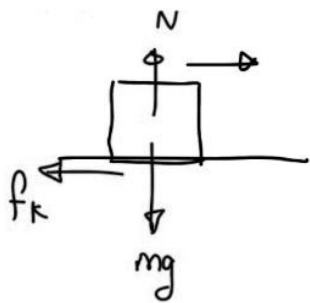# JEE-Main-05-04-2024 (Memory Based) [EVENING SHIFT]

Physics

Question: A body of mass of 50 kg is moving on a rough horizontal surface having friction coefficient 0.3. Find the kinetic friction.

Options:
(a) 147 N
(b) 1.47 N
(c) 14.7 N
(d) 1470 N
Answer: (a)

Question: A body is moving in one direction with constant power. The displacement is proportional to time as
Options:
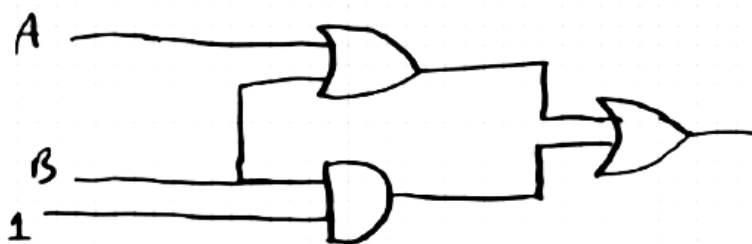(a) T
(b) $T^{3/2}$
(c) $T^{1/2}$
(d) T^0
Answer: (b)

Question: In hydrogen spectrum, if shortest wavelength of Lyman series is 916 Å then find longest wavelength of Balmer series for hydrogen is
Options:
(a) 95 Å
(b) 65 Å
(c) 9565 Å
(d) 6595 Å
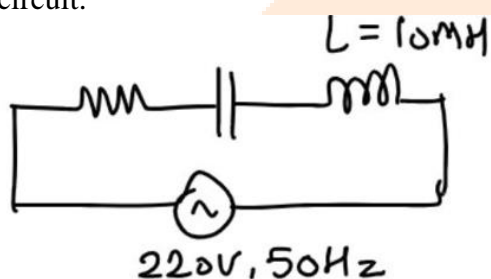Answer: (d)

Question: Which combination of A & B gives zero as output?

Options:
(a) A = 0, B = 0
(b) A = 1, B = 0
(c) A = 0, B = 1
(d) A = 1, B = 1
Answer: (a)

Question: For a series LCR circuit having AC source of 220V, 50Hz, It is observed that the voltage across the inductor which has self inductance of 10mH is 31.4 V. Find the current in circuit.

Options:
(a) 10 mA
(b) 10 A
(c) 63 A
(d) 63 mA
Answer: (b)

Question: If T is the time period of a satellite moving around earth in an orbit of radius R then find the time period of a satellite moving around another planet having mass as one fourth of that of earth and having same radius of orbit
Options:
(a) T/2
(b) 4T
(c) 2T
(d) T/4
Answer: (c)

Question: Which of the following statement/s about for stopping potential in a photoelectric effect is/are not correct.
Options:
(a) Stopping potential depends on intensity light falling
(b) Stopping potential is 1/e times max KE of photoelectrons
(c) Stopping potential not constant for a given metal
(d) Stopping potential is scalar physical quantity
Answer: (a)

Question: The equation for real gas is given by

$$\left(P + \frac{a}{V^2}\right)(V - b) = RT$$

Fnd dimensions of $a^1 b^{-1}$ here, P is pressure, V is volume, T is temperature and R is gas constant.

Options:

(a) $[M^1 L^5 T^{-2}]$

(b) $[M^5 L^2 T^{-2}]$

(c) $[M^1 L^2 T^{-2}]$

(d) $[M^1 L^2 T^{-5}]$

Answer: (c)

Question: In the case of hydraulic lift 10 N force is applied to a side where the radius for the cross-section is 1.4 cm. The force that can be applied, on other side of containers having radius 14 cm to keep the fluid in equilibrium is given as 10n N find n
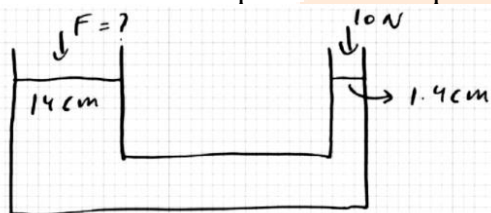
Options:

Answer: (3)

Question: A projectile is thrown with velocity v at an angle θ with horizontal, the maximum height up it goes is 64m. Keeping angle of projectile same, if initial velocity is halved then, find it maximum height.

Options:

(a) 8 m

(b) 16 m

(c) 18 m

(d) 32 m

Answer: (b)

Question: Truck carrying inflammable liquid has hanging metal chains why?

Options:

(a) To alert others to take Caution

(b) It is a Custom

(c) To take care of the Tyre

(d) To Neutralise free electrons due to air friction

Answer: (d)

Question: If a charged particle is moving in a region having uniform electric as well as uniform magnetic field. What is the electric force $(\bar{F}_1)$ and the magnetic force $(\bar{F}_2)$ acting on it are

Options:

(a) $\bar{F}_1 = q\bar{B}, \bar{F}_2 = q(\bar{V} \times \bar{E})$

(b) $\bar{F}_1 = q\bar{E}, \bar{F}_2 = q(\bar{B} \times \bar{V})$

(c) $\bar{F}_1 = q\bar{B}, \bar{F}_2 = q(\bar{E} \times \bar{V})$

(d) $\bar{F}_1 = q\bar{E}, \bar{F}_2 = q(\bar{V} \times \bar{B})$
Answer: (d)

Question: In the case of inductor the current is varying as i = 3t + 8. The induced e.m.f is 12V. Find the value of self inductance
Options:
(a) 2 H
(b) 4 H
(c) 6 H
(d) 8 H
Answer: (b)
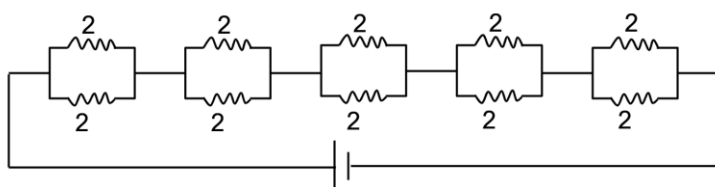
Question: A force acts on a body such that Momentum is P = cos(kt) t - sin (kt) j. Find the Angle between P & F
Options:
Answer: (90°)

Question: 10 Resistors of 1 Ohm Each arranged as shown. What will be the equivalent resistance
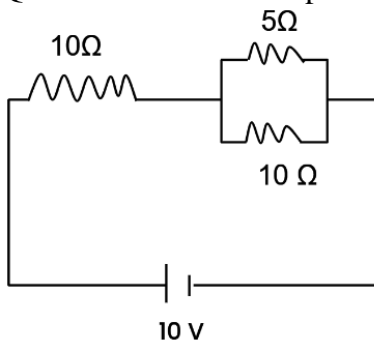

Options:
Answer: (5 ohm)

Question: In Adiabatic process Pressure is directly proportional to the cube of the temperature. Find γ
Options:
(a) 3/2
(b) 4/3
(c) 7/3
(d) 7/5
Answer: (a)

Question: Ratio of heat produced in 5 Ohm & 10 Ohm is

Options:
(a) 1

(b) 2
(c) 3
(d) 4
Answer: (b)

Question: If in a sonometer wire experiment if length of wire is 90 cm fundamental freq is 400Hz. If fundamental is 600 Hz what will be the length of wire
Options:
(a) 30 Cm
(b) 40 Cm
(c) 50 Cm
(d) 60 Cm
Answer: (d)

Question: Assertion: The light of Red colour deviates least from the prism as compared to violet and yellow colours.
Reason: Different colours deviate differently on passing through the prism depending on their wavelength
Options:
(a) If both assertion and reason are true and the reason is the correct explanation of assertion
(b) If both assertion and reason are true, but the reason is not the correct explanation of assertion
(c) If the assertion is true, but the reason is false
(d) If the assertion is false, but the reason is true
Answer: (b)

Question: The angular momentum of an electron in a hydrogen atom is proportional to (where r is radius of orbit)
Options:
(a) r^1
(b) r^{-1}
(c) $r^{1/2}$
(d) $r^{-1/2}$
Answer: (c)

Question: A galvanometer of resistance 100 ohm measure a maximum voltage of 10 volt when connected in series to a 400 ohm resistor. What resistance has to be connected in parallel to galvanometer to convert it into an ammeter of range 10 ampere
Options:
(a) 1 Ω
(b) 2 Ω
(c) 3 Ω
(d) 4 Ω
Answer: (a)

Question: The mean free path for a gas, with molecular diameter d and number density n can be expressed as:
Options:
(a) $\dfrac{1}{\sqrt{2}n^2\pi d}$

(b) $\frac{1}{\sqrt{2}n^2\pi^2d^2}$

(c) $\frac{1}{\sqrt{2}n\pi d}$

(d) $\frac{1}{\sqrt{2}n\pi d^2}$

Answer: (d)