

INDIAN ASSOCIATION OF PHYSICS TEACHERS
NATIONAL STANDARD EXAMINATION IN PHYSICS 2009 - 2010

Date of Examination: 22nd November 2009

Time 09.30 to 11.30 Hrs.

Instructions to Candidates

1. In addition to this question paper, you are given answer sheet for part A and an answer paper for part B.
2. On the answer sheet for part A, fill up all the entries carefully in the space provided, **ONLY IN BLOCK CAPITALS.**

Incomplete / incorrect / carelessly filled information may disqualify your candidature.

3. On part A answer sheet, use only **BLUE or BLACK BALL PEN** for making entries and marking answers.
4. Part A has two parts. In Part A1 (Q. Nos. 1 to 40) each question has **FOUR** alternatives, out of which only one is correct. Choose the correct alternative and mark a cross (**X**) in the corresponding box on the answer sheet.

For example,

Q.No.	a	b	c	d
22		X		

Part A2 (Q. Nos. 41 to 50) has four alternatives in each question, but any number of these (4, 3, 2, or 1) may be correct. You have to mark **ALL** correct alternatives and mark a cross (**X**) for each, like

Q.No.	a	b	c	d
44		X		X

5. **For Part A1**, each correct answer gets 3 marks; wrong answer gets a penalty of 1 mark. **For Part A2** full marks are 6 for each question, you get them when **ALL** correct answers only are marked.
6. Any rough work should be done only on the sheets provided with part B answer paper.
7. Use of nonprogrammable calculator is allowed.
8. No candidate should leave the examination hall before the completion of the examination.
9. After submitting your answerpapers, read the instructions regarding evaluation given at the end of the question paper.

PLEASE DO NOT MAKE ANY MARK OTHER THAN (X) IN THE SPACE PROVIDED ON THE ANSWER SHEET OF PART A.

Answer sheets for part A are evaluated with the help of a machine. Hence, **CHANGE OF ENTRY IS NOT ALLOWED.**

Scratching or overwriting may result in wrong score.

DO NOT WRITE ANYTHING ON BACK SIDE OF PART A ANSWER SHEET.

INDIAN ASSOCIATION OF PHYSICS TEACHERS

NATIONAL STANDARD EXAMINATION IN PHYSICS 2009 – 2010

Total time: 120 minutes (A-1, A-2 & B)

PART A

MARKS : 180

SUB-PART A – 1: ONLY ONE OUT OF FOUR OPTIONS IS CORRECT

SUB-PART A – 1

1) The Schrödinger equation for a free electron of mass m and energy E written in terms of the wavefunction ψ is $\frac{d^2\psi}{dx^2} + \frac{8\pi^2mE}{h^2}\psi = 0$. The dimensions of the coefficient of ψ in the second term must be

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

2) In an experiment to verify Poiseuille's law $[\eta = \frac{\pi\Delta p a^4}{8lV}]$ where the symbols have their usual meanings, the maximum error that enters in calculating the coefficient of viscosity η is due to measurement of

- (a) pressure difference Δp .
- (b) length of the tube l .
- (c) volume rate of flow V .
- (d) radius of the tube a .

3) A uniform rope of length L and mass M partly lies on a horizontal table and partly hangs from the edge of the table. If μ is the coefficient of friction between the rope and the surface of the table (neglecting the friction at the edge), the maximum fraction of the length of the rope that overhangs from the edge of the table without sliding down is

- (a) $\frac{1-\mu}{\mu}$
- (b) $\frac{\mu}{\mu+1}$
- (c) $1-\mu$
- (d) $\frac{1}{\mu+1}$

4) A thin uniform rod XY of length $2l$ is hinged at one end X to the floor and stands vertical. When allowed to fall, the angular speed with which the rod strikes the floor is

(a) $\sqrt{3g/4l}$

(b) $\sqrt{3g/2l}$

(c) $\sqrt{3g/l}$

(d) $\sqrt{g/2l}$

5) A 60 cm metal rod M_1 is joined to another 100 cm metal rod M_2 to form an L shaped single piece. This piece is hung on a peg at the joint. The two rods are observed to be equally inclined to the vertical. If the two rods are equally thick, the ratio of density of M_1 to that of M_2 is

(a) $5/3$

(b) $3/5$

(c) $25/9$

(d) $9/25$

6) The string of a simple pendulum is replaced by a thin uniform rod of mass M and length L . The mass of the bob is m . If it is allowed to oscillate with small amplitude, the period of oscillation is

(a) $2\pi \sqrt{\frac{2(M+3m)L}{3(M+2m)g}}$

(b) $2\pi \sqrt{\frac{3(M+2m)L}{2(M+3m)g}}$

(c) $2\pi \sqrt{\frac{(M+2m)L}{(M+3m)g}}$

(d) $2\pi \sqrt{\frac{2(M+m)L}{3(M+2m)g}}$

7) Two stars each of mass m and radius R approach each other to collide head-on. Initially the stars are at a distance r ($\gg R$). Assuming their speeds to be negligible at this distance of separation, the speed with which the stars collide is

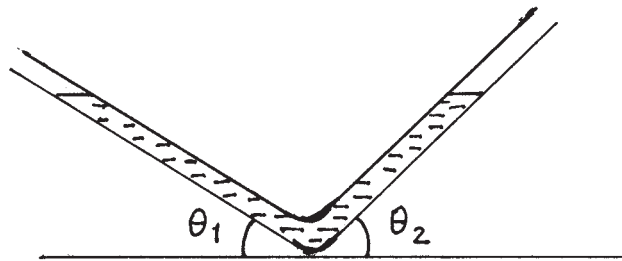
(a) $\sqrt{Gm\left(\frac{1}{R} - \frac{1}{r}\right)}$

(b) $\sqrt{Gm\left(\frac{1}{2R} - \frac{1}{r}\right)}$

(c) $\sqrt{Gm\left(\frac{1}{R} + \frac{1}{r}\right)}$

(d) $\sqrt{Gm\left(\frac{1}{2R} + \frac{1}{r}\right)}$

8) A nonviscous liquid of density ρ is filled in a tube with A as the area of cross section, as shown in the figure. If the liquid is slightly depressed in one of the arms, the liquid column oscillates with a frequency



(a) $\frac{1}{2\pi} \sqrt{\frac{\rho g A \sin\left(\frac{\theta_1 + \theta_2}{2}\right)}{m}}$

(b) $\frac{1}{2\pi} \sqrt{\frac{\rho g A (\sin \theta_1 - \sin \theta_2)}{m}}$

(c) $\frac{1}{2\pi} \sqrt{\frac{\rho g A (\sin \theta_1 + \sin \theta_2)}{m}}$

(d) $\frac{1}{2\pi} \sqrt{\frac{\rho g A \sin\left(\frac{\theta_1 - \theta_2}{2}\right)}{m}}$

9) A wax candle floats vertically in a liquid of density twice that of wax. The candle burns at the rate of 4 cm / hr. Then, with respect to the surface of the liquid the upper end of the candle will

(a) fall at the rate of 4 cm / hr.

(b) fall at the rate of 2 cm / hr.

(c) rise at the rate of 2 cm / hr.

(d) remain at the same height.

10) A mass hangs at the end of a massless spring and oscillates up and down at its natural frequency f . If the spring is cut at the midpoint and the mass reattached at the end, the frequency of oscillation is

- (a) $\sqrt{2}f$
- (b) $2f$
- (c) $f/2$
- (d) $f/\sqrt{2}$

11) The density of a solid at normal pressure is ρ . When the solid is subjected to an excess pressure p , the density changes to ρ' . If the bulk modulus of the solid is k , then the ratio $\frac{\rho'}{\rho}$ is

- (a) $1 + \frac{p}{k}$
- (b) $1 + \frac{k}{p}$
- (c) $\frac{p}{p+k}$
- (d) $\frac{k}{p+k}$

12) A metal ball B_1 (density 3.2 g / cc) is dropped in water, while another metal ball B_2 (density 6.0 g / cc) is dropped in a liquid of density 1.6 g / cc. If both the balls have the same diameter and attain the same terminal velocity, the ratio of viscosity of water to that of the liquid is

- (a) 2.0
- (b) 0.5
- (c) 4.0
- (d) indeterminate due to insufficient data.

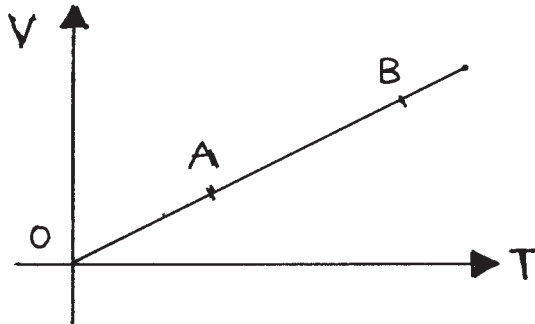
13) A thin copper rod rotates about an axis passing through its end and perpendicular to its length with an angular speed ω_0 . The temperature of the copper rod is increased by 100°C . If the coefficient of linear expansion of copper is $2 \times 10^{-5} / ^\circ\text{C}$, the percentage change in the angular speed of the rod is

- (a) -2%
- (b) -4%
- (c) -0.2%
- (d) -0.4%

14) The internal energy of one gram of helium at 100 K and one atmospheric pressure is

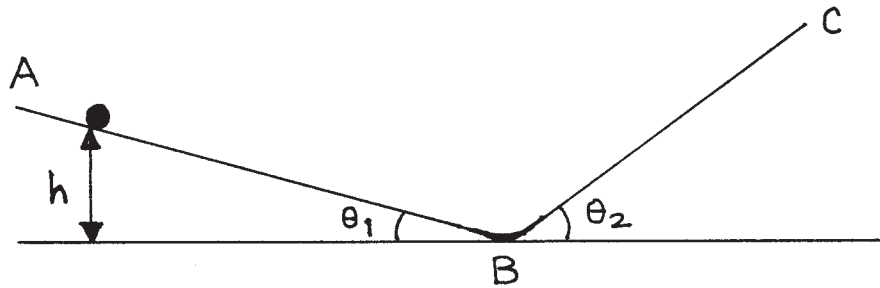
- (a) 100 J.
- (b) 1200 J.
- (c) 300 J.
- (d) 500 J.

15) Volume of a monatomic gas varies with its temperature as shown. The ratio of work done by the gas to the heat absorbed by it when it undergoes a process from A to B is



- (a) 2 / 3.
- (b) 2 / 5.
- (c) 2 / 7.
- (d) 1 / 3.

16) A small glass bead of mass m initially at rest starts from a point at height h above the horizontal and rolls down the inclined plane AB as shown. Then it rises along the inclined plane BC. Assuming no loss of energy, the time period of oscillation of the glass bead is



- (a) $\sqrt{\frac{8h}{g}}(\sin \theta_1 + \sin \theta_2)$
- (b) $2\sqrt{\frac{14h}{5g}\left(\frac{1}{\sin \theta_1} + \frac{1}{\sin \theta_2}\right)}$
- (c) $\sqrt{\frac{8h}{g}\left(\frac{1}{\sin \theta_1} + \frac{1}{\sin \theta_2}\right)}$
- (d) $\sqrt{\frac{8h}{5g}\left(\frac{1}{\sin \theta_1} + \frac{1}{\sin \theta_2}\right)}$

17) Water at 20°C (coefficient of viscosity = 0.01 poise) flowing in a tube of diameter 1 cm with an average velocity of 10 cm / s has the Reynold number

- (a) 500.
- (b) 1000.
- (c) 2000.
- (d) indeterminate due to insufficient data.

18) A billiard ball is hit by a cue at a point distance h above the centre. It acquires a linear velocity v_0 . Let m be the mass and r be the radius of the ball. The angular velocity acquired by the ball is

- (a) $\frac{5v_0h}{2r^2}$
- (b) $\frac{2v_0h}{3r^2}$
- (c) $\frac{2v_0h}{5r^2}$
- (d) $\frac{2v_0h}{r^2}$

19) Two pipes are each 50 cm in length. One of them is closed at one end while the other is open at both ends. The speed of sound in air is 340 m / s. The frequency at which both the pipes can resonate is

- (a) 680 Hz.
- (b) 510 Hz.
- (c) 85 Hz.
- (d) none of the above.

20) The work involved in breaking a bigger size spherical oil drop into n smaller size identical droplets is proportional to

- (a) $\sqrt[3]{n^2} - 1$
- (b) $\sqrt[3]{n}$
- (c) $\sqrt[3]{n-1}$
- (d) $\sqrt[3]{n} - 1$

21) A train moving towards a hill at a speed of 72 km / hr sounds a whistle of frequency 500 Hz. A wind is blowing from the hill at a speed of 36 km / hr. If the speed of sound in air is 340 m / s, the frequency heard by a man on the hill is

- (a) 532.5 Hz.
- (b) 565.0 Hz.
- (c) 516.5 Hz.
- (d) none of the above.

22) A convex lens forms a real image with magnification m_1 on a screen. Now, the screen is moved by a distance x and the object is also moved so as to obtain a real image with magnification m_2 on the screen. Then, the focal length of the lens is

- (a) $\left(\frac{m_1}{m_2}\right)x$
- (b) $\left(\frac{m_2}{m_1}\right)x$
- (c) $x(m_1 - m_2)$
- (d) $\frac{x}{(m_2 - m_1)}$

23) Two metal wires of identical dimensions are connected in series. If σ_1 and σ_2 are the conductivities of the metals respectively, the effective conductivity of the combination is

- (a) $\sigma_1 + \sigma_2$
- (b) $\frac{\sigma_1 + \sigma_2}{2}$
- (c) $\sqrt{\sigma_1 \sigma_2}$
- (d) $\frac{2\sigma_1 \sigma_2}{\sigma_1 + \sigma_2}$

24) An alternating supply of 220 volt is applied across a circuit with resistance 22 ohm and impedance of 44 ohm. The power dissipated in the circuit is

- (a) 1100 watt.
- (b) 550 watt.
- (c) 2200 watt.
- (d) $(2200 / 3)$ watt

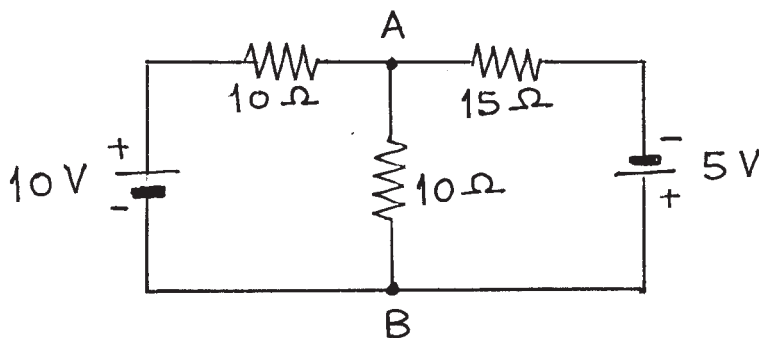
25) If T denotes the temperature of the gas, the volume thermal coefficient of expansion of an ideal gas at constant pressure is

- (a) T .
- (b) $\frac{1}{T}$.
- (c) T^2 .
- (d) $\frac{1}{T^2}$.

26) A coil having N turns is wound in the form of a spiral with inner radius a and outer radius b respectively. When a current I passes through the coil, the magnetic field at the centre is

- (a) $\frac{2\mu_0 NI}{(a+b)}$
 (b) $\frac{\mu_0 NI}{\sqrt{ab}}$
 (c) $\frac{\mu_0 NI}{(b-a)} \ln\left(\frac{b}{a}\right)$
 (d) $\frac{\mu_0 NI}{2(b-a)} \ln\left(\frac{b}{a}\right)$

27) A circuit is arranged as shown. Then, the current from A to B is



- (a) + 500 mA.
 (b) + 250 mA.
 (c) - 250 mA.
 (d) - 500 mA.

28) Two identical thin rings, each of radius a are placed coaxially at a distance a apart. Let charges Q_1 and Q_2 be placed uniformly on the two rings. The work done in moving a charge q from the centre of one ring to that of the other is

- (a) zero
 (b) $\frac{q\sqrt{2}}{4\pi\epsilon_0 a}(Q_1 - Q_2)$
 (c) $\frac{q(\sqrt{2}-1)}{4\pi\epsilon_0 a\sqrt{2}}(Q_1 - Q_2)$
 (d) $\frac{q(\sqrt{2}-1)}{4\pi\epsilon_0 a}(Q_1 - Q_2)$

29) An equilateral triangular loop of wire of side l carries a current i . The magnetic field produced at the circumcentre of the loop is

- (a) $\frac{\mu_0}{4\pi} \frac{3\sqrt{3}i}{l}$.
- (b) $\frac{\mu_0}{4\pi} \frac{9i}{l}$.
- (c) $\frac{\mu_0}{4\pi} \frac{18i}{l}$.
- (d) $\frac{\mu_0}{4\pi} \frac{6i}{l}$.

30) Consider a double slit interference experiment. Let E_0 be the amplitude of the electric field of the waves starting from the slits. If φ is the phase difference between the two waves reaching the screen, the amplitude of resultant electric field at a point on the screen is

- (a) $E_0 \cos \varphi$
- (b) $E_0 \cos (\varphi / 2)$
- (c) $2 E_0 \cos (\varphi / 2)$
- (d) $2 E_0 \cos \varphi$

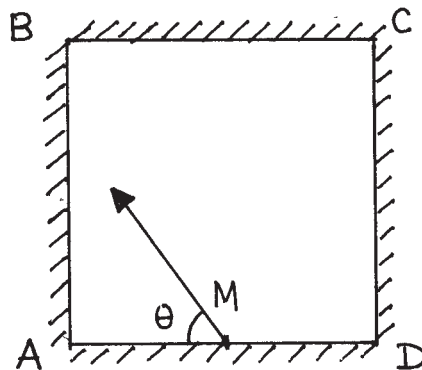
31) In a double slit experiment, the coherent sources are spaced $2d$ apart and the screen is placed a distance D from the slits. If n th bright fringe is formed on the screen exactly opposite to a slit, the value of n must be

- (a) $\frac{d^2}{2\lambda D}$
- (b) $\frac{2d^2}{\lambda D}$
- (c) $\frac{d^2}{\lambda D}$
- (d) $\frac{d^2}{4\lambda D}$

32) When two sound sources of the same amplitude but of slightly different frequencies n_1 and n_2 are sounded simultaneously, the sound one hears has a frequency equal to

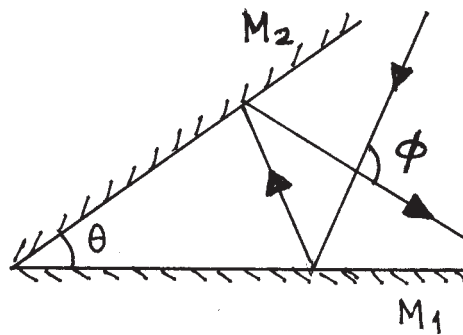
- (a) $|n_1 - n_2|$
- (b) $\left[\frac{n_1 + n_2}{2} \right]$
- (c) $\sqrt{n_1 n_2}$
- (d) $[n_1 + n_2]$

33) Four identical mirrors are made to stand vertically to form a square arrangement as shown in a top view. A ray starts from the midpoint M of mirror AD and after two reflections reaches corner D. Then, angle θ must be



- (a) $\tan^{-1}(0.75)$
- (b) $\cot^{-1}(0.75)$
- (c) $\sin^{-1}(0.75)$
- (d) $\cos^{-1}(0.75)$

34) The reflecting surfaces of two mirrors M_1 and M_2 are at an angle θ (angle θ between 0° and 90°) as shown in the figure. A ray of light is incident on M_1 . The emerging ray intersects the incident ray at an angle ϕ . Then,

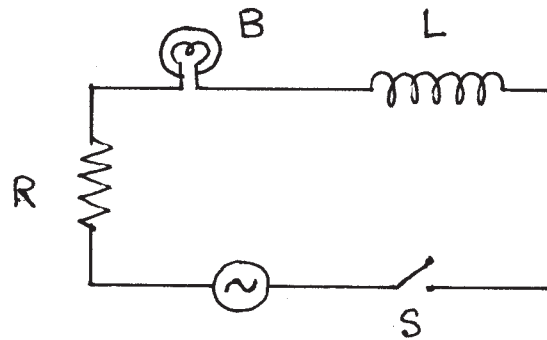


- (a) $\phi = \theta$
- (b) $\phi = 180^\circ - \theta$
- (c) $\phi = 90^\circ - \theta$
- (d) $\phi = 180^\circ - 2\theta$

35) An unpolarized light beam is incident on a surface at an angle of incidence equal to Brewster's angle. Then,

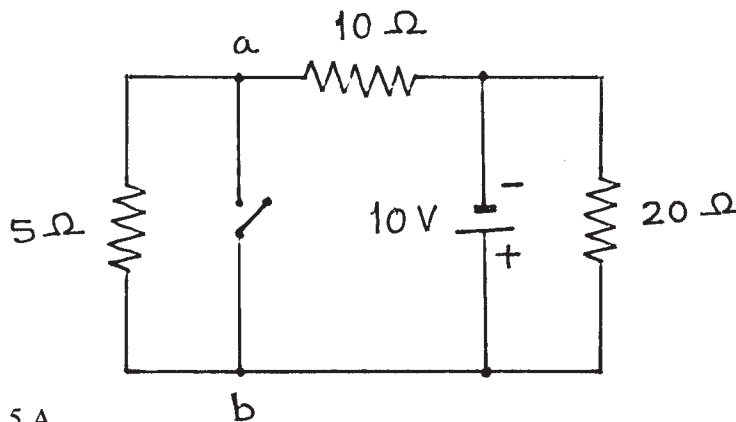
- (a) the reflected and the refracted beams are both partially polarized.
- (b) the reflected beam is partially polarized and the refracted beam is completely polarized and are at right angles to each other.
- (c) the reflected beam is completely polarized and the refracted beam is partially polarized and are at right angles to each other.
- (d) both the reflected and the refracted beams are completely polarized and are at right angles to each other.

36) Switch S is closed at $t = 0$. After sufficiently long time an iron rod is inserted into the inductor L. Then, the light bulb



- (a) glows more brightly.
- (b) gets dimmer.
- (c) glows with the same brightness.
- (d) gets momentarily dimmer and then glows more brightly.

37) In the circuit shown below, the current that flows from a to b when the switch S is closed is



- (a) -1.5 A
- (b) $+1.5 \text{ A}$
- (c) $+1.0 \text{ A}$
- (d) -1.0 A

38) Two radioactive materials A and B have decay constants 5λ and λ respectively. Initially both A and B have the same number of nuclei. The ratio of the number of nuclei of A to that of B will be $\frac{1}{e}$ after a time

- (a) $\frac{1}{5\lambda}$
- (b) $\frac{1}{4\lambda}$
- (c) $\frac{5}{4\lambda}$
- (d) $\frac{4}{5\lambda}$

39) The radius of the hydrogen atom in its ground state is a_0 . The radius of a 'muonic hydrogen' atom in which the electron is replaced by an identically charged muon with mass 207 times that of an electron, is a_μ equal to

- (a) $207 a_0$
- (b) $\frac{a_0}{207}$
- (c) $\frac{a_0}{\sqrt{207}}$
- (d) $a_0 \sqrt{207}$

40) The instantaneous magnitudes of the electric field (E) and the magnetic field (B) vectors in an electromagnetic wave propagating in vacuum are related as

- (a) $E = \frac{B}{c}$
- (b) $E = c B$
- (c) $E = \frac{B}{c^2}$
- (d) $E = c^2 B$

SUB-PART A-2

In question 41 to 50 any number of options (1 or 2 or 3 or all 4) may be correct. You are to identify all of them correctly to get 6 marks. Even if one answer identified is incorrect or one correct answer is missed, you get zero score.

41) A monkey holds a light rope that passes over a smooth pulley. A bunch of bananas of equal mass as that of the monkey is attached to the other end of the rope. The monkey starts climbing the rope to get to the bananas. Then,

- (a) the bananas also move up.
- (b) the bananas move downwards.
- (c) the distance between the monkey and the bananas decreases.
- (d) the distance between the monkey and the bananas remains constant.

42) Consider the curve representing the Maxwell-Boltzmann speed distribution of gas molecules at some temperature. Let v_{rms} , v_{avg} and v_{mp} be the rms, the average and the most probable speeds respectively. Then,

- (a) the curve has a maximum at v_{mp} .
- (b) the area under the curve gives the total number of molecules of the gaseous system.
- (c) $v_{\text{rms}} > v_{\text{avg}} > v_{\text{mp}}$
- (d) $v_{\text{avg}} < v_{\text{mp}} < v_{\text{rms}}$

43) A particle of mass m moves along a straight line under the action of a force f varying with time as $f = f_0 \left[1 - \left(\frac{t-T}{T} \right)^2 \right]$ where f_0 and T are positive constants.

Then,

- (a) the speed of the particle after a time $2T$ is $\frac{4f_0T}{3m}$.
- (b) after time interval of $3T$, the particle starts moving backwards.
- (c) between time instants 0 and $2T$, the acceleration first increases and then decreases.
- (d) the particle stops at $t = 3T$.

44) A sound wave of angular frequency ω travels with a speed v in a medium of density ρ and bulk modulus B . Let k be the propagation constant. If p and A are the pressure amplitude and displacement amplitude respectively, then the intensity of sound wave is

- (a) $\frac{1}{2} \omega B k A^2$
- (b) $\frac{v p^2}{2B}$
- (c) $\frac{p^2}{2\rho v}$
- (d) $\frac{p^2}{2\sqrt{\rho B}}$

45) Two conducting plates A and B are placed parallel to each other at a small distance between them. Plate A is given a charge q_1 and plate B is given a charge q_2 . Then,

- (a) the outer surfaces of A and B (not facing each other) get no charge.
- (b) the inner surfaces of A and B (facing each other) get all the charge.
- (c) the inner surfaces of A and B (facing each other) get equal and opposite charge of

$$\text{magnitude } \left| \frac{q_1 - q_2}{2} \right|$$

- (d) the outer surfaces of A and B (not facing each other) get charge of the same

$$\text{polarity and of magnitude } \left| \frac{q_1 + q_2}{2} \right|$$

46) A man with normal vision uses a magnifying lens of focal length 10 cm. Then,

- (a) magnification of any value is possible.
- (b) maximum magnification possible is 3.5.
- (c) minimum magnification possible is 2.5.
- (d) magnification depends upon the distance of the lens from the eye.

47) An electromagnetic wave is traveling through a medium of refractive index n_1 and is incident at the boundary of a medium of refractive index n_2 . If the wave reflects at the boundary,

- (a) the wave undergoes a phase change of 180° , if $n_1 < n_2$.
- (b) the wave undergoes a phase change of 180° , if $n_1 > n_2$.
- (c) the wave undergoes no phase change, if $n_1 < n_2$.
- (d) the wave undergoes no phase change, if $n_1 > n_2$.

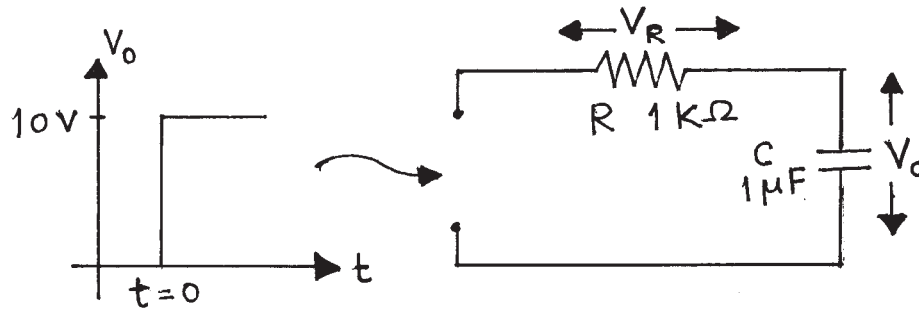
48) In cyclotron (particle accelerator) an ion is made to travel successively along semicircles of increasing radii under the action of a magnetic field. The angular velocity of the ion is independent of

- (a) speed of the ion.
- (b) radius of the circle.
- (c) mass of the ion.
- (d) charge of the ion.

49) Physical quantities A and B have the same dimensions. Then,

- (a) $A \pm B$ must be a meaningful physical quantity.
- (b) $A \pm B$ may not be a meaningful physical quantity.
- (c) A / B must be a dimensionless quantity.
- (d) both must be either scalar or vector quantities.

50) A step voltage V_0 is applied to a series combination of R and C as shown. Then,

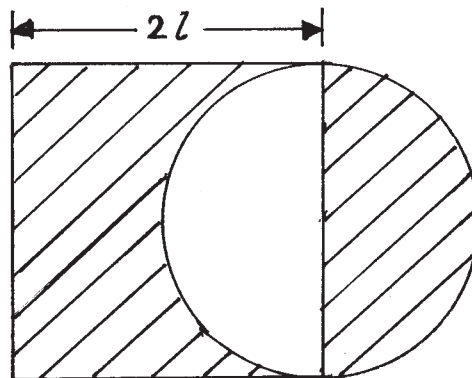


- (a) after sufficiently long time $V_R = 0$.
- (b) as time passes V_R decreases as $(1 / t)$.
- (c) after 1 ms, $V_C = 6.3$ volt (approximately).
- (d) initially current through R is 10 mA.

PART B**MARKS : 60****All questions are compulsory.****All questions carry equal marks.**

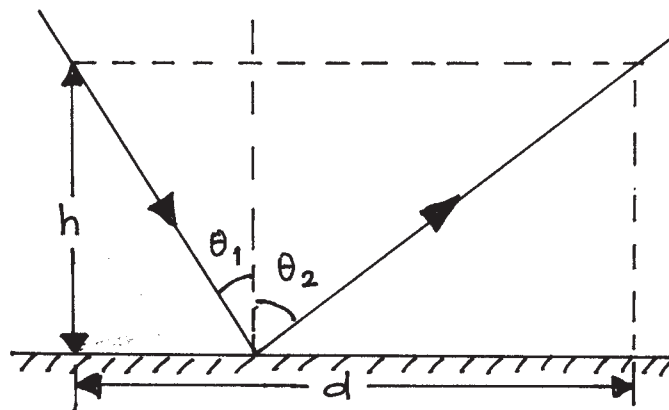
1) A cube of side 10 cm is rigidly joined to a thin rod of length 40 cm. The rod is pivoted at the other end so that the rod along with the cube is able to rotate freely about the pivot in a vertical plane. A bullet of mass 50 g, moving horizontally hits a point of the cube 5 cm from the lower end and gets embedded into it. Determine the speed of the bullet so that the system just rises to a horizontal position. (mass of the rod = 100 g, mass of the cube = 750 g)

2) Consider a uniform square plate of side $2l$ made of wood. A semicircular portion is cut and attached to the right as shown. Determine the centre of mass of the redesigned plate.



3) Consider two long parallel and oppositely charged thick wires of radius d with their central axes separated by a distance D apart. Obtain an expression for the capacitance per unit length of this pair of wires.

4) Fermat's principle states that 'when light ray travels between two points, the path is the one that requires the least time'. Use this principle to derive law of reflection regarding angle of incidence and angle of reflection. You may refer to the following figure.



5) Two samples X and Y of a gas have equal volumes and pressures. The gas in X is allowed to expand isothermally to 1.5 times its initial volume, while that in Y is allowed to expand adiabatically to an equal volume. If the work done in the first expansion is 1.5 times that in the second, show that the ratio of specific heats γ satisfies a relation

$$(\gamma - 1)\ln\left(\frac{3}{2}\right) = \frac{3}{2}\left[1 - \left(\frac{2}{3}\right)^{\gamma-1}\right]$$

-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-

INSTRUCTIONS TO CANDIDATES :

1. The answers / solutions of this question paper will be available on our website - www.iapt.org.in by 27 th November 2009.

EVALUATION PROCEDURE (NSEP) :

2. Part 'A' Answers of ALL the candidates are examined .
3. Part B is evaluated of only those students who get marks above a certain "cut off" marks in Part A. (e.g. NSEP Total marks for Part A are 180. Students getting (say) 100 or more than 100 marks in Part A are identified and their Part B is evaluated. Thus "cut off" marks are 100 in this example.)
4. PART B IS NOT EVALUATED OF ALL THE CANDIDATES.

CERTIFICATES & AWARDS

Following certificates are awarded by the I.A.P.T. to students successful in NSEP.

- i) Certificate for "Centre Top 10%" students on the basis of marks in part A only.
 - ii) Merit certificates to statewise Top 1% students on the basis of (A+B) marks.
 - iii) Merit certificate and a prize in the form of a book to Nationwide Top 1% students based on (A+B) marks.
5. **Result sheets** and the "**centre top 10%**" certificates of NSEP are dispatched to the Professor in charge of the centre. Thus you will get your marks from the Professor in charge of your centre by January 2010 end.
 6. TOP 300 (or so) students are called for the next examination -Indian National Physics Olympiads (INPhO). Individual letters are sent to these students ONLY.
 7. Gold medals will be awarded to TOP 35 students in this entire process.
 8. No queries will be entertained in this regard.