CLASS: 12	**INDIAN SCHOOL MUSCAT** **FIRST PERIODIC ASSESSMENT**	SUBJECT: MATHS
	SET - B	
QP.NO.	VALUE POINTS	SPLIT UP MARKS
1.	$gof = g(8x^3) = (8x^3)^{1/3} = 2x$ $fog = f\left(x^{1/3}\right) = 8\left(x^{1/3}\right)^3 = 8x$	1 mk 1 mk
2.	Let $x = \operatorname{cosec}\theta \;\; \therefore \; \tan^{-1}(\tan\theta) = \; \theta = cosec^{-1}\, x$	(1 + 1) mks
3.	$\cos^{-1}\left(cos\left(\pi + \frac{\pi}{6}\right)\right) = \cos^{-1}\left(-cos\frac{\pi}{6}\right)$ $= \cos^{-1}\left(cos\left(\pi - \frac{\pi}{6}\right)\right)$ $= \frac{5\pi}{6} \epsilon\, [0, \pi]$	½ + ½ ½ mk ½ mk
4.	$f(x_1) = f(x_2) \Rightarrow 2x_1 = 2x_2 \Rightarrow x_1 = x_2 \Rightarrow f$ is one-one Let $y = 2x \Rightarrow x = \frac{y}{2} \notin$ N (Eg: $y = 3$) $\Rightarrow$ f is not onto	1 mk 1 mk
5.	For proving Reflexive For proving Symmetric For proving Transitive Conclusion	1 mk 1 mk 1 ½ mk ½ mk
6.	$\tan^{-1}\left(\frac{\frac{x-1}{x-2}+\frac{x+1}{x+2}}{1-\left(\frac{x-1}{x-2}\right)\left(\frac{x+1}{x+2}\right)}\right) = \frac{\pi}{4}, \quad \frac{x^2-1}{x^2-4} < 1$ Solving to get $2x^2 - 4 = -3$ Final answer : $x = \pm\frac{1}{\sqrt{2}}$	2 mks 1 mk 1 mk
7.	Let $y = 4x^2 + 12x + 15 \; = \; (2x+3)^2 + 6 \; \Rightarrow x = \frac{\sqrt{y-6}-3}{2}$ Proving $fog = y$ and $gof = x$ $\Rightarrow f$ is invertible $\therefore \; f^{-1} = g = \frac{\sqrt{y-6}-3}{2}$	1 mk (1+1) mks ½ mk ½ mk