

## FORM 5

### CHAPTER 2

#### Paper 1

1 A

$$\begin{aligned}\rho_1 g h_1 &= \rho_2 g h_2 \\ 0.8 \times 4 &= \rho_2 \times 8 \\ \rho_2 &= \frac{0.8 \times 4}{8} \\ &= 0.4 \text{ g cm}^{-3}\end{aligned}$$

2 D

3 C

$$\begin{aligned}P_1 V_1 &= P_2 V_2 \\ (500)l &= (1\,500)l_2 \\ l_2 &= \frac{500l}{1\,500} \\ &= \frac{1}{3}l\end{aligned}$$

4 B

5 D

$$\begin{aligned}\text{Gas pressure} &= P_0 + h \\ &= 76 + 20 \\ &= 96 \text{ cm Hg}\end{aligned}$$

6 A

7 D

$$\begin{aligned}P &= \rho g h \\ &= 1000 \times 10 \times 5 \\ &= 5 \times 10^4 \text{ N m}^{-2} \\ &= 50\,000 \text{ N m}^{-2}\end{aligned}$$

8 B

$$\begin{aligned}P_1 V_1 &= P_2 V_2 \\ (76 + 4)(6) &= P_2(5) \\ 80 \times 6 &= 5P_2 \\ P_2 &= \frac{80 \times 6}{5} \\ &= 96 \text{ cm Hg}\end{aligned}$$

$$\text{Length of column} = 96 - 76 = 20 \text{ cm Hg}$$

9 D

10 D

$$\begin{aligned}\frac{P_1}{T_1} &= \frac{P_2}{T_2} \\ P_1 &= 25 \text{ kPa}, P_2 = 30 \text{ kPa}, T_1 = 27^\circ\text{C} = 300 \text{ K} \\ \frac{25}{300} &= \frac{30}{T_2} \\ T_2 &= \frac{30}{25} \times 300 \\ &= 360 \text{ K} \\ &= 360 \text{ K} \times 273 \text{ K} \\ &= 87^\circ\text{C}\end{aligned}$$

11 C

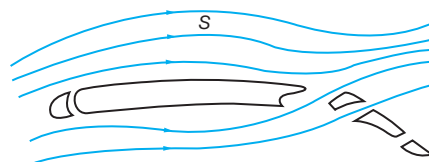
12 D

#### Paper 2

##### Structured Question

1 (a) Aerofoil

(b) (i)



(ii) The air over the wing is faster and creates lower pressure. The pressure under the wing is higher. Force is produced from a high pressure area to a low pressure area.

(iii) Bernoulli's principle

(iv) To add lift Force  
= Pressure  $\times$  Area