A2-Answerkey

Chapter 15

P1: a) 0.525m

b) 0.686s

P2: a) f=5.58Hz

b) 0.325kg

c) 0.400m

P3: a) f= 2.2Hz

b) v= 0.56m/s

c) m =0.100kg

d) Equilibrium position= 0.200m

P4: a) = f=2.25Hz

b)P.E =125J

c) K.E=250J

d) Amplitude = 0.866m

P5: a) angular velocity = 39.5 rad/s

b) Angular velocity at displacement $\pi/2$ = -34.2rad/s

c) Angular acceleration= -124 rad/s^2 or 124 rad/s^2

P6: a) L = 0.499m

b) Max k.E = 9.40 x 10^ -4 J

P7: T = 0.366s

P8: a) Min T= 2.26s

b) If d is chosen to minimize the period, then as L is increased the period will increase as well.

c) The period does not depend on the mass of the pendulum, so T does not change when m increases.

P9: Damping factor = 0.39

P10: a) k = 4.9x10^2 N/m

b) b = 1.1x10^3 kg/s OR 1080 kg/s

Chapter 16

P11: T = 30N

P12: T = 13.5 N

P13: a) 0.08 sin (7.85x+6πt)

b) 0.08 sin (7.85x+6πt-0.785)

P14: a) Amp=0.25m

b) ω =40rad/s

c) k =0.30

d) ʎ= 20.94m

e) v =133.3m/s

f) Direction of motion is positive

P15: a) Δx = 0.300 meters (+x direction)

P16:

a) Amp=0.0200m

b) Wavelength = 2.98m

c) f =0.575Hz

d) Speed of the wave =1.72 m/s

P17:

a) Speed of the wave = 62.5m/s
b) Wavelength =7.85m
c) f =7.96Hz
d) Power = μ 21.1 w