

# Magnetism

## Chapter 20-21 Assignments and Answers

### Assignments:

**Ch. 20 Problem Assignment:**

HW due: \_\_\_\_\_

Pg. 577-580 Problems #1-5, 8-17, 25-27, 29-30, 32-34, 37, 41, 42, 47-50

**Ch. 21 Problem Assignment:**

HW due: \_\_\_\_\_

Pg. 610-611 Problems #1-2, 4-10, 13-18a, 19

### Answers:

**Ch. 20 Assignment:**

- |  |   |
|--|---|
| 1.a. 7.56N/m   | 25.a. 45° (from geometry)   |
| b. 5.35N/m   | b. 0.00347m   |
| 2. 1.09N   | 26. 2.17E <sup>-4</sup> T   |
| 3. 1.95A   | 27. I = 68.75A  |
| 4. 2.29E <sup>-4</sup> N   | 29. 12.83A upward   |
| 5. 0.264T  | 30. 0.073N attractive   |
| 8. 1370A (which isn't realistic)                                 | 32. 2.24E <sup>-6</sup> T   |
| 9. 1.32T   | 33. 1.083E <sup>-4</sup> T  |
| 10. 1.05E <sup>-13</sup> N to the north                          | 34. 40.8° W of N  |
| 11.a. left   | 37.a. (2E <sup>-5</sup> )(15-I)   |
| b. left  | b. (2E <sup>-5</sup> )(15+I)  |
| c. up  | 41. 2.61E <sup>-6</sup> N toward the wire                                   |
| d. into page   | 42.a. 6690A to the right  |
| e. zero  | b. Not stable.  |
| f. down  | c. 6690A to the left, and now it's stable.                                  |
| 12.a. down   | 47. $B = \frac{\mu_0 I}{2\pi} \left( \frac{1}{x} - \frac{1}{(d-x)} \right)$ |
| b. into page   | 48. 0.0088T   |
| c. right   | 49. 94.3A   |
| 13. clockwise in a circular path of radius 2.77E <sup>-5</sup> m | 50. 0.10N to the south  |
| 14. 1.62m  |   |
| 15. 1.55T to the east  |   |
| 16. v = 2.514E <sup>6</sup> m/s                                  |   |
| r = 0.0041m  |   |
| 17.a. 0.027m   |   |
| b. 3.81E <sup>-7</sup> s   |   |

**Ch. 21 Assignment:**

1. 419V
2. CCW
4. 0.053V
5. 0.085V
6. 0.048V
- 7.a. 0.00884 Wb  
b.  $55^\circ$   
c. 0.0051 Wb
- 8.a. CCW      b. CW
- 9.a. CW      b. CCW  
c. CW      d. zero
10. CCW
- 13.a. CW  
b. 0.043V  
c. 0.017A
- 14.a. 1.01m/s  
b. 0.909V/m
15. 0.548N
16.  $1.03E^{-4}$  V
- 17.a. 0.168V  
b. 0.00611A  
c.  $6.42E^{-4}$  N
- 18.a. 0.15A
19. 5.865C