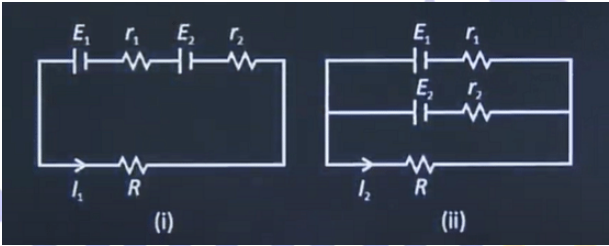
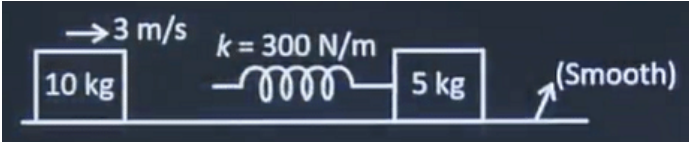
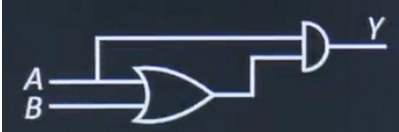
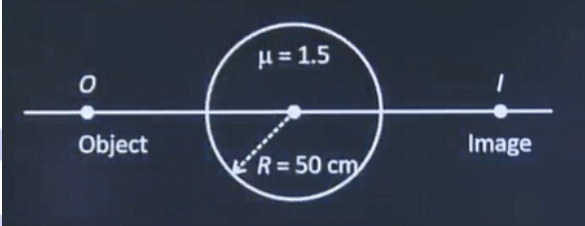


JEE MAIN 3 APRIL 2025 SHIFT 2

PHYSICS QUESTION PAPER WITH ANSWER KEY

Q.No.	Questions	Answers
1	The ratio of intensities of two coherent is 1:9. The ratio of the maximum to the minimum intensities is	4:1
2	Excess pressure inside bubble A is half of that of bubble B. Find the ratio of volume of bubble A to bubble B.	8
3	In a resonance tube experiment at one end, resonance is obtained at two consecutive lengths $l_1 = 100$ cm and $l_2 = 140$ cm. If the frequency of the sound is 400 Hz, the velocity of sound is	320 m/s
4	Physical quantity S is given as $S = pq/r^3\sqrt{t}$ Find to percentage change in S if percentage change in p, q, r and t are 1, 1, 3 and 2, respectively.	12%
5	In a medium of refractive index 2, the frequency of light is 5×10^{14} Hz, the wavelength of the light is	300 nm
6	A capacitor $C_1 = 100$ pF is connected to a 60 V cell and then disconnected. C_1 is now connected to an unchanged capacitor C_2 such that the final potential across C_1 becomes 20 V. Find C_2 .	200 pF
7	A bulb rated 100 W, 220 V connected to an ac supply of 220 V. Find the peak current in the bulb.	0.64 A

8	<p>Statement-I: O^{2-} and H^+ are projected in a magnetic field perpendicular to the field with same speed. The radius of curvature of O^{2-} will be less than H^+.</p> <p>Statement-II: e^- and p^+ are projected in a magnetic field perpendicular to the field with same speed. The radius of curvature of e^- will be more the proton.</p>	Both statement-I and statement-II are incorrect
9	The pressure of an ideal gas is increased by 0.4% keeping the volume constant. Find the initial temperature of the gas if there is a $1^\circ C$ rise in temperature.	250 K
10	<p>In two situations given in figures (i) and (ii) current through R is I_1 and I_2, respectively. If $E_1 = 2\text{ V}$, $r_1 = 1\ \Omega$, $E_2 = 1\text{ V}$, $r_2 = 2\ \Omega$, $R = 6\ \Omega$ then find I_1 / I_2.</p> 	4/3
11	<p>A block of mass 10 kg is moving with speed 3 m/s collides with a spring connected to another block of mass 5 kg initially at rest. Find the compression in spring when both move with same speed.</p> 	0.1 m
12	The torque experienced by a magnetic dipole in a uniform magnetic field is $80\sqrt{3}\text{ N.m}$. If the angle between the magnetic moment and the magnetic field is 60° , the potential energy of the dipole is	-80 J

13	<p>The truth-table of the circuit shown is</p> 	<table border="1"> <thead> <tr> <th>A</th> <th>B</th> <th>Y</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> </tr> </tbody> </table>	A	B	Y	0	0	0	0	1	0	1	0	1	1	1	1	
A	B	Y																
0	0	0																
0	1	0																
1	0	1																
1	1	1																
14	<p>Match the following:</p> <table border="1"> <tbody> <tr> <td>(i)</td> <td>Boltzmann's constant</td> <td>(a)</td> <td>ML^2T^{-1}</td> </tr> <tr> <td>(ii)</td> <td>Coefficient of viscosity</td> <td>(b)</td> <td>$ML^2T^{-2}K^{-1}$</td> </tr> <tr> <td>(iii)</td> <td>Thermal conductivity</td> <td>(c)</td> <td>$ML^{-1}T^{-1}$</td> </tr> <tr> <td>(iv)</td> <td>Planck's constant</td> <td>(d)</td> <td>$MLT^{-3}K^{-1}$</td> </tr> </tbody> </table>	(i)	Boltzmann's constant	(a)	ML^2T^{-1}	(ii)	Coefficient of viscosity	(b)	$ML^2T^{-2}K^{-1}$	(iii)	Thermal conductivity	(c)	$ML^{-1}T^{-1}$	(iv)	Planck's constant	(d)	$MLT^{-3}K^{-1}$	<p>(i)-(b), (ii)-(c), (iii)-(d), (iv)-(a)</p>
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(iv)	Planck's constant	(d)	$MLT^{-3}K^{-1}$															
15	<p>Find the distance of the object from the left surface, if the distance of the final image from the left surface is 200 cm.</p> 	100 cm																
16	<p>The displacement of a particle is given as $x = C_0(t^2 - z) + C(t - z)^2$, where t is time in seconds and C_0 and C are constants the acceleration of the particle is</p>	$2(C_0 + C)$																
17	<p>In a Hydrogen atom, an electron makes a transition from n^{th} orbit to 4^{th} excited state. Energy released in this transition 0.33 eV, find the value of n.</p>	8																
18	<p>A block of mass 1 kg moves from $x = 0.1$ m to $x = 1.9$ m. The speed of block at $x = 0.1$ is 10 m/s. A resistive force $F = -10x$ acts on the block. Find speed of block (in m/s) when it is at $x = 1.9$ m.</p>	8																

19	A projectile is fired with an initial velocity u , such that range of the projectile is 3 times the maximum height. If the range of the projectile is $Nu^2/25g$, Find value of N .	24
20	A solid ball of diameter 3.6 mm and having density 7825 kg/m^3 . This ball has terminal velocity $2.56 \times 10^{-2} \text{ m/s}$ in a liquid of density 925 kg/m^3 . Find coefficient (in pascal sec) of viscosity.	1.9