

P 1051 Winter 2011

1 (a) 0.708 m/s

1 (b) $\alpha = -\theta_0 \omega^2 \cos \omega t$

2 (a) $3.77 \times 10^6 \text{ Nm}^2/\text{C}$

2 (b) $-200 \mu\text{C}$

2 (c) The answer for (a) will change but (b) will not.

3 (a) 8.93 m/s

3 (b) 7.33°

4 (A) $I_0/2$

4 (B) I_0

4 (C) 0

4 (D) $I_0/4$

5 (a) 6.01 N k

5 (b) $5.78 \text{ Am}^2 \text{ k}$

5 (c) -14.5 Nm i

6 (a) The path difference is zero therefore there is destructive interference and a dark band.

6 (b) 638 nm

6 (c) decrease

7 (a) $3.00 \times 10^{-6} \text{ N}$ (attractive)

7 (b) $2.33 \times 10^3 \text{ N/C}$

7 (c) 120 V

7 (d) $+2.63 \times 10^{-7} \text{ J}$

8 (a) 245 Hz

8 (b) 408 Hz

8 (c) 81.5 Hz

8 (d) 1.05 m

9 (a) $3.00 \times 10^5 \text{ N/C}$

9 (b) $3.81 \times 10^5 \text{ m/s}$

9 (c) $1.15 \times 10^{-12} \text{ N}$

9 (d) $8.36 \times 10^{-4} \text{ m}$

9 (e) out of the page

10 (a) 0

10 (b) $\frac{k\lambda}{r} \cos \theta d\theta$

10 (c) -0.242 N/m

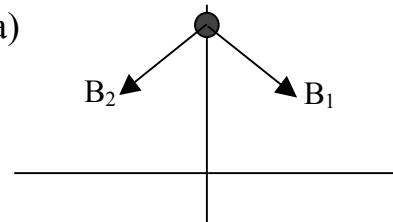
11 (a) 0.0846 V

11 (b) 3.38 mA

11 (c) counterclockwise

11 (d) $2.39 \times 10^{-4} \text{ N left}$

12 (a)



12 (b) $-1.00 \times 10^{-5} \text{ T j}$

12 (c) $1.60 \times 10^{-18} \text{ N i}$

12 (d) $7.50 \times 10^{-6} \text{ N i}$