

Mark schemes

Q1.

(a) $W = 25\,000 \times 9.8$

1

$$= 245\,000 \text{ (N)}$$

1

(b)

$$p = \frac{1\,960\,000}{49}$$

1

$$= 40\,000$$

1

Pa

1

(c) B

1

[6]**Q2.**

(a) $\text{pressure} = \frac{\text{force}}{\text{area}}$

1

(b) $\text{area of base} = 0.0144 \text{ (m}^2\text{)}$

*do not allow this or subsequent marks
unless base area is used*

1

$$1500 = \frac{F}{0.0144}$$

*this mark may be awarded if base area
is incorrectly calculated*

1

$$F = 1500 \times 0.0144$$

*this mark may be awarded if base area
is incorrectly calculated*

1

$$F = 21.6 \text{ (N)}$$

*this mark may be awarded if base area
is incorrectly calculated*

allow 22 (N)

1

[5]

Q3.

(a) 100 km 1

(b) gas 1

(c) 90 000 Pa 1
allow 89 500 to 90 500

(d) $101\,000 - 90\,000 = 11\,000$ Pa 1
allow ecf from part (c)

(e) the density of the air decreases 1

the mass of air above the student decreases 1

(f) $P = \frac{188\,000\,000}{2000}$ 1

94 000 (Pa) 1

[8]