Calculation Practice Answers Paper 2

Any correct rearrangement of the equations is acceptable for the part a) questions
Answers are rounded to a sensible number of significant figures.

1 a) moment of a force = force x distance (normal to the direction of the force)
   b) 7.5 Nm
   c) 400 N
   d) 0.5 m

2 a) distance travelled = speed x time
   b) 1.6 m/s
   c) 13 s
   d) 270 m

3 a) acceleration = change in velocity / time taken
   b) 5 m/s^2
   c) 2.25 s
   d) 36.4 m/s

4 a) weight = mass x gravitational field strength
   b) 19 N
   c) 1447 kg
   d) 0.0060 N/kg

5 a) force applied to a spring = spring constant x extension
   b) 300 N
   c) 0.6 m
   d) 7.5 N/cm or 750 N/m

6 a) resultant force = mass x acceleration
   b) 2400 N
   c) 3 m/s^2
   d) 650 kg

7 a) momentum = mass x velocity
   b) 3600 kgm/s
   c) 625 kg
   d) 3.85 m/s
   e) 2.36 m/s

8 a) pressure = force normal to the surface / area of that surface
   b) 0.04 m^2
   c) 7500 Pa
   d) 480 N
   e) 0.25 m^2

9 a) wave speed = frequency x wavelength
   b) 300 m/s
   c) 0.006 m or 6mm
   d) 2.93m

10 a) 2.12 m/s
b) 93.6 m
c) 24.5 m/s

11 a) i) 0.75 kgm/s
ii) 1.67 N

b) i) 5.4 Ns
ii) 8.3 m/s

12 a) 23520 Pa
b) 13560 kg/m^3
c) 730 mm

13 a) i) 0.002 s
ii) 2.94 x10^{-6} s or 2.94 μs
b) i) 400 Hz
ii) 5000 Hz

14 a) 25
b) 0.005

15 a) 0.15 N
b) 0.0024 T
c) 13.75 m

16 a) 345 V
b) 3696 turns

17 a) 0.183 A
b) 126.5 A