

Name ..... row. .... col....

1.	2.	3.	4.	5.	$\Sigma$ .

1. Put  $O$  or  $\Omega$  a)  $4^{\lg_3 n} = \dots (4^{\ln n})$

b)  $(\ln n)^{\ln n} = \dots (\ln(n^{\ln n}))$

2. Use generating functions to find  $a_n$  if:  $a_n = 2a_{n-1} + 3a_{n-2}$  and  $a_0 = 0, a_1 = 4$ .

3. Find a coefficient of  $x^{42}$  in  $(x + x^2 + x^3 + x^4 + x^5)(x^2 + x^4 + x^6 + \dots)^6$ .

4. A code is given by generator matrix:  $\begin{bmatrix} 1011001 \\ 0000111 \\ 0101011 \end{bmatrix}$ . This code detects ... errors and corrects ... errors.  
Is it perfect? .... Find the parity check matrix. What was sent if at most one error has arisen during the transmission and the received word is a) 0101100 b) 0110010