21BDS0340

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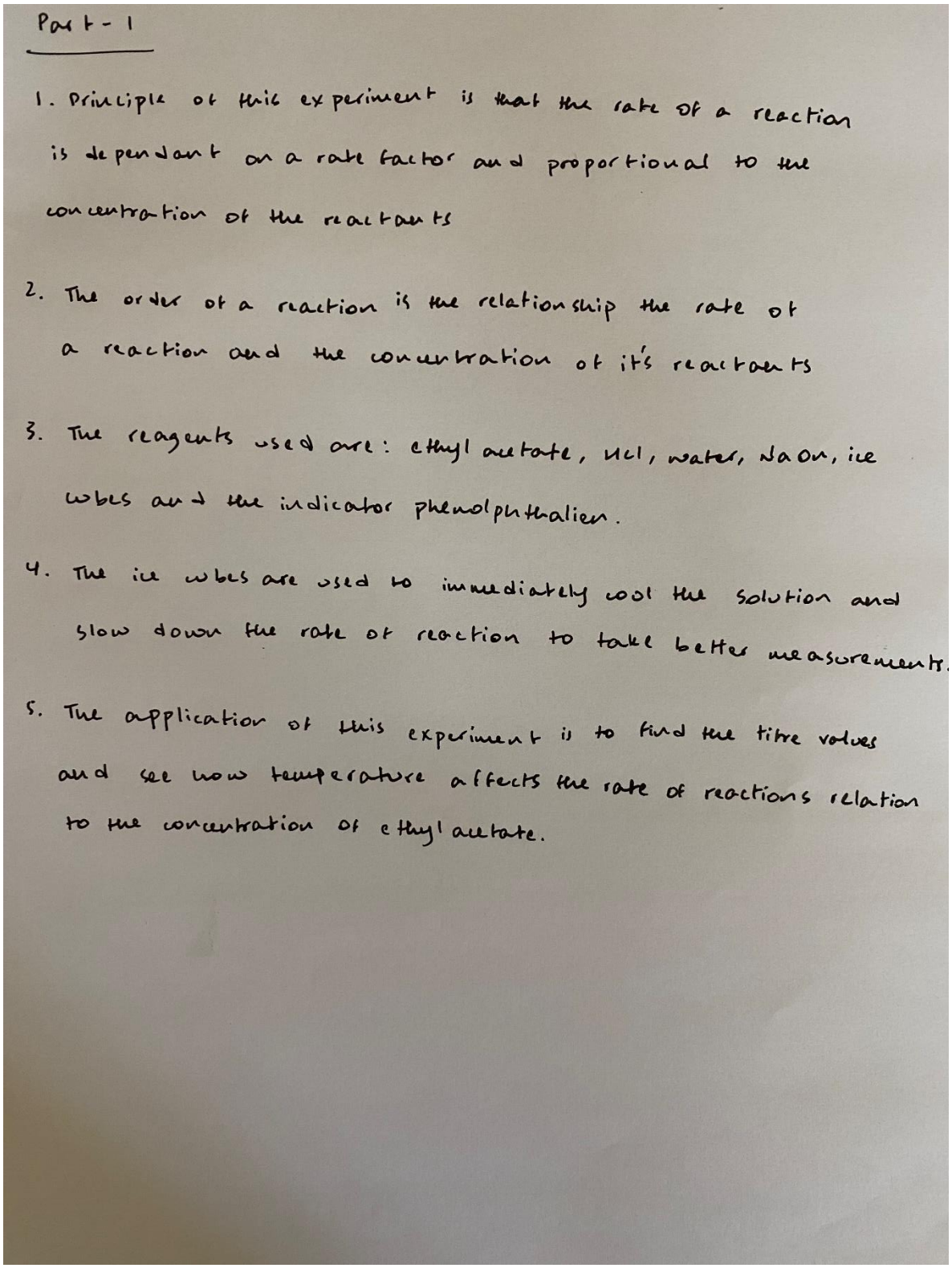
Chemistry Lab

FAT Exam

Question Paper – Data Set 10

Part I



Part - 1

1. Principle of this experiment is that the rate of a reaction is dependant on a rate factor and proportional to the concentration of the reactants

2. The order of a reaction is the relationship the rate of a reaction and the concentration of it's reactants

3. The reagents used are: ethyl acetate, HCl, water, NaOH, ice cubes and the indicator phenolphthalien.

4. The ice cubes are used to immediately cool the solution and slow down the rate of reaction to take better measurements.

5. The application of this experiment is to find the titre values and see how temperature affects the rate of reactions relation to the concentration of ethyl acetate.

Part II

Part II

S. No.	Time (min)	Vol. of NaOH (mL)	$V_t = V_\infty - V_t$ (mL)	$\log(V_t)$	$K = \frac{2.303}{t} \log\left(\frac{V_\infty - V_0}{V_t}\right)$
1	0	27.3	24.7	1.393	0
2	10	27.8	24.2	1.384	0.00205
3	20	28.3	23.7	1.375	0.00207
4	30	28.5	23.5	1.371	0.00167
5	40	29.1	22.9	1.360	0.00189
6	50	29.5	22.5	1.352	0.00187
7	∞	52.0	–	–	–

Average $K = \frac{0.00205 + 0.00207 + 0.00167 + 0.00189 + 0.00187}{5}$

$= 0.00191 \text{ min}^{-1}$

Result

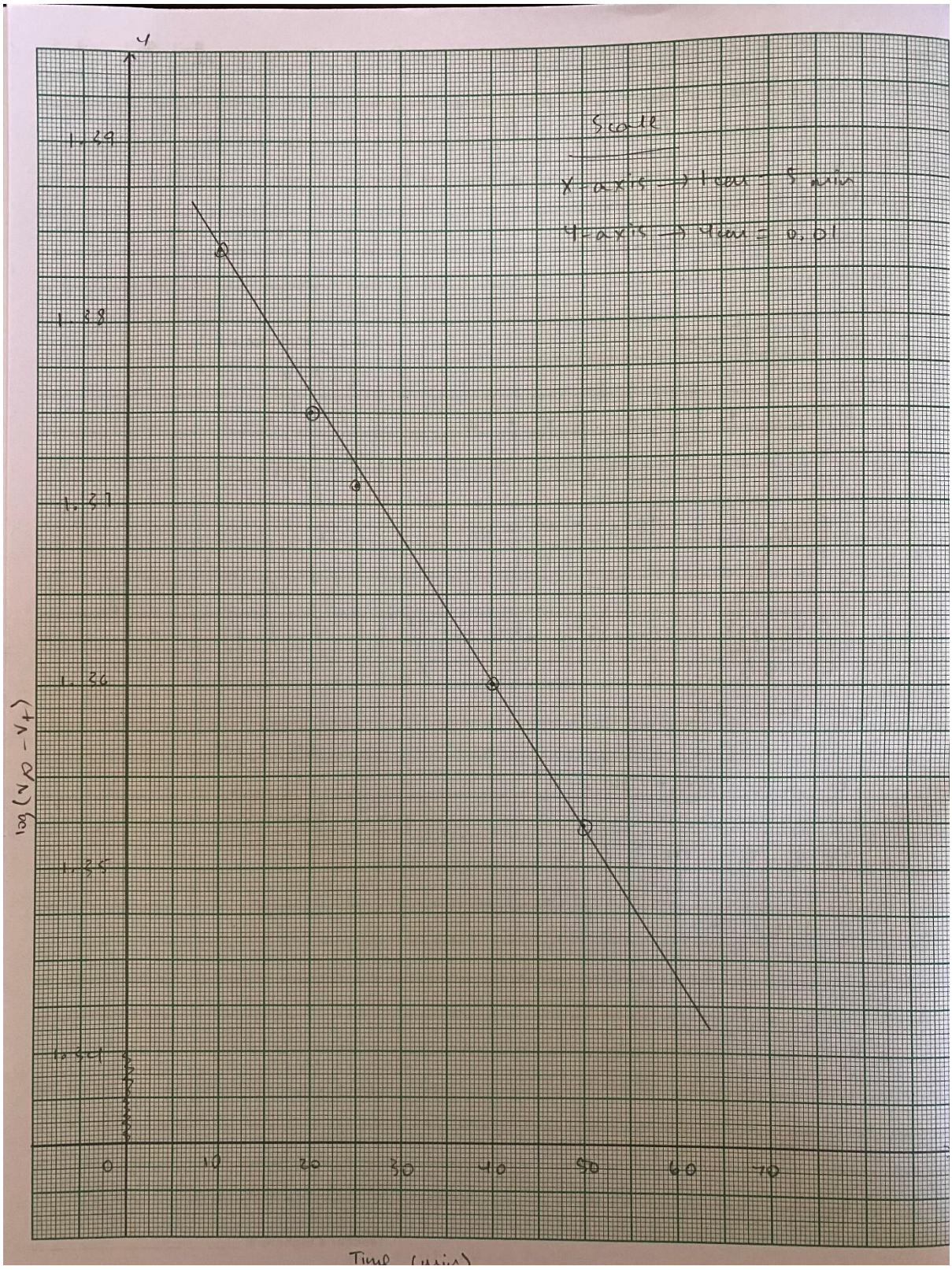
Calculate value = 0.00191 min^{-1}

Graphical value = 0.00189 min^{-1}

Molecularity = 2 (bimolecular)

order of reaction = first order (pseudo 1st order)

Graph


y
Scale
X - axis → 1 cm = 5 min
Y - axis → 1 cm = 0.01
1.29
1.28
1.27
1.26
1.25
1.24
log (V∞ - Vt)
0
10
20
30
40
50
60
70
Time (min)