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TCET2220

HW # 1

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Chapter 6

6.1-6.21

1. E = V/d ⇒ 200V/ 5×10-3m = 40×103 V/m = 40 kV/m
2. E = V/d ⇒ 60V/ 1×10-2m = 60×102 V/m = 6 kV/m
3. V = E×d ⇒ (2×103 V/m) × (4×10-2 m) = 80 V
4. V = E×d ⇒ (200V/mm) × (8mm) = 1600 V
5. H = I/(2πd) ⇒ 5A / (2π×3m) = 5/6π A/m
6. H = I/(2πd) ⇒ (40×10-3 A) / (2π×1.5m) = 40/3π mA/m
7. (6.3) D = ε×ε0×E ⇒ 2000 V/m × 2.25 F/m = 4500 C/m2 × 8.842 × 10-12 F/m
8. (6.4) D = ε0×E ⇒ 8.842 × 10-12 F/m × (200V / 10-3m) = 1768.4 × 10-9 C/m2
9. (6.5) B = µ × H ⇒ 1.257 × 10-6 H/m × (5/6π A/m) = .333 × 10-6 Wb/m2
10. (6.6) B = µ × H ⇒ 1.257 × 10-6 H/m × (40/3π A/m) = 5.33 × 10-9 Wb/m2
11. Φ = D × A ⇒ A = (8m × .75m) = 6 m2 ⇒ 4 µC/m2 × 6 m2 = 24 µC