PJC 2011 JC 2 H2 End of Year Examination Paper 2

Qn/No	Topic Set	Answers
1	Systems of Equations	$T_r = \dfrac{1}{6}r^3 - \dfrac{1}{2}r^2 + \dfrac{4}{3}r$
2	Summation of Series	(i) $\alpha = \dfrac{1+\sqrt{13}}{2}$
3	Inequalities	$x \geq -\ln 5$
4	Vectors	(i) $\begin{pmatrix} 2 \\ 3 \\ 3 \end{pmatrix}$ (ii) $6\sqrt{2}$ (iii) $\theta = 64.6^0$
5	Integration Techniques Applications of Integrations	(i) $2\sqrt{4-x^2}$ (ii) $a = \dfrac{k}{4}$ (iii) $R = \dfrac{1}{2}\displaystyle\int_0^k \sqrt{4-x^2}\,\mathrm{d}x$ (iv) $\sqrt{3} + \dfrac{2\pi}{3}$
6	Complex Numbers	(i) $\lvert z-3 \rvert \geq \lvert z+1 \rvert$ (ii) $0 \leq \arg z \leq \dfrac{\pi}{3}$, z lies on OAC excluding point $'O'$ (iv) $-\dfrac{\pi}{2} < \arg\left(z - 2\sqrt{3}\mathrm{i}\right) \leq -\dfrac{\pi}{3}$
7	Sampling	
8	Correlation and Regression	(ii) $r = 0.9785$ (iii) $\ln y = 1.35553 + 0.132498\,x$ (iv) $x = 10.2$ mg
9	Probability	(i) $\dfrac{3}{20}$ (ii) $\dfrac{1}{2}$ (iii) $\dfrac{3}{8}$

10	Permutations and Combinations	(i) 100 00 (ii) 75600 (iii) 72000
11	Binomial Distributions Poisson Approximation Normal Approximation	(i) 0.00427 (ii) 0.995 (iii) 0.913
12	Hypothesis Testing	(i) $\bar{x} = 82.75$, $s^2 = 490.391$
13	Normal Distribution	(i) 0.788 (ii) 0.756
14	Poisson Distribution	(i) 0.713 (ii) $P(\bar{X} > 2) = 0.00195$