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 μF? [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]

Answer: 125 ✔

The correct answer is: 125

Question 3

Correct

Mark 5.0 out of 5.0

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]

Answer: 125

✔

The correct answer is: 125

Question 4

Correct

Mark 5.0 out of 5.0

What is the energy density, in J/m^3, at the centre of the plates and three-quarter distance from the positive plate? [2 decimal places]

Answer: 0.07

✔

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]

Answer: 2.8

✖

The correct answer is: 2.2

Information

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.

Question 6

Incorrect

Mark 0.0 out of 7.5

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]

Answer: 27.5 ✖

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]

Answer: 24.3 ✔

The correct answer is: 24.3

Question 8

Incorrect

Mark 0.0 out of 10.0

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 GΩ, if the conductivity of the insulation is 10^{-15} S/m? [A whole number, 0 decimal places]

Answer: 1000000000000

✖

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 mΩ, over its run?

Answer: 0.0000000294

✖

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 cm^2, 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]

Answer: 180

✔

The correct answer is: 180

Question 13

Incorrect

Mark 0.0 out of 7.5

What is the magnetic field intensity, in A/m, in the middle of the cross-section of the toroid? [A whole number, 0 decimal places]

Answer: 3000

✖

The correct answer is: 477

Question 14

Incorrect

Mark 0.0 out of 7.5

What is the magnetic flux density, in T, in the middle of the cross-section of the toroid? [1 decimal place]

Answer: 0.004

✖

The correct answer is: 1.2

Question 15

Not answered

Marked out of 7.5

What is the total stored energy, in mJ, in the toroid core? [A whole number, 0 decimal places]

Answer:

✖

The correct answer is: 43

◄ [2021] EXAMPLES - LECTURE 2

Jump to...

[2021] ASSIGNMENT 2 ►