**MATHS**

Matrix multiplication

Inverse

Eigen Value & Eigen Vector

Derive a differential equation

First order and second order differential equation.

Explain why a fast spinning wheel looks as if it is going backwards

Arithmetic progression and probability.

matrix identities, inverse of matrix, vector manipulation, limits: all the basics, some other linear algebra questions

Is this matrix invertible? (The interviewer gave me a matrix and I had to tell him if it was invertible or not and explain why)

Inverse and Invertibility of Matrix. What are the conditions for inverse? Ques on limits. What is Integral?What is derivative? How to find whether a number is even or odd in a line?

a. Rank of 3 by 3 matrix.

b. How to make a non-invertible matrix a singular matrix.

c. Problem using LMV theorem.

d. Limits.

Was shown a function on the board and asked to draw its derivative

Was given a parabola y = 12 - x^2 (symmetric about Y axis) and asked to find the max area of a rectangle that rests on X-axis and is inside the parabola

Set/ Venn diagram questions.

1) Differentiation, Integration -Area Under a curve.

2) Matrix Inversion and symmetry, rank of matrix

3) Eigen values of a matrix

4) partial fractions

geometric progression and athmatic

**PROBABLITY** (5 - 6qns) :(15-20 mins)

1. flipping cards probability

2. ant collision probability

3. no of matches in knockout tournament

4. going from one street to another, max probability of dropping a packet in between

5. If there are 400 people in a room, what is the probability of at least 2 people sharing the same birthday?

probability, pigeonhole principle

Probability of two people having birthday on same day.

**ALGORITHMS**

what is the meaning of O(n).

GCD greatest common divider of two number?

What is the time complexity and space complexity of an algorithm?

Birthday Paradox, Logic (40 in Class, 22 people take Math, 12 take Math and English, how many take only English?), Algorithm for finding GCD (I did not know this at all...), run times for various sorting algorithms