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**TCET 2220**

**Prof. Viviana**

**Homework 1**

**09-15-13**

**(6.1) The voltage between two parallel plates separated by a distance of 5 mm is 200 V. Determine the electric field intensity**

**(6.2) The Voltage between two parallel plates separated by a distance of 0.4 inch is 60 V. Determine the electric field intensity.**

**(6.3) The electric field intensity in the region between two parallel plates separated by a distance of 4 cm is 2 kV/m. Determine the voltage between the plates.**

**(6.4) The electric field intensity in the region between two parallel plates separated by a distance of 8 mm is 200 V/mm. Determine the voltage between the plates.**

**(6.5) A direct current of 5 A is flowing in a conductor. Determine the magnetic field intensity at a distance of 3 m from the conductor.**

**(6.6) A direct current of 40 mA is flowing in a conductor. Determine the magnetic field intensity at a distance of 5 ft. from the conductor.**

**(6.7) For the parallel plates of Problem (6.3), determine the electric flux density if the dielectric is polyethylene (.**

**(6.8) For the parallel plates of Problem (6.4), determine the electric flux density if the dielectric is air.**

**(6.9) For the current-carrying conductor of Problem (6.5), determine the magnetic flux density at a distance of 3 m from the conductor if the medium is air.**

**(6.10) For the current-carrying conductor of Problem (6.6), determine the magnetic flux density at a distance of 5 ft from the conductor if the medium is air.**

**(6.11) The electric flux density normal to a rectangular surface with dimensions 8 m x 75 cm is 4 . Determine the value of the electric flux across the area.**

**(6.12) The electric flux density normal to a circular surface with a diameter of 3m is 8 . Determine the value of the electric flux across the area.**

**(6.13) The magnetic flux density normal to a circular surface with a radius of 5m is 4. Determine the value of the magnetic flux across the area.**

**(6.14) The magnetic flux density normal to a rectangular surface with dimensions 30 cm x 60 cm is 12. Determine the value of the magnetic flux across the area.**

**(6.15) A current of 8 A is uniformly distributed over a rectangular conductor with dimensions 5 mm x 4 mm. Determine the current density.**

**(6.16) A current of 4 A is uniformly distributed over a circular conductor with a dimensions 3 cm. Determine the current density.**

**(6.17) Assume that the conductivity for the conductor of Problem (6.15) is 5 MS/m. Determine the electric field intensity.**

**(6.18) Assume that the conductivity for the conductor of Problem (6.16) is S/m. Determine the electric field intensity.**

**(6.19) The rms magnitude of the magnetic field of a plane wave in air is . Assuming that E is in the positive x-direction, determine the following for a circular surface of diameter 50 m in the x-y plane over which the fields are constant:**

**(a)**

**(b)**

**(c) Total power transmitted through area**

**(6.20) The rms magnitude of the magnetic field of a plane wave in sea water ( is . Assuming that H is in the positive y-direction, determine the following for a square surface with sides of 15 m each in the x-y plane over which the fields are constant:**

**(a)**

**(b)**

**(c) Total power transmitted through area**

**(6.21) In a lossless dielectric medium, the rms electric and magnetic field intensities are and . Determine the following:**

**(a) Intrinsic impedance**

**(b) Power density**

**(c) Dielectric constant**