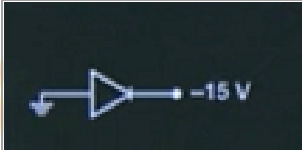
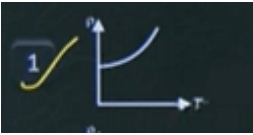
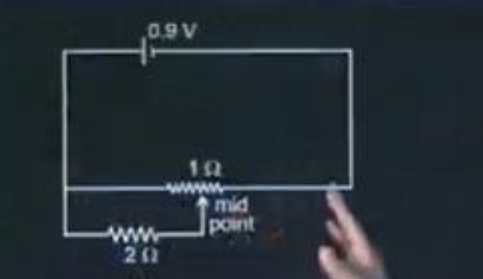
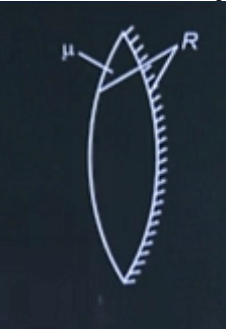
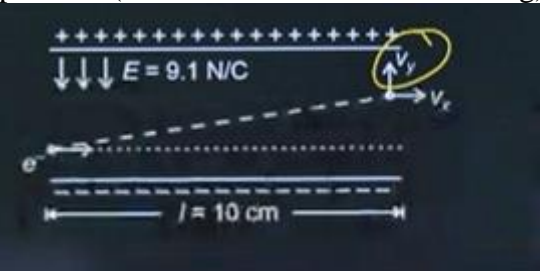


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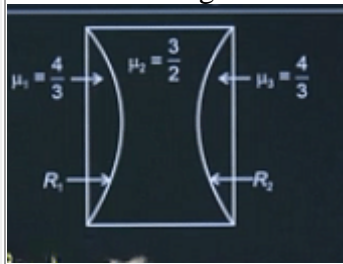
PHYSICS QUESTION PAPER WITH ANSWER KEY

Q.No.	Question	Answers
1	Find the dimensions of B/μ_0 .	$[AL^{-1}]$
2.	Solid sphere of mass M , radius R , exerts force F on a point mass. Now a concentric spherical mass $M/7$ is removed. What is new force?	$6F$ <hr/> 7
3.	From a sphere of mass M , and radius R , a cavity of radius $R/2$ is created. Find the moment of inertia about an axis passing through the centre of sphere and cavity.	$31 MR^2$ <hr/> 80
4.	Find the radius of curvature of the common surface of two bubbles ($R_1 > R_2$)	$(R_1 R_2)/(R_1 - R_2)$
5.	Ice at -10 degrees Celcius is to be converted into steam at 110 degrees Celcius. Mass of ice is 10^{-3} kg. what amount of heat is required?	$\Delta Q = 730 \text{ cal}$
6.	Find out the equivalent capacitance for the situation shown in figure.	$C_{eq} = \frac{A\epsilon_0}{d} (2k_1 + 2k_2 + k_2 + K_3 + K_3 + K_1) / 2 (K_1 + K_2)$
7.	From the given option, identify the diode connected in forward bias.	
8.	Radius of electron in ground state for hydrogen is a_0 , then radius of electron in He^+ ion in 3rd excited state is a . Then a_0/a is	$1/8$
9.	A charge of value q is placed at the edge of an imaginary cube of side a as shown in the figure. Find the net flux through the cube.	$q/6\epsilon_0$
10.	A closed organ pipe in 9th harmonic resonates with 4th harmonic of open organ pipe [$l_{\text{closed}} = 10 \text{ cm}$]	$L_0 = 80/9 \text{ cm}$
11.	A capacitor is charged by battery to charge Q_1 . Now the battery is disconnected and dielectric slab of dielectric constant K is inserted between the gaps of the plates. Now charge on capacitor is Q_2 . Find Q_1/Q_2	1
12.	If whole YDSE apparatus is immersed in a liquid of R_1 (μ), then what is the effect on fringe width?	Fringe width decreases
13.	Two spherical black bodies of radius 0.8 m and 0.2 m are at temperatures of 400 K and 800 K respectively. Find ratio of rate of heat loss.	1
14.	The particle shown in figure is just able to complete the vertical circular motion. Find the ratio of kinetic energy at A to the kinetic energy at B.	$2:1$

15.	Which of the following graphs correctly represents the variation of resistivity (ρ)? with Temperature (T)?	
16.	Light of wavelength 550 nm is incident on surfaces of cerium and lithium. Work function are respectively 1.9 eV & 2.5 eV. Then, electron will be ejected from?	Cerium only
17.	The current drawn from battery in the circuit shown below is _____ A. 	0.9 Ω
18.	The equiconvex lens shown in figure is silvered on one side. For what distance of object from the lens is the image formed on the object itself? 	R <hr/> $2\mu - 1$
19.	The figure shows an electron entering the space between the plates of a parallel plate capacitor with an initial velocity, $v^x = 10^6$ m/s parallel to the plates. If the length of the plates is $l = 10$ cm and the electric field in the region $E = 9.1$ N/C, then the value of v_y when the electron comes out of the plates is (Electronic mass = 9.1×10^{-31} kg)? 	1.6×10^5 m/s

20.

Find the equivalent power of the thin lens combination shown in the figure.



$$-(R_1 + R_2)$$

$$(6R_1R_2)$$