6-1 The voltage between two parallel plates separated by a distance of 5mm is 200V. Determine the electric field intensity.

6-2 The voltage between two parallel plates separated by a distance for 0.4in is 60V. Determine the electric field intensity.

1in = 0. 254 m

0.4in = 0.01016

6-3 The electric field intensity in the region between two parallel plates separated by a distance of 4cm is 2KV/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 8mm is 200V/mm. Determine the voltage between the plates.

6-5 A direct current of 5A is flowing a conductor. Determine the magnetic field intensity at a distance of 3m from the conductor.

6-6 A direct current of 4mA is flowing in a conductor. Determine the magnetic field intensity at a distance of 5ft from the conductor.

1ft = 0.3048m

5ft = 1.524m

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 3m 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 5ft from the conductor if the medium is air.

6-11 The electric flux density normal to a rectangular surface with dimensions 8m x 75cm is 4μC/m2. 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 8μC/m2. 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 4nWb/m2. Determine the value of the magnetic flux across the area.

6-14 The magnetic flux density normal to a rectangular surface with dimensions 30cm x 60cm is 12nWb/m2. Determine the value of the magnetic flux across the area.

6-15 A current of 8A is uniformly distributed over a rectangular conductor with dimensions 5mm x 4mm. Determine the current density.

6-16 A current of 4A is uniformly distributed over a circular conductor with a diameter of 3cm. Determine the current density.

6-17 Assume that the conductivity for the conductor of Problem 6-15 is 5MS/s. Determine the electric field intensity.

6-18 Assume that the conductivity for the conductor of Problem 6-16 is 6 x107 S/m. Determine the electric field intensity.

6-19 The rms magnitude of the magnetic field of a plane wave in air is . Assuming the E is in the positive x-direction, determine the following for a circular surface of diameter 50m in the x-y plane over which the field are constant.

1. Ex
2. Pz
3. Total power transmitted through area

6-20 The rms magnitude of the electric field of a plane wave in a sea water () is Ex = 3V/m. Assuming that H is in the positive y-direction, determine the following for a square surface with sides of 15m each in the x-y plane over which the fields are constant:

1. Hy
2. Pz

1. Total power transmitted through area