17. 5 ml per 1000 ml is the same as 0.5 ml per 100 ml. 0.5 ml per 100 ml = 0.5% v/v. **Answer**: c (0.5% v/v)

18. 5% is equivalent to 5 g per 100 ml. As the prescription requires 10 ml, we require 5 ÷ 10 = 0.5 g. **Answer**: c (0.5 g)

19. 0.5% w/v solution contains 500 mg (0.5 g) per 100 ml. 250 ml will contain (500 ÷ 100) × 250 = 1250 mg (1.25 g). 20% w/v solution contains 20 g per 100 ml, 2 g per 10 ml or 1 g per 5 ml. Therefore, we require (1.25 ÷ 1) × 5 = 6.25 ml. **Answer**: b (6.25 ml)

20. 1% w/v solution contains 1 g per 100 ml. Therefore, we require (1 ÷ 100) × 150 = 1.5 g. 4% w/v solution contains 4 g per 100 ml. This is equal to 2 g per 50 ml, 1 g per 25 ml and 0.5 g per 12.5 ml. Therefore, 1.5 g will be contained in (1.5 ÷ 0.5) × 12.5 = 37.5 ml. **Answer**: e (37.5 ml)

21. 0.5% w/v contains 500 mg per 100 ml. 250 ml of a 0.5% w/v solution contains (500 ÷ 100) × 250 = 1250 mg (1.25 g). 25% w/v solution contains 25 g per 100 ml. Therefore 1.25 g will be contained in (1.25 ÷ 25) × 100 = 5 ml. **Answer**: d (5 ml)

22.

a. A 1% v/v solution contains 1 ml per 100 ml. Therefore half a litre (500 ml) will contain 1 × 5 = 5 ml. A 15% v/v solution will contain 15 ml per 100 ml. Therefore for 5 ml, we require 100 ÷(15 ÷ 5) = 33.3 ml. **Answer**: 33.3 ml

b. A 1% v/v solution contains 1 ml per 100 ml. Therefore 250 ml will contain (1 ÷ 100) × 250 = 2.5 ml. A 40% v/v solution will contain 40 ml per 100 ml. Therefore for 2.5 ml, we require 100 ÷ (40 ÷ 2.5) = 6.25 ml. **Answer**: 6.25 ml

c. A 1% v/v solution contains 1 ml per 100 ml. 500 ml of a 1% v/v solution contains 5 ml. A 10% solution contains 10 ml per 100 ml. Therefore for 5 ml, we require 100 ÷ (10 ÷ 5) = 50 ml. **Answer**: 50 ml

d. A 0.5% v/v solution contains 0.5 ml per 100 ml. 1 litre (1000 ml) of a 0.5% v/v solution contains 5 ml. A 15% solution contains 15 ml per 100 ml. Therefore for 5 ml, we require 100 ÷ (15 ÷ 5) = 33.3 ml. **Answer**: 33.3 ml

e. A 0.05% v/v solution contains 0.05 ml per 100 ml. 1 litre (1000 ml) of a 0.05% v/v solution contains 0.5 ml (0.05 × 10). A 4% solution contains 4 ml per 100 ml. Therefore for 0.5 ml, we require 100 ÷ (4 ÷ 0.5) = 12.5 ml. **Answer**: 12.5 ml

23. If a solid is soluble in 2.5 parts of water, that means that 1 g is soluble in 2.5 ml of water. Therefore, for 3 g, we require (3 ÷ 1) × 2.5 = 7.5 ml. **Answer**: d (7.5 ml)

24. If a solid is soluble 1 in 1.5 parts of water, that means that 1 g is soluble in 7.5 ml of water. Therefore, for 7 g, we require (7 ÷ 1) × 1.5 = 10.5 ml. **Answer**: d (10.5 ml)

25. If sodium bicarbonate is soluble 1 in 11, that means that 1 g is soluble in 11 ml. Therefore, for 0.37 kg (or 370 g), we require 370 × 11 = 4070 ml or 4.07 litres. **Answer**: b (4.07 l)

26. A 0.2% solution contains 200 mg per 100 ml. 200 ml of a 0.2% solution contains 400 mg. A 1 in 150 w/v solution contains 1 g in 150 ml. Therefore for 400 mg, we require (150 ÷ 1) × 0.4 = 60 ml. **Answer**: e (60 ml)

27. 500 micrograms in 2 ml is equivalent to 1 mg per 4 ml. This is equivalent to 1 g (1 mg × 1000) in 4000 ml (4 × 1000). **Answer**: e (1 in 4000)

28. A 1 in 12 000 solution contains 1 g in 12 000 ml (12 litres). Therefore, for 5.4 litres, we will require (1 ÷ 12) × 5.4 = 0.45 g (450 mg). **Answer**: d (450 mg)