STD XII **MATHS UNIT TEST -2** **F.M: 20** **TIME : 45 min**

ANSWER ALL THE QUESTIONS

1. Given $A = R - \{2\}$ and $B = R - \{1\}$. if $f: A \to B$ is a mapping defined by

$f(x) = \frac{x-1}{x-2}$, $show\ that\ f\ is\ bijective.\ Also\ find\ f^{-1}(x).$ [4]

2.If the function $f : R - \left\{\frac{7}{5}\right\} \to R - \left\{\frac{3}{5}\right\}$ $be\ given\ by\ f(x) = \frac{3x+4}{5x-7}$ $and\ g: R - \left\{\frac{3}{5}\right\} \to R - \left\{\frac{7}{5}\right\}$ $be\ given\ by\ g(x) = \frac{7x+4}{5x-3}$.

Show that $gof = I_A\ and\ fog = I_B$,$where\ A = R - \left\{\frac{7}{5}\right\}\ and\ B = R - \left\{\frac{3}{5}\right\}$. [4]

3. Evaluate (a) $cos^{-1}\left(cos\frac{13\pi}{6}\right)$ [2]

(b) $\tan\left(2tan^{-1}\frac{1}{5} - \frac{\pi}{4}\right)$ [2]

4. Solve $cos^{-1}x + sin^{-1}\frac{x}{2} = \frac{\pi}{6}$. [4]

5. Evaluate $sin^{-1}\frac{4}{5} + 2tan^{-1}\frac{1}{3}$. [4]