ANNEX B

RI H2 Maths JC2 Prelim P1

Qn/No	Topic Set	Answers
1	Curve Sketching	$\mathrm{f}'(x) = 1 - \dfrac{b}{x^2}$
2	Recurrence Relation	(i) 7 (ii) $\dfrac{5}{4}$ (iii) 25
3	Binomial Series	(i) $1 - x - 2x^2 + 2x^3 + 3x^4 + \cdots$ (ii) $(-1)^{r+1}(r+1)$
4	Mathematical Induction	$\dfrac{1}{6}$
5	Curve Sketching	$x < -\dfrac{1}{2}$ or $\dfrac{1}{2} < x < \dfrac{2}{3}$
6	Vectors	(iii) $\dfrac{4}{5}\sqrt{14}; 2\sqrt{14}$ (iv) $\dfrac{5}{3}$
7	Integration and Applications	(a) $b > 4$ and $0 < a < 4$ (b) 22.3 (c) 500π
8	Complex Numbers	(a) $z = 2\mathrm{e}^{\left(\frac{5}{24}+\frac{1}{2}k\right)\pi \mathrm{i}}$, $k = 0,\ \pm 1,\ -2$ (b) $z = -3,\ 3+6\mathrm{i},\ 3-6\mathrm{i}$
9	Vectors	(i) $\pi_1 : \mathbf{r} \cdot \begin{pmatrix} 6 \\ 10 \\ -15 \end{pmatrix} = 30.$ (ii) 37.9° (iii) 75.7° (iv) $l_{XY} : \quad \mathbf{r} = \begin{pmatrix} 5 \\ 2 \\ 1 \end{pmatrix} + \lambda \begin{pmatrix} 5 \\ 3\alpha - 1 \\ -1 \end{pmatrix}, \quad \lambda \in \mathbb{R}.$ $l_{OR} : \quad \mathbf{r} = \mu \begin{pmatrix} 5 \\ 3 \\ 2 \end{pmatrix}, \quad \mu \in \mathbb{R}.$ (v) $\alpha = \dfrac{1}{3}; \ 2:3.$

10	Differentiation and Applications	(i) $x^2+1=y^2$ (iii) 2π
11	Maclaurin's Series	(i) -1 (ii) $y=1+x-\frac{x^2}{2}-\frac{x^3}{6}+\frac{x^4}{24}+\cdots$ (iii) $u=2-y^2$ (iv) $y=\sqrt{2}\sin\left(x+\frac{\pi}{4}\right)$ (v) $1+x-\frac{x^2}{2}-\frac{x^3}{6}+\frac{x^4}{24}+\cdots$