ANNEX B

RI H2 Maths JC2 Prelim P2

Qn/No	Topic Set	Answers
1	Integration Techniques	(i) $\dfrac{4x}{\sqrt{\left(1-4x^2\right)^3}}$ (ii) $\dfrac{\sin^{-1}(2x)}{4\sqrt{1-4x^2}} - \dfrac{1}{8}\ln\left|\dfrac{1+2x}{1-2x}\right| + C$
2	Inequalities	(i) $x < 0$ or $0 < x < \dfrac{1}{3a}$ or $x > 2a$ (ii) $0 < x < \dfrac{1}{9a^2}$ or $x > 4a^2$
3	Functions	(ii) 2 (iii) 3 (iv) $\mathrm{gf}: x \mapsto \ln\left(2x^2 - 8x + 9\right)$, $x \le 3$ (v) $[0, \infty)$
4	Complex Numbers	(ii) $h = \sqrt{3}\sin\dfrac{\pi}{6} = \dfrac{\sqrt{3}}{2}$ (iii) $-4\sqrt{3} + 3i$ (iv) $0 \le \arg\left(z + 4\sqrt{3} + i\right) < \dfrac{2}{3}\pi$
5	Arithmetic and Geometric Progressions	(a) $\pm 243\sqrt{3}$; 493 (b) (i) $d = 0.2$ (ii) $600(1 - 0.99^n)$ (iii) 21
6	Sampling	(ii) Stratified or quota sampling.
7	Hypothesis Testing	(i) $\bar{x} = 13.61$; $s^2 = 2.31$ (ii) $H_0: \mu = \mu_0$ vs $H_1: \mu < \mu_0$ (iii) $\mu_0 \ge 14.0$
8	Permutations and Combinations	(i) 3 628 800 (ii) 2 983 680 (iii) 28800
9	Probability	(ii) 40
10	Poisson Distributions	(i) 0.677 (ii) 0.116 (iii) 0.842 (iv) 0.869

11	Correlation and Regression	(ii) $y = -46.1 + 7.52x$; $y = -8.43$
		(iv) $r = 0.995$
		(v) $a = 14.9, \ b = 0.171$
		32%
12	Normal Distributions	(i) 0.0745
		(ii) 0.941
		(iii) 0.0478
		(iv) 0