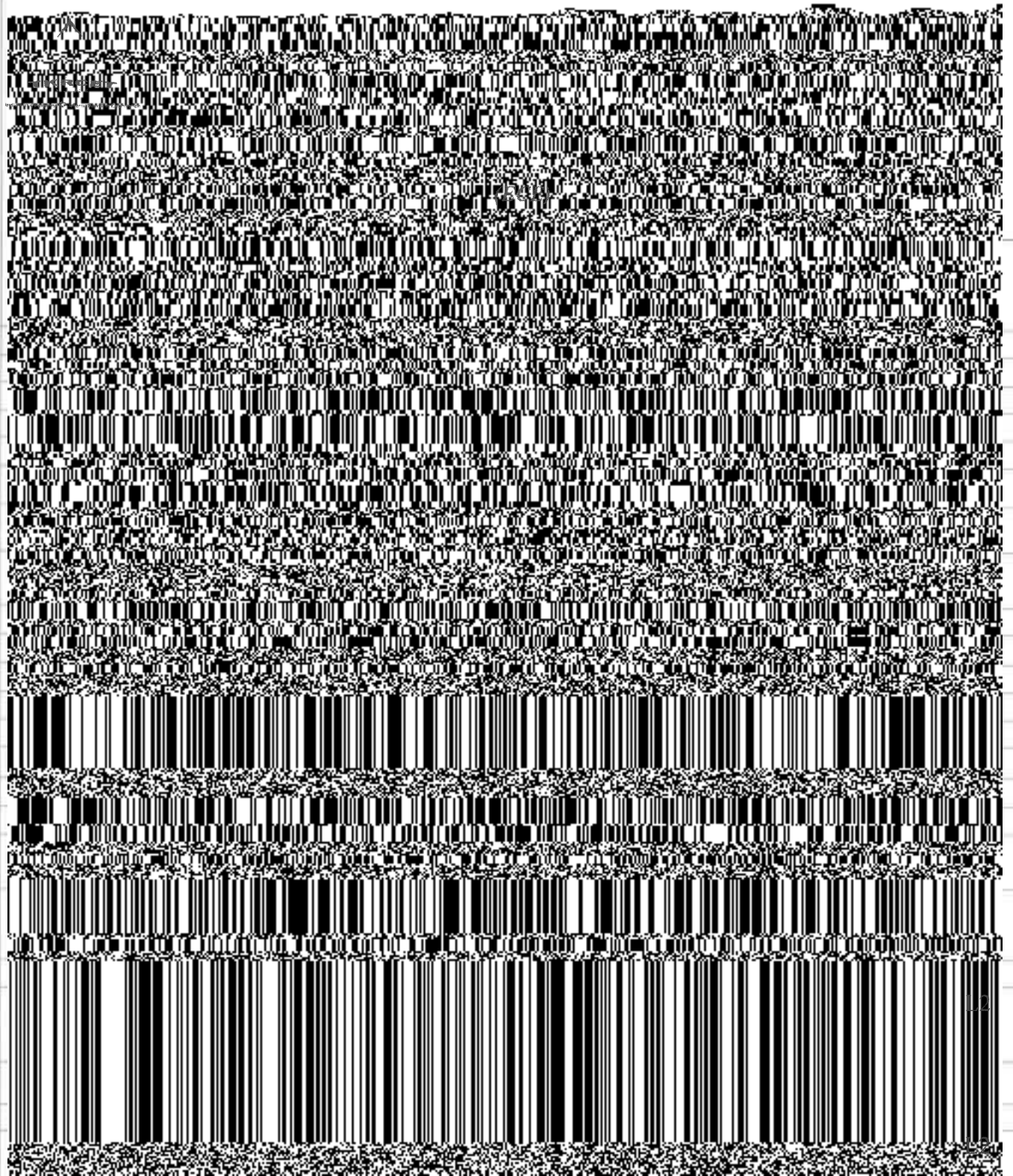




17	If $\vec{r}$ is the position vector of any point in space, then find $\nabla \cdot \nabla(\log r)$.	10M	4	L2
	OR			
18	a) A vector field is given by $\vec{F} = (x^2 - y^2 - x)\hat{i} + (2xy + y)\hat{j}$ Show that the field is irrotational and find its Scalar potential b) Prove that $\text{div curl } \vec{f} = 0$	5M 5M	4	L2
19	Verify stokes theorem for $F = y^2 \hat{i} + y \hat{j} - 3x \hat{k}$ and S is the upper half of the sphere $x^2 + y^2 + z^2 = a^2$ and $z \geq 0$.	10M	5	L2
	OR			
20	Find the work done by $\vec{f} = 3x^2\hat{i} + y\hat{j} + 2z\hat{k}$ along the straight line from (0,0,0) to (2,1,3).	10M	5	L2