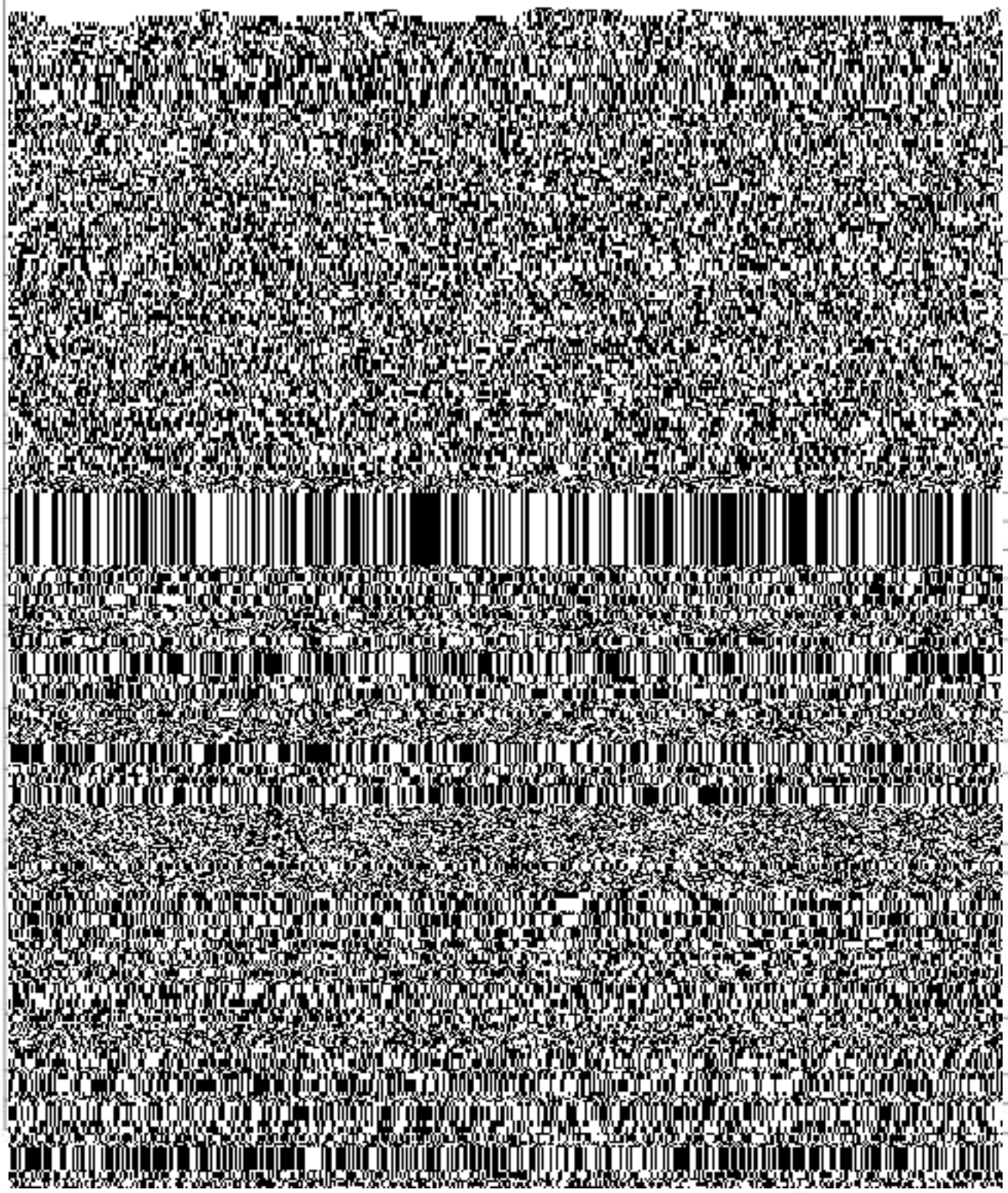
R20 Regulation *Subject code:3B2AI*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)



15	Find the general solution of (i) $p\,x + q\,y = z$ [5M] (ii) $y^2 z\,p + x^2 z\,q = y^2 x$ [5M]	3	L2
	OR		
16	Solve $z = p^2 + q^2$ [10M]	3	L2
17	Prove that the vector $(x^2 - yz)i + (y^2 - zx)j + (z^2 - xy)k$ is irrotational and find its scalar potential. [10M]	4	L2
	OR		
18	a) Find the values of a and b so that the surface $ax^2 - byz = (a+2)x$ will be orthogonal to the surface $4x^2y + z^2 = 4$ at the point (-1,1,2) [5M] (b) Prove that curl $(\bar{a} \times \bar{b}) = \bar{a}$ div $\bar{b} - \bar{b}$ div $\bar{a} + (\bar{b}.\nabla)\,\bar{a} - (\bar{a}.\nabla)\,\bar{b}$ [5M]	4	L2
19	Use Greens theorem for $\int_c (3x^2 - 8y^2)dx + (4y - 6xy)\,dy$ where 'c' is the region bounded by x=0, y=0,and x+y=1. [10M]	5	L2
	OR		
20	Verify stokes theorem for $F = y^2 I + y\,j - 3\,x\,k$ and S is the upper half of the sphere $x^2 + y^2 + z^2 = a^2$ and $z \geq 0$. [10M]	5	L2