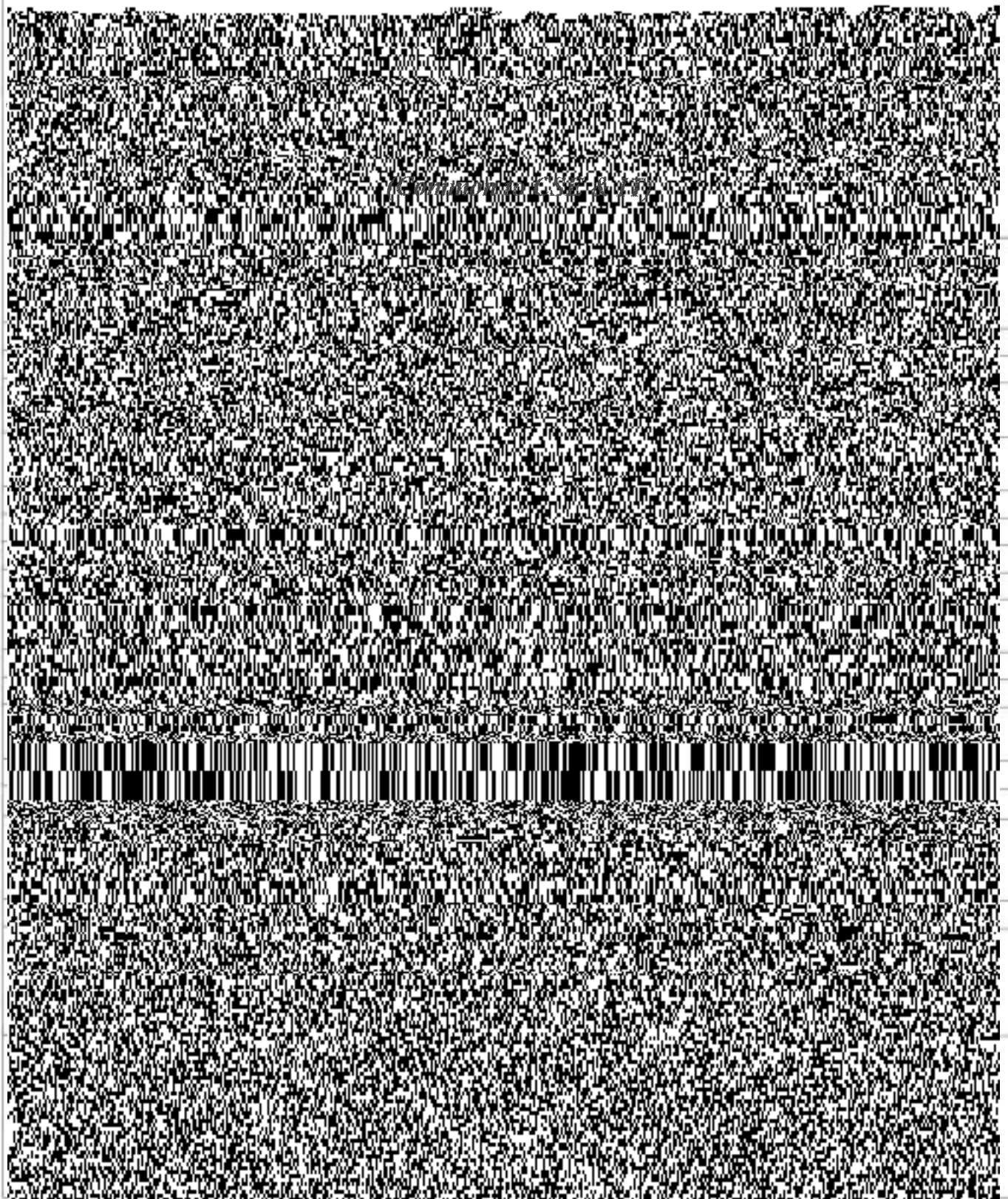




	OR			
14	State and Prove Division algorithm theorem using well ordering principle.	10M	2	L2
15	a) Obtain CNF of $((P \rightarrow Q) \wedge \sim Q) \rightarrow \sim P$ b) Obtain DNF of $(Q \rightarrow P) \wedge (\sim P \wedge Q)$	5M 5M	3	L2
	OR			
16	a) Find PDNF by constructing the PCNF of $(Q \vee P) \wedge (Q \vee R) \wedge (\sim (P \vee R) \vee \sim Q)$ b) Test for validity of the following argument "No Engineering student is bad in studies" "Anil is not bad in studies" Therefore "Anil is an engineering student"	5M 5M	3	L2
17	a) Prove that set of non singular matrices of order 2×2 is a group but not an abelian group under multiplication. b) If 'G' is a group then prove that $(a^{-1})^{-1} = a$	5M 5M	4	L2
	OR			
18	a) Prove that $G = \{0,1,2,3,4,5,6\}$ is an abelian group of order 7 with respect to addition modulo 7. b) Define subgroup, normal subgroup, Quotient group, left and right cosets with an example for each.	5M 5M	4	L2
19	a) State and prove Euler's theorem on plane graphs. b) Define isomorphism of graphs. What are the steps followed in discovering the isomorphism	5M 5M	5	L2
	OR			
20	a) Define graph coloring and chromatic number of a graph and find the chromatic number of i) $K_{3,3}$ ii) cycle with even number of vertices b) Define the following terms. Give one suitable example for each i) Euler circuit ii) Hamiltonian graph	5M 5M	5	L2