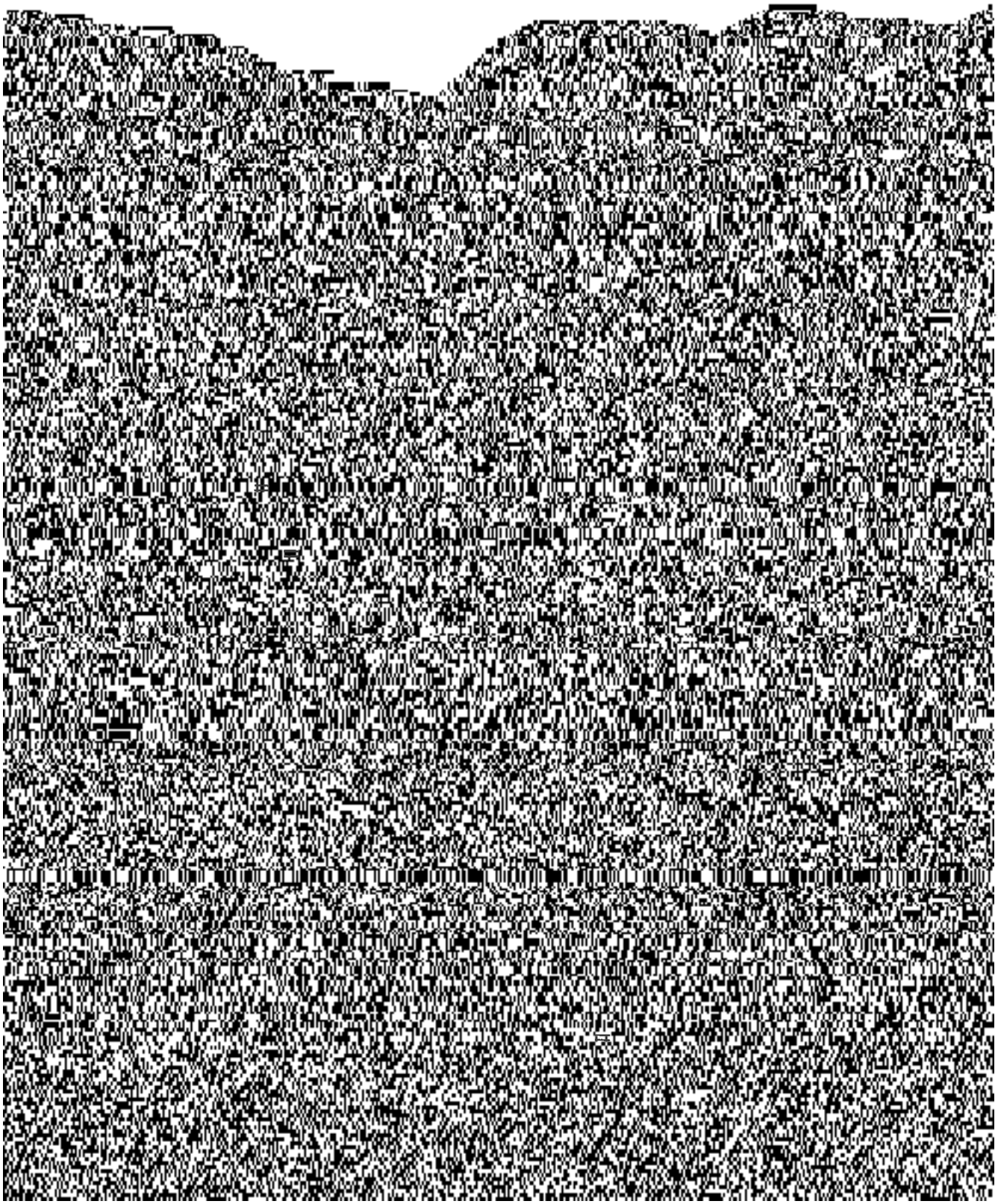

5	Solve the differential equation $y'' + 3y' + 2y = 2$, given that $y'(0) = 0$ and $y(0) = 0$ using Laplace transform. [10M]	CO2	L5
6	Find the Fourier series expansion of $f(x) = (\pi - x)^2$ on $(0,2\pi)$. [10M]	CO3	L3
	OR		
7	Find the half range cosine series for $f(x) = x$ on $(0,\pi)$. [10M]	CO3	L3
8	Find the Fourier transform of the function $f(x) = \begin{cases} 1, & \text{IxI} < a \\ 0, & \text{IxI} \geq a \end{cases}$ [10M]	CO4	L3
	OR		
9	Evaluate $\int_0^\infty \frac{x^2 dx}{(x^2+a^2)(x^2+b^2)}$ using Fourier sine transform of e^{-ax} and e^{-bx} where a,b > 0. [10M]	CO4	L3
10	Evaluate $Z^{-1}\left[\frac{6z^2}{(2z-1)(3z+1)}\right]$ using convolution method. [10M]	CO5	L3
	OR		
11	Using Z-transform, find the response of the system $u_{n+2} - 3u_{n+1} - 10\,u_n = 0$ *given* $u_0 = 1$ *and* $u_1 = 0$. [10M]	CO5	L3