Name: _____

1. What physical phenomenon does the relationship $B_{galv} = \frac{\mu_0 i N}{2r}$ describe? (10 pts)

2. Explain the right-hand rule for current. (10 pts)

3. Consider Fig. 17.4. Determine the following in terms of B's (B_e, B_{galv}, and B_{net}). (10 pts)

   $\sin\theta =$

   $\cos\theta =$

   $\tan\theta =$

4. Consider Fig. 17.7. Determine the following in terms of B's (B_e, B_z, and B_t). (10 pts)

   $\sin\alpha =$

   $\cos\alpha =$

   $\tan\alpha =$

5. Given B_e of 45×10^{-6} T and a dip angle of 55°, calculate B_z. See Fig. 17.7. (30 pts)

6. Consider the top-view diagram of the tangent galvanometer, Fig. 17.11. Given the galvanometer's alignment with North, as shown, indicate the direction that current flows through the top of the wire loops. (30 pts)

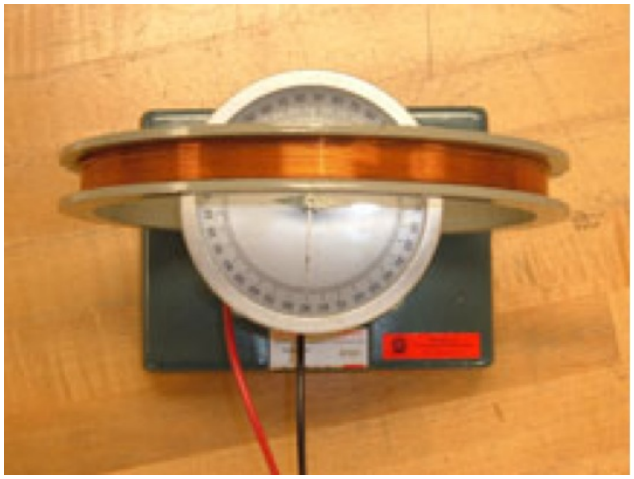

Figure 17.8: Top View - Wire loops encircle compass.

Figure 17.9: Side View - Compass located inside wire loops.

Figure 17.10: Tangent Galvanometer

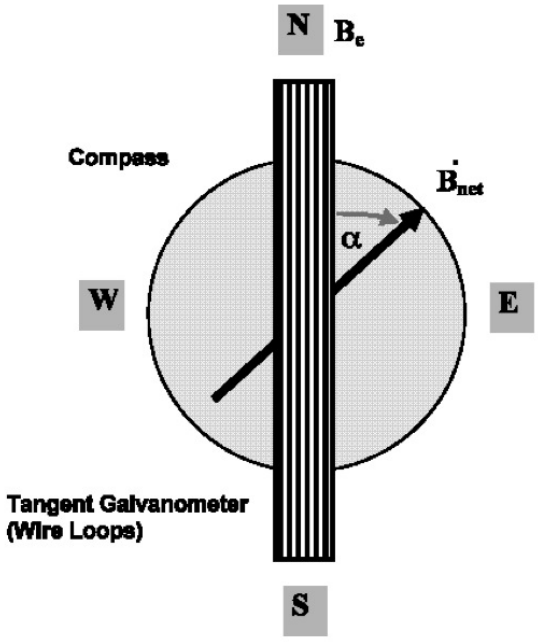

Figure 17.11: Compass Needle