Dept. of Mathematics – Kandi Raj College – 2nd Sem Internal – 2022

Question for PROGRAMME Course Students dated: 29.08.2022

PCC **10**

Answer any Two questions:

1. If $u = \tan^{-1}\frac{x^3+y^3}{x-y}$, then show that $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = \sin 2u$. 05

2. If $y = \tan^{-1} x$, then show that 05
$(1 + x^2)\, y_{n+2} + 2(n + 1)\, xy_{n+1} + n(n + 1)\, y_n = 0$

3. A function f: $\mathbb{R} \to \mathbb{R}$ is defined by $f(x) = \begin{cases} x, & x \in \mathbb{Q} \\ 0, & x \in \mathbb{R} - \mathbb{Q} \end{cases}$ 05
Show that 'f' is continuous at 0 and discontinuous at every other points in $\mathbb{R}$.

Question for Programme ends here……