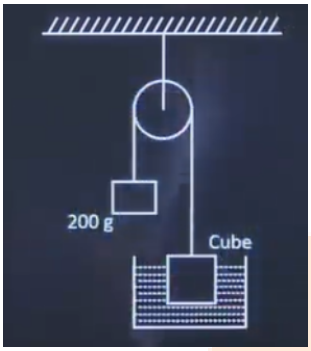
(b) $\frac{\lambda L^3}{4\pi^2}$

(c) $\frac{\lambda L^2}{12}$

(d) $\frac{\lambda L^3}{8\pi^2}$

Answer: (d)

Question: A cube of side 10 cm is suspended from one end of a fine string of length 27 cm, and a mass of 200 gram is connected to the other and of the string. When the cube is half immersed in water then the system remains in balance. Find density of national of cube.



Options:

(a) 800 kg/m³

(b) 500 kg/m³

(c) 700 kg/m³

(d) 600 kg/m³

Answer: (c)