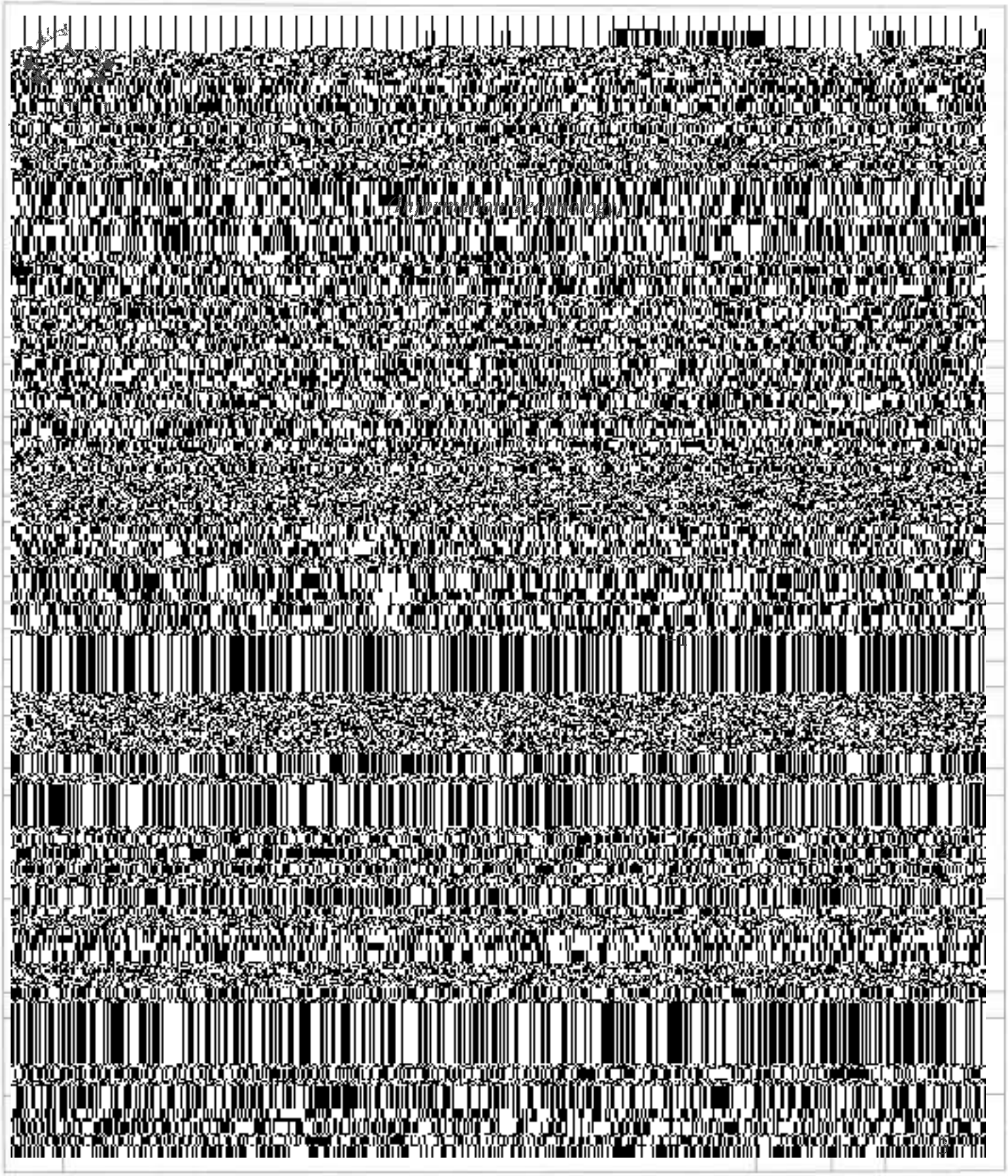
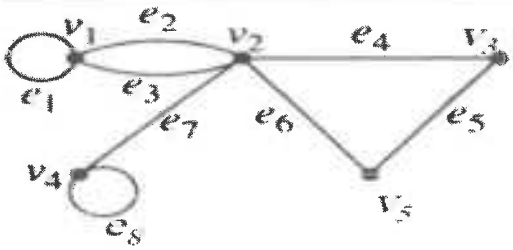
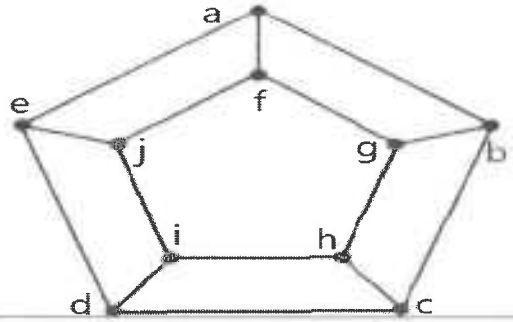
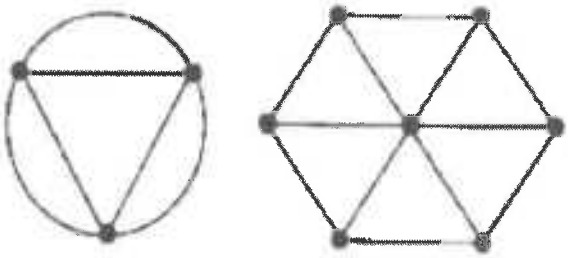


	 b) Define Hamiltonian Graph. Find the Hamiltonian cycle of the following graph:  	5M 5M		
	OR			
7	a) Explain about DFS algorithm. b) Find the minimum number of colors needed to paint the each of the below graphs. 	5M 5M	3	3
8	Let G = R – {0}. A binary operation * be defined on G as $a*b=\frac{ab}{3}$ for all $a,b\in G$. Prove that (G,*) is a group.	10M	4	3
	OR			
9	Define Semi group. Determine whether the given table with respect to operation * on the set A={a,b} is semi group or monoid. * a b a a b b b b	10M	4	2

10	Define equivalence relation. Let X={1,2,3,4,5,6,7} and R={(x, y) /x-y is divisible by 3} on X. Show that R is an equivalence relation.	10M	5	2
	OR			
11	a) Let A={a,b,c} and define a relation R as:R={(a,a),(b,b),(c,c),(a,b),(b,c)} i) Is R a compatibility relation? ii) Is it a partial order? b) Let f, g and h are functions from R to R defined as $f(x) = 2x^3 - 7$, $g(x) = 3x^2$ and $h(x) = 5x + 4$. Find (i) ((gof)oh)(1) and (ii) (fog)(2)	5M 5M	5	3