

IGCSE Sample 05
Paper 4H

Q	Working	Answer	Mark		Notes
1.	Correctly collect p terms in eqn Correctly collect constants in eqn	$\frac{1}{2}$ oe	3	M1 M1 A1	eg $4p + 3 = 5$ (not $7p - 3p + 3 = 5$)
					Total 3 marks
2.	14.9422 611-182 = 429 "429" \times 0.0704 or 30.2016 "14.9422" + "30.2016" or 45.1438 "45.1438" \times 5/100 or 2.25719 "45.1438" + "2.25719"	47.40(099)	7	B1 B1 M1 M1 M1 M1 A1	Allow working to 3 s.f. or better throughout M marks can be implied 45.14 \times 1.05 or 47.50 or 2.25 Can be awarded in previous line At least 2 d.p.
					Total 7 marks
3.	(a)	50°	3	B3	If B3 not gained: $PQS = 70^\circ$ / $\angle PTR = 60^\circ$ / ext $\angle PTR = 120^\circ$: B2 If B2 not gained: $\angle PST = 60^\circ$: B1
	(b)	\angle s on a straight line = 180° or \angle sum of triangle = 180° or ext \angle of Δ = sum of int opp \angle s AND Corresponding \angle s or alternate \angle s or allied or supp or included or interior or co-interior \angle s	2	B1 B1	
					Total 5 marks

4.	(a)	(i) (ii) (iii)	p^4 $-3a + 4b - 7$ q^6	1 2 1	B1 B2 B1	B1: 2 terms. subs include working: -B1
	(b)		$2x^2 + 3x$	2	B2	B1 each term. subs include working: -B1
	(c)	$y^2 + 2y - y - 2$	$y^2 + y - 2$	2	M1 A1	3 terms correct or 4 terms correct ignoring sign Incorrect subsequent work: -A1
						Total 8 marks

5.	(a)		10-19	1	B1	
	(b)		42/59 or 0.71(....) or 71(...)%	2	B2	B1 num, B1 denom 42:59 B1
	(c)	$8 \times 4.5 + 20 \times 14.5 + 14 \times 24.5 + 5 \times 34.5 + 12 \times 44.5$ Midpoints 4.5 (or 5 or 4) etc	1375(.5) or 1376	3	M1 M1 A1	\geq four fx attempted, consistent x within interval dep (for midpoints 4 or 5 etc) ISW eg +59 23.3, 1405, 1346 (no working): SC B2 22.8, 23.8 : SC B1
						Total 6 marks

6.		No or not necessarily Some are (or may be) both	2	B1 B1	dep on 2 nd B1

7.	(a)	$8^2 + 15^2$ or 289 seen \surd	17cm	3	M1 M1 A1	$\tan x = 15/8$ dep on x used dep 8/cosx Answer rounds to 17.0
	(b)		15/8 or 1.875 or 1.88 seen	1	B1	ISW
						Total 4 marks

8.	(a)		Kitchen chairs belonging to Angela or "her"	2	B1 B1	Or equivalent. Must be clear that overlap is intended eg "chairs that are part of / common to kitchen furniture" "furniture that is both a chair and in the kitchen"
	(b)	(i)	1, 2, 3, 4, 5, 6, 7, 8, 9	2	B2	-B1 each omission or extra Any order, in a single list Ignore negative odd numbers
		(ii)	Yes - no common members	1	B1	Or eg "No odd numbers in P." "P is even numbers, or Q is odd numbers." Must refer to sets or odd or even
						Total 5 marks

9.		$19.8 = 2\pi \times r \times 2.1$ or $19.8 / (2\pi \times 2.1)$	1.5 or better	2	M1A1	Or $19.8 = 2\pi \times 1.5 \times 2.1$
		OR $2\pi \times 19.8 \times 2.1$	261(.3..)		M1A1	
						Total 2 marks

10.	(a)		9.905×10^7 or 99 050 000 or 9.91×10^7 or 99 100 000	2	B2	B1 for digits 9905 or 991
	(b)	$9.7/100 \times 9.72 \times 10^7$	9.43×10^6 or 9 430 000 or better	2	M1 A1	
	(c)	Total = 5.988×10^8 or 598800000 ($4.98 \times 10^8 / \text{her } 5.988 \times 10^8$) $\times 100$	83% or better	3	B1 M1 A1	Or 599000000 dep total clearly attempted
Total 7 marks						

11.	(a)	3 x (i) or otherwise equalize coeffs	$\frac{1}{2}, 1$	3	M1 A1A1	Whole equations correct T & I: 3 or 0
	(b)		Her ($\frac{1}{2}, 1$)	1	B1f	
Total 4 marks						

12.	(a)		49	1	B1	
	(b)	(i) $2.5 \times 3/2$ oe	3.75	2	M1 A1	cao
		(ii) $1.5 \times 2/3$ oe	1	2	M1 A1	Or 1.5 - 0.5 cao
Total 5 marks						

13.	(a)	$2(-4) - 3$	-11	2	M1 A1	
	(b)	$2a - 3 = 5$ or $(5 + 3)/2$	4	2	M1 A1	
	(c)	$\sqrt{2 \times 6 - 3} + 1$	4	2	M1 A1	
	(d)		Negative or $x < 0$	1	B1	
	(e)	$y = 1 + \sqrt{x}$ $x = (y - 1)^2$	$\sqrt{\quad}, +1$ becomes $-1, (\quad)^2$	3	M1 M1 A1	Or $x = 1 + \sqrt{y}$ Or $g^{-1}(x) = (x - 1)^2$ or $(x - 1)^2$
				Total 10 marks		

14.	(a)		$x(28 - 2x)$ seen	1	B1	Brackets essential
	(b)	(i)	$28 - 4x$	2	B1B1	Ignore "y ="
		(ii)	$"28 - 4x" = 0$ $x = 7$	2	M1 A1	
		(iii)	negative coeff. of x^2 or \cap shape or $\frac{d^2y}{dx^2} = -4$, which is negative	1	B1	Not "the value is negative." ft her $28 - 4x$
	(c)	$28 \times 7 - 2 \times 7^2$	98	2	M1 A1	ft his (ii) if working seen cao
				Total 8 marks		

15.	(a)	$\pi \times 12^2 \times 110/360$	138(.2. . .)	2	M1 A1	Or $\pi \times 12^2 \times 0.31$, Or $\pi \times 12^2 \div 3.3$ or better
	(b)	$\frac{1}{3} \times 2\pi r$ or $\frac{120}{360} \times 2\pi r$ seen + $2r$ seen	$\frac{2\pi r}{3} + 2r$ or $\frac{2}{3}\pi r + 2r$	3	M1 M1 A1	Or equivalent explanation
						Total 5 marks

16.	(a)	(i) (ii) (iii)	-a + b oe 2a oe -2a + 2b oe	1 1 1	B1 B1 B1	} Simplification not required } Allow plain a, b }
	(b)		Parallel $QR = 2MN$ or lines in ratio 1:2 or 2:1	2	B1 B1	(b) marks dep (a)(i)&(iii) correct Without vector symbols unless "length" stated.
						Total 5 marks

17.	(a)	One block of correct height, or $\frac{20}{5}$ or $\frac{14}{5}$ or $\frac{8}{20}$ seen	Correct blocks, height & width	4	M1 A1A1A1	8cm, 5.6cm or 0.8cm, any width
	(b)	$\frac{1}{2} \times 14$ or $\frac{1}{4} \times 8$ or 2.5×2.8 or 5×0.4	9	2	M1 A1	Value "7" or "2" not enough
						Total 6 marks

18.	(a)		$\frac{2}{5}$ and $\frac{3}{5}$ correctly placed $\frac{3}{4}$ and $\frac{1}{4}$ correctly placed Correct structure includes labels	3	B1 B1 B1	Allow even if extra branches
	(b)	$\frac{3}{5} \times \frac{3}{4}$ or $\frac{9}{20}$ + $\frac{2}{5}$	$\frac{17}{20}$ or 0.85 oe	3	M1 M1 A1	dep
						Total 6 marks
19.		$5.\dot{1} - 0.5\dot{1}$ or $51.\dot{1} - 5.\dot{1}$ or $51.\dot{1} - 0.5\dot{1}$	$\frac{23}{45}$ or $\frac{46}{90}$ or $\frac{460}{900}$ oe	2	M1 A1	Or $\frac{1}{90}$ seen
						Total 2 marks
						TOTAL FOR PAPER: 100 MARKS