## Unit 10 - Week 8

does an NPTEL online rse work?	Assignment 8	
	The due date for submitting this assignment has passed.	23:59 IST.
equisites Assignment	As per our records you have not submitted this assignment.	
k 1	1) The The state of the state o	1 poi
k 2	The force $\vec{F}$ experienced by a test charge q that moves at a velocity $(\vec{v})$ in resultant electromagnetic field is given by the Lorentz force law $\vec{F} = q(\vec{E} + \vec{v}X\mu_o\vec{H})$ . Here, $\mu_o\vec{H}$ is the :	1 001
k 3	O electric field density	
k 4	magnetic field intensity     magnetic flux density	
k 5	O permeability of free space	
	No, the answer is incorrect. Score: 0	
6	Accepted Answers: magnetic flux density	
7	2) Which of the following represents a charge conservation equation?	1 poi
8	$\mathbf{a}_{\mathbf{a}} \longrightarrow$	
arge Flux arge Flux - Some	$rac{\partial  ho}{\partial t} + ec{ abla}. \stackrel{ ightarrow}{I'} = 0$	
damentals	$rac{\partial  ho}{\partial t} = q ec{v} X  \mu_o ec{H}$	
rge Flux - Some More damentals		
ng Useful Relationships igh Maxwell's Equations	$\int_s \overset{ ightarrow}{I'} dA + rac{d}{dt} \int_v  ho dV = 0$	
es/lons in Solution	$ec{ abla}.\stackrel{ ightharpoonup}{I'}=0$	
e Flux: Review e Notes	No, the answer is incorrect. Score: 0	
Assignment 8	Accepted Answers:	
Feedback 8 : Transport	$rac{\partial  ho}{\partial t} + ec{ abla}. \stackrel{ ightarrow}{I'} = 0$	
na in Biological	$\int_s \overset{ ightarrow}{I'} dA + rac{d}{dt} \int_v  ho dV = 0$	
	3) According to Gauss' law,	1 po
	the net charge enclosed in a volume V, enclosed by a surface S is related to the net electric flux through that surface	
	the magnetic field intensity is related to its source     an electric current and a time-variant electric flux produce a magnetic field.	
	an electric current and a time-variant electric flux produce a magnetic field.      the magnetic field intensity is not related to its source	
/IDEOS	No, the answer is incorrect. Score: 0	
lution	Accepted Answers: the net charge enclosed in a volume V, enclosed by a surface S is related to the net electric flux through	
s	that surface	
5	4) Identify the Laplace equation for electric potential	1 po
	$ abla^2V=-rac{ ho}{2}$	
	$\epsilon$	
	$ abla^2 V = rac{ ho}{\epsilon}$	
	$ abla^2V=-rac{\epsilon}{}$	
	$\rho$	
	$ abla^2 V = 0$	
	No, the answer is incorrect. Score: 0	
	Accepted Answers: $ abla^2 V = 0$	
	5) The plasma membrane can be equated to which of the following electrical elements	1 po
	○ Resistor	
	Capacitor     Diode	
	○ Transistor	
	No, the answer is incorrect. Score: 0	
	Accepted Answers: Capacitor	
	6) Identify from below the equation relating electric field and magnetic flux	1 po
	$\phi E. dS = -\frac{\omega}{L} \int u_0 H. dA$	
	$\int_{0}^{\infty} dt \int_{s}^{\infty} f^{0} dt dt$	
	$\int dt \; \int_s  ho_0 dV = \int_V  ho dV$	
	$\int dt \int_{s}^{r}  ho dV$ $\int \epsilon_{0} ec{E}.  dec{A} = - \int_{V}^{r}  ho dV$ $\int ec{H}.  dec{S} = I + \epsilon_{0} \frac{darphi_{E}}{}$	
	$\oint ec{E}.dec{S} = -rac{d}{dt}\int_{s}\mu_{0}ec{H}.dec{A} \ \oint \epsilon_{0}ec{E}.dec{A} = -\int_{V} ho dV \ \oint ec{H}.dec{S} = I + \epsilon_{0}rac{darphi_{E}}{dt} \ rac{d}{dt}$	
	$\overset{\bigcirc}{ abla}$ . $\mu_0ec{H}=0$	
	$\vec{ abla}$ . $\mu_0 \vec{H} = 0$ No, the answer is incorrect. Score: $0$	
	$\vec{\nabla}.\mu_0\vec{H}=0$ No, the answer is incorrect. Score: 0 Accepted Answers:	
	$\vec{ abla}$ . $\mu_0 \vec{H} = 0$ No, the answer is incorrect. Score: $0$ Accepted Answers: $\oint \vec{E} \cdot d\vec{S} = -rac{d}{dt} \int_s \mu_0 \vec{H} \cdot d\vec{A}$	
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	$\vec{ abla}$ . $\mu_0 \vec{H} = 0$ No, the answer is incorrect. Score: $0$ Accepted Answers: $\oint \vec{E} \cdot d\vec{S} = -rac{d}{dt} \int_s \mu_0 \vec{H} \cdot d\vec{A}$	1 pc
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	<ul> <li>∇. μ<sub>0</sub> H̄ = 0</li> <li>No, the answer is incorrect.</li> <li>Score 0</li> <li>Accepted Answers:</li> <li>F̄ Ē, d̄ S̄ = - d̄ d̄ f̄, μ<sub>0</sub> H̄. d̄ Ā</li> <li>7) A solution is electrically neutral when</li> <li>Number of positive charges &gt; number of negative charges</li> <li>Number of negative charges &gt; number of positive charges</li> <li>Number of negative charges = number of positive charges</li> <li>Number of negative charges = number of positive charges</li> <li>No, the answer is incorrect.</li> <li>Score 0</li> <li>Accepted Answers:</li> <li>Number of negative charges = number of positive charges</li> <li>No, the answer is incorrect.</li> <li>Score 0</li> <li>Accepted Answers:</li> <li>τ<sub>r</sub> = k̄<sub>c</sub></li> <li>τ<sub>r</sub> = t̄ c̄</li> <li>No, the answer is incorrect.</li> <li>Score 0</li> <li>Accepted Answers:</li> <li>τ<sub>r</sub> = t̄ c̄</li> <li>R<sub>c</sub></li> <li>γ<sub>r</sub> = t̄ c̄</li> <li>R<sub>c</sub>&lt;</li></ul>	1 pc
	<ul> <li>∇. μ<sub>0</sub> H̄ = 0</li> <li>No, the answer is incorrect.</li> <li>Score. Of Accepted Answers:</li> <li>F. dS = - d/dt f_κ μ<sub>0</sub>H̄. dĀ</li> <li>7) A solution is electrically neutral when</li> <li>Number of positive charges &gt; number of negative charges</li> <li>Number of negative charges &gt; number of positive charges</li> <li>when the net charge of the system is non zero</li> <li>Number of negative charges = number of positive charges</li> <li>No, the answer is incorrect.</li> <li>Score. O</li> <li>Accepted Answers:</li> <li>Number of negative charges = number of positive charges</li> <li>No. the answer is incorrect.</li> <li>Score. O</li> <li>Accepted Answers:</li> <li>τ<sub>r</sub> = k/k</li> <li>τ<sub>r</sub></li></ul>	1 pc
	No, the answer is incorrect. Score 0  No, the answer is incorrect. Score 0  Accepted Answers: $\oint \vec{E} \cdot d\vec{S} = -\frac{d}{dt} \int_{\mu} \mu_0 \vec{H} \cdot d\vec{A}$ 7) A solution is electrically neutral when  Number of positive charges > number of negative charges Number of negative charges > number of positive charges when the net charge of the system is non zero Number of negative charges = number of positive charges Not be answer is incorrect. Score 0  Accepted Answers: Number of negative charges = number of positive charges  8) Charge relaxation time is defined as $\tau_r = \frac{\epsilon}{k_c}$ $\tau_r = \frac{\epsilon}{k_c}$ $\tau_r = \frac{\epsilon}{k_c}$ $\tau_r = \frac{\epsilon}{k_c}$ 9) A comparative study was done on the charge relaxation time of water-ethanol mixture at various proportions. A 60% ethanol-water mixture had a $\tau_r$ of 80 ps and 80% ethanol-water mixture had a $\tau_r$ of 120 ps. If a uniform charge density is added to equal volumes of both of these mixtures at the same time under the same conditions, which one would reach the equilibrium faster?  60% ethanol-water mixture  both will reach the equilibrium at the same time equilibrium will not be reached  No. the answer is incorrect. Score 0  Accepted Answers: 60% ethanol-water mixture	1 pc
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	No, the answer is incorrect. Score 0  No, the answer is incorrect. Score 0  Accepted Answers: $\oint \vec{E} \cdot d\vec{S} = -\frac{d}{dt} \int_{\mu} \mu_0 \vec{H} \cdot d\vec{A}$ 7) A solution is electrically neutral when  Number of positive charges > number of negative charges Number of negative charges > number of positive charges when the net charge of the system is non zero Number of negative charges = number of positive charges Not be answer is incorrect. Score 0  Accepted Answers: Number of negative charges = number of positive charges  8) Charge relaxation time is defined as $\tau_r = \frac{\epsilon}{k_c}$ $\tau_r = \frac{\epsilon}{k_c}$ $\tau_r = \frac{\epsilon}{k_c}$ $\tau_r = \frac{\epsilon}{k_c}$ 9) A comparative study was done on the charge relaxation time of water-ethanol mixture at various proportions. A 60% ethanol-water mixture had a $\tau_r$ of 80 ps and 80% ethanol-water mixture had a $\tau_r$ of 120 ps. If a uniform charge density is added to equal volumes of both of these mixtures at the same time under the same conditions, which one would reach the equilibrium faster?  60% ethanol-water mixture  both will reach the equilibrium at the same time equilibrium will not be reached  No. the answer is incorrect. Score 0  Accepted Answers: 60% ethanol-water mixture	1 pc
	<ul> <li>∇, μ<sub>B</sub>H̄ = 0</li> <li>No, the answer is incorrect.</li> <li>Accepted Answers:</li> <li>∫ Ē, d̄S̄ = -d̄ d̄ ∫ μ<sub>B</sub>H̄, d̄ d̄</li> <li>7) A solution is electrically neutral when</li> <li>Number of positive charges &gt; number of negative charges</li> <li>Number of negative charges &gt; number of positive charges</li> <li>Number of negative charges &gt; number of positive charges</li> <li>when the net charge of the system is non zero</li> <li>Number of negative charges = number of positive charges</li> <li>Number of negative charges = number of positive charges</li> <li>Number of negative charges = number of positive charges</li> <li>8) Charge relaxation time is defined as</li> <li>τ = 1/k<sub>e</sub></li> <li>τ = 1/k<sub>e</sub></li></ul>	1 pc
	No. the answer is incorrect.  Accepted Answers: $\vec{F}.\vec{E}.d\vec{S} = -\frac{d}{dt} \int_{\mu_0} \vec{H}.d\vec{A}$ 7) A solution is electrically neutral when  Number of positive charges > number of negative charges  Number of negative charges > number of positive charges  when the net charge of the system is non zero  Number of negative charges = number of positive charges  No. the answer is incorrect.  Score: 0  Accepted Answers: Number of regative charges = number of positive charges  3) Charge relaxation time is defined as $r_r = \frac{t}{k_c}$ $r_r = \frac{t}{k_c}$ $r_r = \frac{t}{k_c}$ 9) A comparative study was done on the charge relaxation time of water-ethanol mixture at various proportions. A 60% ethanot-water mixture had a $r_r$ of 180 ps and 80% ethanot-water mixture had a $r_r$ of 120 ps. If a uniform charge density is added to equal volumes of both of these mixtures at the same time under the same conditions, which one would reach the equilibrium faster?  60% ethanot-water mixture  80% ethanot-water mixture	1 po