Multiple-choice section

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Answer | B | C | A | D | D | A | C | B |

Question 1 [4.1]

B

*P* = 2*l* + 2*w*

= 2 × 12 + 2 × 2

= 28 m

Question 2 [4.1]

C

arc length = × 2πr

=× 2 × π × 3

=× π

= 7.07 cm

Question 3 [4.1]

A

*P* = (4 + 7) × 2

= 22 cm

Question 4 [4.2]

D

300 mm2 = 300 ÷ 100 cm2 = 3 cm2

Question 5 [4.2]

D

*A* = *l*2

= 62

= 36 cm2

Question 6 [4.2]

A

*A* = *lw* + *bh*

= (8 × 5) + (× 8 × 1) m2

Question 7 [4.4]

C

*V* = *AH*

= *lwH*

= 3 × 5 × 10

= 150 cm3

Question 8 [4.4]

B

2 m3 = 2 × (100)3 cm3

= 2 000 000 cm3

Multiple-choice total marks: 8

Short answer section

Question 9 4 marks [4.1]

(a) *P* = (8 + 7) × 2

*P* = 30 cm

**(b)** *P* =  × 2 × π × 6 + 2 × 15 + 12

*P* = 6π + 42

*P* = 60.85 m

Question 10 4 marks [4.1]

*P* =  × 2 × π × 18 + 2 × 18

*P* = 120.82 cm

*A* =  × π × 182

*A* = 763.41 cm2

Question 11 2 marks [4.1]

(a) *P* = 2 × (74 + 32)

*P* = 212 m

**(b)** total = 5 × 212 m

total = 1060 m

= 1060 ÷ 1000 km

= 1.06 km

Question 12 4 marks [4.2]

(a) 8 × 102 = 800 mm2

(b) 7 m2 × 1002 = 70 000 cm2

(c) 20 000 cm2 ÷ 1002 = 2 m2

(d) 0.9 km × 10002 = 900 000 m2

Question 13 6 marks [4.2]

(a) *A* = *lw* – (*a* + *b*) × *h*

*A* = 9 × 6 – × (5 + 9) × 3

*A* = 33 m2

(b) *A* = *bh* +π*r*2

*A* = × 4 × 6 +× π × 4= 24.57 m2

Question 14 4 marks [4.3]

(a) SA = 2*lw* × 2*lh* × 2*wh*

= (2 × 7 × 2) + (2 × 7 × 3) + (2 × 2 × 3)

= 28 + 42 + 12

= 82 m2

(b) SA = 2π*r*2 × 2π*rh*

= 2 × π × 1.52 + 2 × π × 1.5 × 6

= 70.69 cm2

Question 15 6 marks [4.4]

(i) (a) *A* = *bh*

*A* = × 6 × 5

*A* = 15 cm2

(b) *V* = *AH*

*V* = 15 × 14

*V* = 210 cm3

(c) *V* = 210 ÷ 1000

*V* = 0. 21 L

(ii) (a) *A* = π*r*2

*A* = π × 2.52

*A* = 19.63 cm2

(b) *V* = *AH*

*V* = 19.634 95 × 14

*V* = 274.89 cm3

**(c)** *V* = 274.89 ÷ 1000 = 0.27 L

Short answer total marks: 30

Extended answer section

Question 16 2 + 2 + 2 + 2 marks [4.1, 4.2, 4.4]

(a) *P* = × 2 × π × 1.5 + 6 + 3 + 2 × 3 + 4

*P* = 23.71 m

(b) *A* =  × π × 1.52 + 6 × 3+ 22

*A* = 25.53 m2

(c) cost = 52 × 25.53

cost = $1328

(d) volume = *AH*

volume = 25.53 × 1.1

volume = 28.1 m3

number of litres = 28.1 kL

Question 17 2 + 1 + 2 + 1 + 1 marks [4.3, 4.4]

(a) *V* = *AH*

= π*r*2*H*

= π × 1.052 × 9.5

= 32.904 m3

(b) 35.315 m3 = 32.904 × 1000 L = 32 904 L

(c) Volume of the smaller tank:

*V* = *AH*

= *lwH*

= 95 × 80 × 130

= 988 000 cm3

(d) 988 000 cm3 = 988 000 ÷ 1000 L = 988 L

**(e)**  = 33.3

Nearly 34 of the smaller tanks can be filled from one large tank truckload.

Extended answer total marks: 15

TOTAL test marks: 53