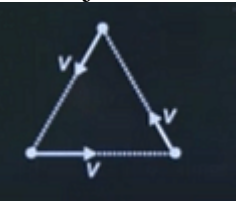
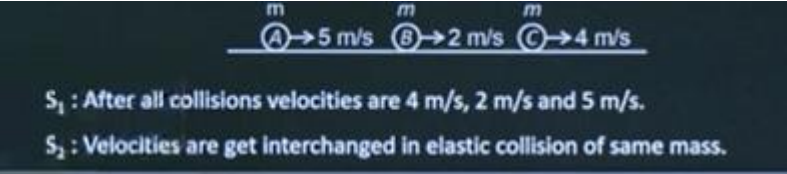
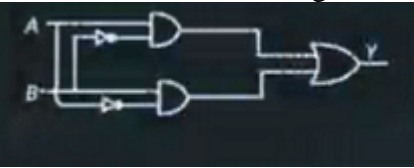
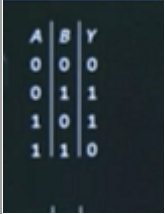
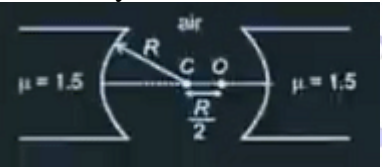
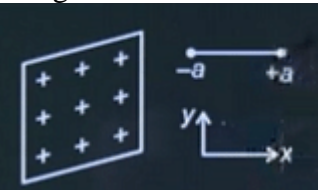


JEE MAIN 29 JANUARY 2025 SHIFT 2

PHYSICS QUESTION PAPER WITH ANSWER KEY

Q.No.	Questions	Answers																				
1	An equiconvex lens is cut into two ways as shown. If the focal length of the parts are as mentioned in the diagram. Find L_1/L_2	1/2																				
2	A solenoid of radius 10 cm carrying current 0.29 A and having total 200 turns. If magnetic field inside solenoid is 2.9×10^{-9} Find length of solenoid	8π cm																				
3	Three identical particles, each of mass m move under the influence of mutual attraction forces. Initially they are on the vertices of an equilateral triangle of side 'a' and have equal speed v direct towards the adjacent particles as shown. The net angular momentum about the centre just before collision is 	$\sqrt{3}/2 mva$																				
4	Match the physical quantities with their corresponding dimensions <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Column-I</th> <th></th> <th>Column-II</th> </tr> </thead> <tbody> <tr> <td>(A)</td> <td>Young's modulus</td> <td>(i)</td> <td>$[AL^{-2}]$</td> </tr> <tr> <td>(B)</td> <td>Magnetic moment</td> <td>(ii)</td> <td>$[ML^2T^{-2}A^{-1}]$</td> </tr> <tr> <td>(C)</td> <td>Magnetic flux</td> <td>(iii)</td> <td>$[AL^{-1}]$</td> </tr> <tr> <td>(D)</td> <td>Magnetic Intensity</td> <td>(iv)</td> <td>$[ML^{-1}T^{-2}]$</td> </tr> </tbody> </table>		Column-I		Column-II	(A)	Young's modulus	(i)	$[AL^{-2}]$	(B)	Magnetic moment	(ii)	$[ML^2T^{-2}A^{-1}]$	(C)	Magnetic flux	(iii)	$[AL^{-1}]$	(D)	Magnetic Intensity	(iv)	$[ML^{-1}T^{-2}]$	A (iv) B (i) C (iii) D (ii)
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(D)	Magnetic Intensity	(iv)	$[ML^{-1}T^{-2}]$																			
5	Two particles of same mass are performing SHM vertically with two different springs of spring constants K_1 and K_2 . If amplitude of both is same. Find ratio of the maximum speed of two particles.	$\sqrt{K_1/K_2}$																				
6	A physical quality Q is given as $Q = ab^4/cd$, if the percentage error is a, b, c and d are 2%, 1%, 2% and 1% the % error in Q will be	9%																				
7	Assertion: On increasing the pressure, the volume decrease is more in an isothermal process than in an adiabatic process. Reason: Adiabatic process is given by PV^{-1}	Assertion is correct and Reason is correct																				
8	Two planet A and B are revolving around a massive star such that $r_A = 2r_B$ and $m_A = 4\sqrt{3} m_B$ Find ratio of angular momentum of planet B to planet A.	$1/ 2\sqrt{3}$																				
9	A capacitor $C_1 = 6\mu F$, initially charged with a cell of emf 5V is disconnected and connected to another capacitor $C_2 = 6\mu F$, which is initially neutral. The charges on C_1 and C_2 after connection are	$10\mu c, 20\mu c$																				

10	<p>Three particles of same mass are moving as shown. (all collisions are elastic)</p> 	S1 Incorrect, S2: Correct
11	An electromagnetic wave propagates in +X direction, then electric field and magnetic field are direct along	Y, Z
12	A converging lens of focal length 24cm, made of glass (μ_{glass}) is immersed completely in water. ($\mu_{\text{glass}} = 1.33$). It will now behave like a converging lens of focal length ____ cm.	96
13	<p>The truth table for the logical circuit shown below is</p> 	
14	<p>Figure shows two spherical surfaces of radius R having common centre. If the object is placed at O_3 Find the distance between the first images formed by both the surface.</p> 	$4R/35$
15	<p>A dipole is placed such that its axis is perpendicular to the infinite charged sheet. Select the correct options</p> 	b and c
16	A cup of coffee take a time 't' to cool from 90 degree Celcius to 80 degree Celcius in a surrounding of 20 degree Celcius.If a similar cup of coffee is cooled from 80 degree Celcius to 60 degree in a same surrounding, it takes a time	$13/5 t$
17	Find the number of spectral lines in H-atom when deexcitation from $n=4$ to ground state	6
18	For a certain mechanical system the rate of accretion dm/dt is proportional to \sqrt{v} , where m is mass, t is time v is velocity, then the power is proportional to $v^{n/2}$ where n is _____.	5