Mark Scheme

Q1.

Question number	Working	Answer	Notes	Marks
(a)	Accept 3.14, 3.142, $\frac{22}{7}$ or the π button on the calculator as a value of π	Answer in the range 9.80 – 9.83 inclusive	M1 $(\pi \times 2.5^2) \div 2$ or better A1	(2)

Question number	Working	Answer	Notes	Marks
(b)	Accept 3.14, 3.142, $\frac{22}{7}$ or the π button on the calculator as a value of π	Answer in the range 12.8 – 12.9 inclusive	M1 $\left(\frac{\pi \times 5}{2}\right)+5$ or better A1	(2)

Q2.

Question number	Working	Answer	Notes	Marks
(a)		8.66(0254038)	M1 for $a^2 + 11^2 = 14^2$ oe M1 $a = \sqrt{(14^2 - 11^2)}$ A1	(3)

Q3.

Question number	Working	Answer	Additional Guidance	Mark
a	$\sqrt{(8.2^2 - 4.1^2)}$ $\sqrt{(67.24 - 16.81)}$ $\sqrt{(50.43)}$	7.10(14083…)	M1 for correct use of Pythagoras eg. $8.2^2 = 4.1^2 + (BC)^2$ M1 for $\sqrt{(8.2^2 - 4.1^2)}$ OR for $\sqrt{50.43}$ A1	3

Q4.

Question number	Working	Answer	Additional Guidance	Mark
	$\sqrt{(14.6^2 - 11.2^2)}$ $213.16 - 125.44$ $\sqrt{87.72}$	9.36(589…) or 9.37	M1 for $14.6^2 = 11.2^2 + (BC)^2$ M1 for $((BC)^2) = 14.6^2 - 11.2^2$ (= 87.72) OR for (BC =) sqrt 87.72 A1	3

Q5.

Question number	Working	Answer	Additional guidance	Mark
	$DE^2 + 8^2 = 21^2$ $DE^2 + 64 = 441$ $DE^2 = 441 - 64$ $DE^2 = 377$ $DE = \sqrt{377}$	19.4 (1648…)	M1 forms a correct equation using Pythagoras M1 for $\sqrt{(21^2 - 8^2)}$ A1 accept $\sqrt{377}$	**(3)**

Q6.

Question number	Working	Answer	Additional guidance	Mark
	$(\pi \times 36 \div 4) + (2 \times 18)$ $9\pi + 36$	64.2 – 64.3	M1 for complete correct method, or for 9π with no evidence that is comes from incorrect working A1	**(2)**

Q7.

Question number	Working	Answer	Additional Guidance	Mark
	eg. $x + x + (x - 7) + (x - 7) = 50$ $4x - 14 = 50$ $x = 16,\ x - 7 = 9$ $A = 9 \times 16\ (= 144)$ $\sqrt{144} = 12$ 4×12	48	M1 forms a correct linear equation to find length or width A1 for finding the length and width of the rectangle M1 (dep on M1 from above) for correct method to find the area of each shape A1	4

Q8.

Question number	Working	Answer	Additional guidance	Mark
	$\frac{1}{2} \times 6 \times 8 \times 12$	288 cm^3	M1 for correct method A1 for 288 B1 for correct units	(3)

Q9.

Question number	Answer	Mark
	A – CORRECT ANSWER B – goes through the centre C – wrong straight line D – formed using this line, but also needs an arc	(1)

Q10.

Question number	Working	Answer	Additional guidance	Mark
a		Chord	B1	(1)

Question number	Working	Answer	Additional guidance	Mark
bi	$(\pi \times 6^2) \div 2$	56.5 – 56.6	M1 for correct method A1for 18π oe	(2)
bii	$((\pi \times 12) \div 2) + 12$	30.8 – 30.9	M1 for correct method A1for $6\pi + 12$ oe	(2)

Q11.

Question number	Answer	Mark
	C - [segment]	(1)

Q12.

Question number	Working	Answer	Additional Guidance	Mark
a		Diameter	B1 condone spelling errors as long as intention is clear	1

Question number	Working	Answer	Additional Guidance	Mark
b	$22 \div 2$ (= 11) $\pi \times 11^2$	380.1(32711…)	M1 for correct method A1 accept 121π or an answer in the range 379.9-380.3	2

Q13.

Question number	Answer	Mark
	B - 1.4	(1)

Q14.

Question number	Answer	Mark
	B - 50 cm	(1)

Q15.

Question number	Answer	Mark
	A – $\pi \times 4$ B – CORRECT ANSWER C – $\pi \times 4^2$ D – $\pi \times 8^2$	1

Q16.

Question number	Working	Answer	Additional guidance	Mark
	100 ÷ 0.5π oe 10 000 ÷ 157.1… oe	63.6 - 64	M1 for 100 ÷ 0.5π oe A1 If M0A0 then award SC:B1 for 100 ÷ 50π	(2)

Q17.

Question number	Working	Answer	Additional guidance	Mark
(a)	$2 \times (6\times8 + 8\times10 + 10\times6)$	376	M1 for complete correct method A1	(2)

Q18.

Question number	Working	Answer	Additional Guidance	Mark
	$\sqrt[3]{614.125}$ (= 8.5) 8.5^2 (= 72.25) 72.25×6	433.5	M1 $\sqrt[3]{614.125}$ (=8.5) M1 '8.5'^{2} (=72.25) A1	3

Q19.

Question number	Answer	Mark
	A – 5 + 5 + 5 (adds instead of multiplying) B – 5^2 (squared instead of cubed) C – CORRECT ANSWER D – $5^2 \times 6$ (Surface area instead of volume)	1

Q20.

Question number	Answer	Mark
	C - $160cm^3$	(1)

Q21.

Question number	Answer	Marks
	C Sector	(1)

Q22.

Question number	Answer	Mark
	A - Chord	(1)

Q23.

Question number	Answer	Mark
	A – Part of circumference that forms the sector B – Two lines either side of the sector C – CORRECT ANSWER D – Only part of the shaded area	1

Q24.

Question number	Working	Answer	Notes	Marks
		No and 1 014	M1 $\sqrt[3]{2197}$ (=13) M1 '13' × '13' (=169) M1 '169' × 6 (=1 014) A1 Correct decision and correct answer	(4)

Q25.

Question number	Working	Answer	Additional Guidance	Mark
	$2 \times \pi \times 3.5^2$ (= 24.5π =76.9…) $2 \times \pi \times 3.5 \times 4.8$ (= 33.6π = 105.5...) 24.5π + 33.6π (= 58.1π = 182.5…)	182.52653 …	M1 for $2 \times \pi \times 3.5^2$ (=24.5π = 76.9…) oe M1 for $2 \times \pi \times 3.5 \times 4.8$ (= 33.6π = 105.5…) oe A1 for an answer in the range 182.4-182.6 from correct working	3