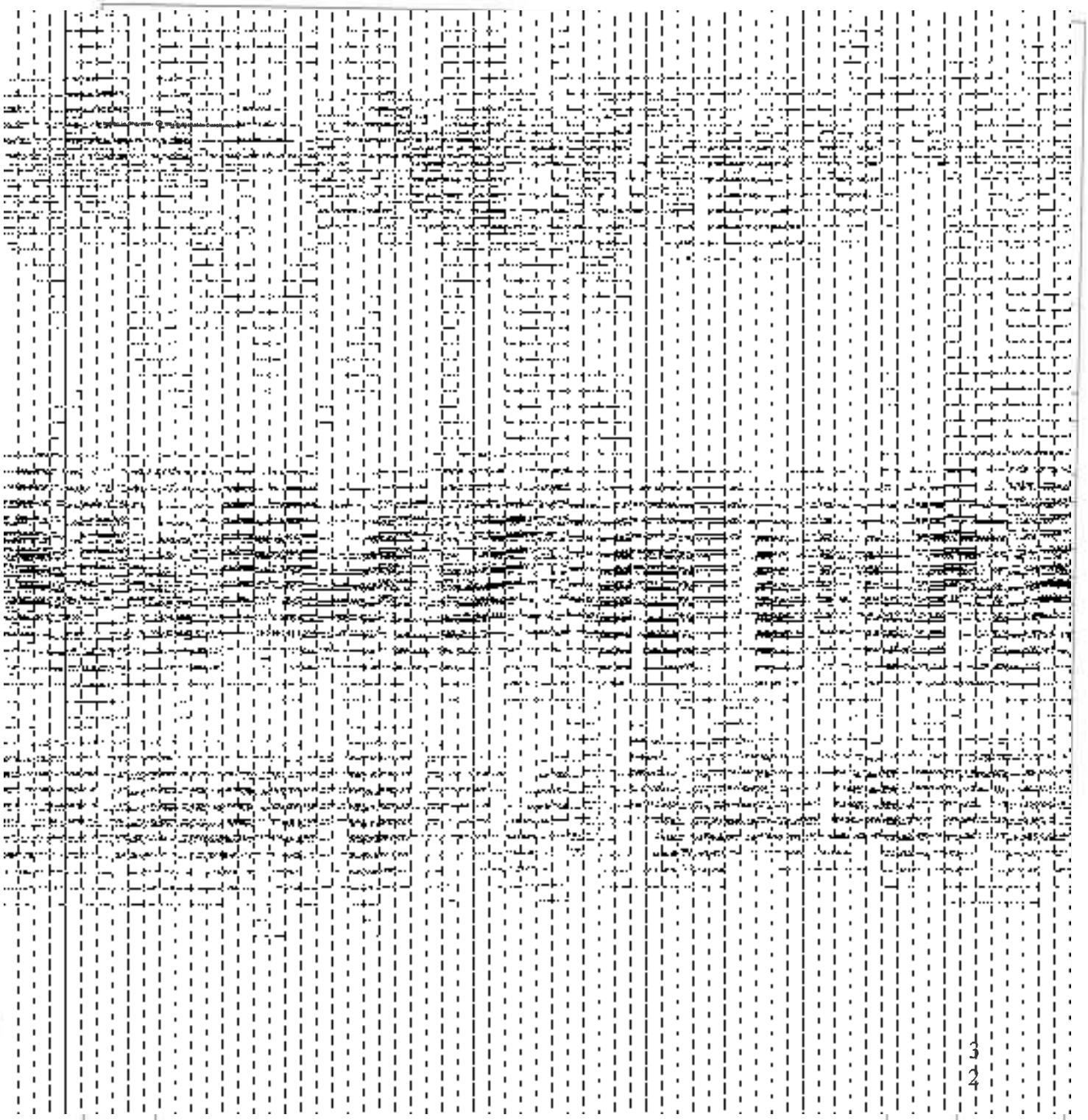

	OR		

5	Solve the initial value problem $y'' + 3y' + 2y = e^{-t}, y(0) = 0, y'(0) = -1$ using Laplace transforms. [10M]	2	3
6	Obtain a half range cosine series for $f(x) = \begin{cases} kx, & 0 \le x \le \frac{L}{2} \\ k(L-x), & \frac{L}{2} \le x \le L \end{cases}$ [10M]	4	4
	OR		
7	Obtain the Fourier series expansion of f(x) given that f(x) = kx (π–x) in 0 < x < 2π where k is a constant. [10M]	3	3
8	Express the function $f(x) = \begin{cases} 1, & \lvert x\rvert \le 1 \\ 0, & \lvert x\rvert > 1 \end{cases}$ as a Fourier integral. [10M]	5	3
	OR		
9	A. Find the Fourier transform of $f(x) = \begin{cases} 0 & for\ x < a \\ 1 & for\ a < x < b \\ 0 & for\ x > b \end{cases}$ [5M] B. Find the Fourier cosine transform of $[6e^{-4x} + 8e^{-2x}]$ [5M]	5 5	3
10	Find $Z^{-1}\left[\frac{5z}{(2-z)(3z-1)}\right]$. [10M]	6	2
	OR		
11	Using Z transform solve $u_{n+2} - 2u_{n+1} + u_n = 3n + 5$ with $u_0 = 0, u_1 = 1$ [10M]	6	3