Dashboard / My courses / EEE 3352 / Lecture 2: Electromagnetic fields / [2021] Assignment 2 (Quiz): 31 August 2022: 1130-1230 hrs

Started on Wednesday, 31 August 2022, 11:32 AM

State Finished

Completed on Wednesday, 31 August 2022, 12:32 PM

Time taken 1 hour

Grade 25.0 out of 100.0

Information

For question 1-5.

Two square metal plates of side 20 cm are placed equi-distant in air at 4 mm from each other and are subjected to 500 V dc between them.

Question **1**

Incorrect

Mark 0.0 out of 5.0

What is the capacitance created by the plates, in μ F? [1 decimal place]

Answer: 0.0000885

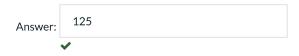
The correct answer is: 88.5

Question 2

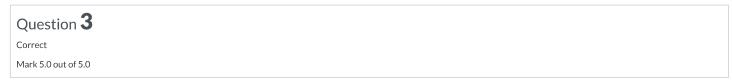
Correct

Mark 5.0 out of 5.0

What is the electric field strength, in V/mm, at the centre of the plates and mid-way between the plates? [A whole number, 0 decimal places]



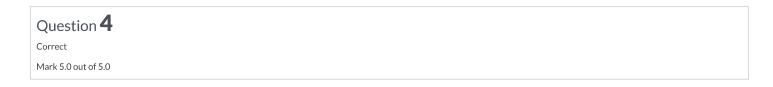
The correct answer is: 125



What is the electric field strength, in V/mm, at the centre of the plates and three-quarter distance from the positive plate? [A whole number, 0 decimal places]



The correct answer is: 125



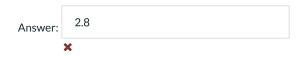
What is the energy density, in J/m³, at the centre of the plates and three-quarter distance from the positive plate? [2 decimal places]



The correct answer is: 0.07

Question 5
Incorrect
Mark 0.0 out of 5.0

What is the force, in mN, on the positive plate? [1 decimal place]

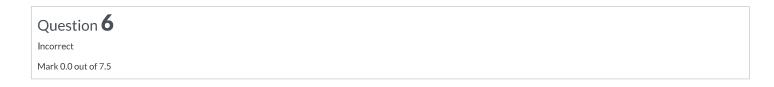


The correct answer is: 2.2

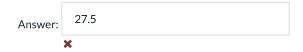
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For question 6-10.

An 80-m concentric cable has a central copper conductor and a metallic metal covering embracing diameters of 1 cm and 2.5 cm, respectively.



If the electric field strength capability of the of the insulation is 6 kV/mm, what is the maximum dc voltage, in kV, that can be applied to the cable? [1 decimal place]



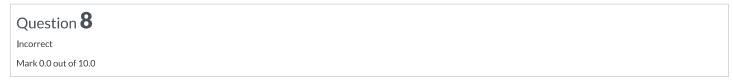
The correct answer is: 2.7

Question 7 Correct Mark 5.0 out of 5.0

If the relative permittivity of the insulation of the cable is 5, what is the capacitance, in nF, of the cable? [1 decimal place]



The correct answer is: 24.3



If the relative permittivity of the insulation of the cable is 5 and 1 kV is applied, what is the electric field strength, in V/mm, at a point mid-way between the radius of copper conductor and the metallic sheath? [A whole number, 0 decimal places]

Answer:	125
	×

The correct answer is: 320

Question 9	
Incorrect	
Mark 0.0 out of 10.0	

What is the resistance of the insulation, in $G\Omega$, if the conductivity of the insulation is 10^{-15} S/m? [A whole number, 0 decimal places]

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Answer: 100000000000
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The correct answer is: 1823

Question 10
Incorrect
Mark 0.0 out of 10.0

If the conductivity of copper is 62 MS/m, what is resistance of the cable, in $m\Omega$, over its run?



The correct answer is: 16.4

Information

For question 11-15.

A toroid made of steel of relative permeability of 2000 is wound with a coil of 120-turns, carrying a current of 1.5 A dc. The toroid has inner and outer diameters of 10 cm and 14 cm, respectively, and has square cross-section area.

Question 11

Not answered

Marked out of 5.0

What is the cross-sectional area, in cm², of the presented magnetic circuit? [1 decimal place]

Answer:

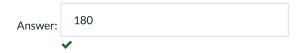
The correct answer is: 4

Question **12**

Correct

Mark 5.0 out of 5.0

What is the value of the mmf, in A, produced by the current-excited coil? [A whole number, 0 decimal places]



The correct answer is: 180

/30/22, 5:24 F	M [2021] Assignment 2 (Quiz): 31 August 2022: 1130-1230 hrs: Attempt review
Question Incorrect Mark 0.0 out of	
What is t	ne magnetic field intensity, in A/m, in the middle of the cross-section of the toroid? [A whole number, O decimal places]
Answer:	3000
The corre	ct answer is: 477
Question Incorrect Mark 0.0 out of	
What is t	ne magnetic flux density, in T, in the middle of the cross-section of the toroid? [1 decimal place]
Answer:	0.004 ×
The corre	ct answer is: 1.2
Question Not answered Marked out of	
What is tl	ne total stored energy, in mJ, in the toroid core? [A whole number, 0 decimal places]
Answer:	×

The correct answer is: 43

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