V.S.R Govt. Degree & P.GCollege-Movva
Affiliated to Krishna University, Machilipatnam.
Department of Electronics

S.No.	Subject	Sem	Date	Topic	No of students	Name of the Lecturer
				2018-2019		
1	Electronics	I	02-07-2018	Average Value and RMS Value of Alternating Current	23	S.KIRANMAYI
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	"	I	04-07-2018	Branch current method,Nodal Analysis	23	"
	"	I	04-07-2018	Star to Delta & delta to star	23	"
	"	I	20-07-2018	Thevenins Theorem	23	"
	"	I	20-07-2018	Maximum Power Transfer Theorem	23	"
	"	I	21-07-2018	Frequency response of RC & RL circuits	23	"
	"	I	21-07-2018	Passive Differentiating and Integrating circuits	23	"
	"	I	28-08-2018	parallel Resonance circuits	23	"
	"	I	28-08-2018	Tank circuits - LC Oscillations	23	"
2	Electronics	II	30-11-2018	Working of forward and reverse bias conditions of PN junction diode	18	S.KIRANMAYI
	"	II	30-11-2018	Construction, Working, V-I Characteristics of Zener Diode	18	"
	"	II	01-12-2018	Construction, Operation, Characteistics of CE Configuration	18	"
	"	II	01-12-2018	Voltage Divider Bias	18	"
	"	II	07-02-2019	Construction, Operation, Characteistics of JFET	18	"
	"	II	07-02-2019	Structure and Working ,Characteristics of SCR	18	"
	"	II	26-02-2019	Structure and operation of LDR	18	"
	"	II	26-02-2019	Light Emitting Diode	18	"
	"	II	13-02-2019	Construction and working of Full wave Bridge rectifier	18	"
	"	II	13-02-2019	Principle and working of SMPS	18	"
3	Electronics	III	02-07-2018	Number conversion from one no.system to another no.system	16	S.KIRANMAYI
	"	III	02-07-2018	1's,2's,9's,10's complements of addition,subtraction	16	"

	"	III	04-07-2018	Demorgans Laws	16	"
	"	III	04-07-2018	Karnaugh map method 4,5 variables	16	"
	"	III	20-07-2018	Half Adder and Full Adder	16	"
	"	III	20-07-2018	TTL Logic families	16	"
	"	III	21-07-2018	Master- Slave JK Flip Flop	16	"
	"	III	21-07-2018	Mod 16 Asynchronous Counter	16	"
	"	III	28-08-2018	Memory operation of ROM,RAM	16	"
	"	III	28-08-2018	PLA and PAL	16	"
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	"	IV	30-11-2018	working of Inverting and Non Inverting OP-Amp	16	"
	"	IV	01-12-2018	Op-Amp as Voltage Regulator	16	"
	"	IV	01-12-2018	Op-Amp as Square wave generators	16	"
	"	IV	07-02-2019	BCD to Seven Segment Display decoder	16	"
	"	IV	07-02-2019	Universal Shift Register	16	"
	"	IV	26-02-2019	Successive Approximation type ADC	16	"
	"	IV	26-02-2019	R-2R Ladder network DAC	16	"
	"	IV	13-02-2019	Digital clock	16	"
	"	IV	13-02-2019	Universal Asynchronous receiver transmitter	16	"
5	Electronics	V P5	02-07-2018	Functional Block diagram of Intel 8085	22	S.KIRANMAYI
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	"	V P6	04-07-2018	DSBSC generation	22	"
	"	V P6	20-07-2018	FET Reactance modulator	22	"
	"	V P6	20-07-2018	Comparision Between AM,FM and PM	22	"
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	"	V P6	28-08-2018	Delta modulation	22	"
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7	Electronics	Cluste	30-11-2018	Block diagram of measurement system	22	S.KIRANMAYI
	"	Cluste	30-11-2018	working of ammeter	22	"
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	"	Cluste	01-12-2018	Basic Principles of phase locked loop	22	"
	"	Cluste	07-02-2019	Function generator	22	"
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	"	Cluste	13-02-2019	Block diagram of PLC's	22	"
8	Electronics	Cluste	30-11-2018	Need for semiconductor power devices	22	S.KIRANMAYI
	"	Cluste	30-11-2018	Structure of SCR	22	"
	"	Cluste	01-12-2018	Structure,working and V-I Characteristics of Diac	22	"
	"	Cluste	01-12-2018	Differences between SCR and Diac	22	"
	"	Cluste	07-02-2019	Step- down chopper	22	"
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	"	Cluste	26-02-2019	parallel capacitor commuted invertors with reactive feedback	22	"
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	"	I	06-09-2019	Average Value and RMS Value of Alternating Current	9	"
	"	I	06-09-2019	Tank circuits - LC Oscillations	9	"
	"	I	16-09-2019	Star to Delta & delta to star	9	"
	"	I	16-09-2019	parallel Resonance circuits	9	"
	"	I	26-09-2019	Thevenins Theorem	9	"
	"	I	26-09-2019	Passive Differentiating and Integrating circuits	9	"
	"	I	21-09-2019	Maximum Power Transfer Theorem	9	"
	"	I	21-09-2019	Frequency response of RC & RL circuits	9	"
10	Electronics	II	06-02-2020	Working of forward and reverse bias conditions of PN junction diode	8	S.KIRANMAYI
	"	II	06-02-2020	Construction, Operation, Characteistics of CE Configuration	8	"
	"	II	11-02-2020	Construction, Working, V-I Characteristics of Zener Diode	8	"
	"	II	11-02-2020	Construction, Operation, Characteistics of JFET	8	"
	"	II	12-02-2020	Voltage Divider Bias	8	"
	"	II	12-02-2020	Structure and operation of LDR	8	"
	"	II	13-02-2020	Structure and Working ,Characteristics of SCR	8	"
	"	II	13-02-2020	Construction and working of Full wave Bridge rectifier	8	"
	"	II	07-03-2020	Light Emitting Diode	8	"
	"	II	11-03-2020	Principle and working of SMPS	8	"
11	Electronics	III	03-09-2019	Number conversion from one no.system to another no.system	19	S.KIRANMAYI
	"	III	03-09-2019	Demorgans Laws	19	"
	"	III	06-09-2019	1's,2's,9's,10's complements of addition,subtraction	19	"
	"	III	06-09-2019	Half Adder and Full Adder	19	"
	"	III	16-09-2019	Karnaugh map method 4,5 variables	19	"
	"	III	16-09-2019	Master- Slave JK Flip Flop	19	"
	"	III	26-09-2019	TTL Logic families	19	"

	"	III	26-09-2019	Memory operation of ROM,RAM	19	"
	"	III	21-09-2019	Mod 16 Asynchronous Counter	19	"
	"	III	21-09-2019	PLA and PAL	19	"
12	Electronics	IV	06-02-2020	Block diagram of OP-Amp	19	S.KIRANMAYI
	"	IV	06-02-2020	Op-Amp as Voltage Regulator	19	"
	"	IV	11-02-2020	Op-Amp as Square wave generators	19	"
	"	IV	11-02-2020	working of Inverting and Non Inverting OP-Amp	19	"
	"	IV	12-02-2020	Universal Shift Register	19	"
	"	IV	12-02-2020	Successive Approximation type ADC	19	"
	"	IV	13-02-2020	BCD to Seven Segment Display decoder	19	"
	"	IV	13-02-2020	Successive Approximation type ADC	19	"
	"	IV	07-03-2020	R-2R Ladder network DAC	19	"
	"	IV	11-03-2020	Digital clock	19	"
13	Electronics	V P5	03-09-2019	Functional Block diagram of Intel 8085	13	S.KIRANMAYI
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	"	V P5	21-09-2019	Differences between I/O mapped and memory mapped I/O	13	"
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	"	V P6	16-09-2019	FET Reactance modulator	13	"
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	"	V P6	21-09-2019	Pulse amplitude modulation	13	"
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	"	I	18-12-2020	Half wave and full wave rectifiers	27	"
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16	Electronics	II	11-01-2021	Decimal,binary,octal,hexa decimal number system	25	S.KIRANMAYI
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	"	II	15-02-2021	Half adder and Full Adder	25	"
	"	II	19-02-2020	Multiplexer and demultiplexer	25	"
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17	Electronics	III	19-11-2020	Block diagram of OP-Amp	8	S.KIRANMAYI
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27	Electronics	Cluste	02-02-2022	Block diagram of measurement system	14	S.KIRANMAYI
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VSR GOVERNMENT DEGREE & PG COLLEGE, MOVVA

DEPARTMENT OF CHEMISTRY

DATE : 13/6/23 CLASS : II BSc SEM : IV TOPIC : Transport number

NAME OF THE LECTURER : Smt. M.NAGAPARAMESWARI

Name of the student :

B. Naga Lalitha. ASSIGNMENT- 01

13/6/23

Q. What are transport numbers. Describe Hittorf's method for the determination of transport number.

ANSWER : Transport number :- "The fraction of the current carried by an ion is called as its transport number". If n_a and n_c are the transport number of anion and cation respectively.

$$\text{Transport number of anion } (n_a) = \frac{\text{Current carried by an anion}}{\text{Total current passed through the solution}}$$

$$\text{and transport number of cation } (n_c) = \frac{\text{Current carried by the cation}}{\text{Total current passed through the solution.}}$$

The transport number of an ion depends upon the speed with which it moves.

Thus fall of concentration around the electrode is proportional to the speed of ions moving away from that electrode.

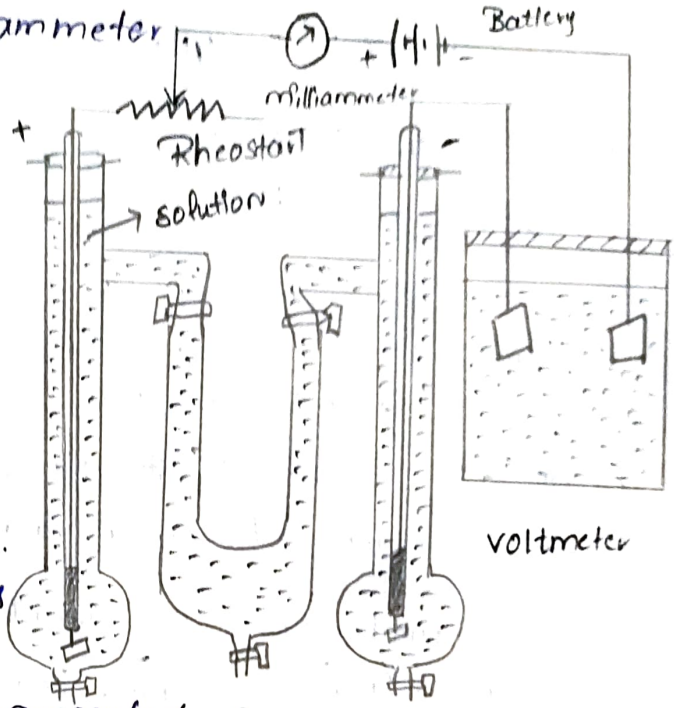
$$n_c = \frac{\text{fall of concentration around the anode}}{\text{Total fall of concentration.}}$$

$$\text{Similarly } n_a = \frac{\text{fall of concentration around the cathode}}{\text{Total fall of concentration}}$$

and $n_a + n_c = 1$.

Experimental determination of transport number by Hittorf's method: The Hittorf's apparatus consists of two vertical glass tubes connected by a U-tube in the middle. The end tubes

containing the anode and cathode compartments. The tubes are provided with stop clock at the bottom. The electrodes are metallic and sealed into glass tubes. The apparatus is connected in series with a voltmeter, variable resistance a battery and also a milli ammeter.



Suppose it is required to determine the transport numbers of silver and nitrate ions in silver nitrate. The Hittorf's apparatus is filled with a standard solution of silver nitrate. Silver electrode & voltmeter are used in the process. A steady current of 0.01 amperes is passed for about 3 hours. During electrolysis, silver is transported from the anode compartment towards the cathode. In the anode compartment, nitrate ions attacks silver anode. when it dissolves to form silver nitrate.

Calculation :-

Before electrolysis "a" grams of $AgNO_3$ sol contains "c" gm of Ag

After electrolysis, it contains "b" gm of Ag.

Increase in the weight of Ag in anode compartment = $b - c = w$

weight of silver deposited in the voltmeter = W gm

fall in concentration due to the migration of Ag^+ ions = $W - w$ gms

Transport number of Ag^+, $n_{Ag^+} = \frac{W-w}{W}$

so transport number of nitrate ion = $1 - n_{Ag^+}$

Sfate &

VSR GOVERNMENT DEGREE & PG COLLEGE, MOVVA

DEPARTMENT OF CHEMISTRY

DATE : 5/6/23 CLASS : II BSC SEM : IV TOPIC : order of a reaction.

NAME OF THE LECTURER : Smt. M.NAGAPARAMESWARI

Name of the student :-
K. pusa

ASSIGNMENT- 01

Q. what is order of a reaction. Describe varies methods used for determining the order of reaction.

ANSWER : order of a reaction :- "The order of a reaction is given by the number of atoms (or) molecules whose concentrations alter during the chemical change." Thus the order of a reaction can be defined by the sum of the power of the concentrations in the rate equation.

Eg :- 1) Decomposition of hydrogen peroxide is 1st order.

$$H_2O_2 \longrightarrow H_2O + \frac{1}{2}O_2$$

2) Acid catalysed ester hydrolysis is 1st order.

$$CH_3COOC_2H_5 + H_2O \xrightarrow{H^+} CH_3COOH + C_2H_5OH$$

3) SN^2 reaction is 2nd order

$$CH_3Cl + NaOH \longrightarrow CH_3-OH + NaCl$$

4) formation of hydrogen iodide is 2nd order.

$$H_2 + I_2 \longrightarrow 2HI$$

methods of determining the order of a reaction :-

i) Integration or substitution method :- In this method, known amounts of reactants are mixed and the progress of the reaction is determined time to time by analysis. The data thus obtained the values of t, a, a − x, x are substituted in the kinetic equations of first order, second order and third order.

$$k_1 = \frac{2.303}{t} \log \frac{a}{a-x} \quad \text{(first order)}$$

$$k_2 = \frac{1}{at} \times \frac{x}{a-x} \quad \text{(second order)}$$

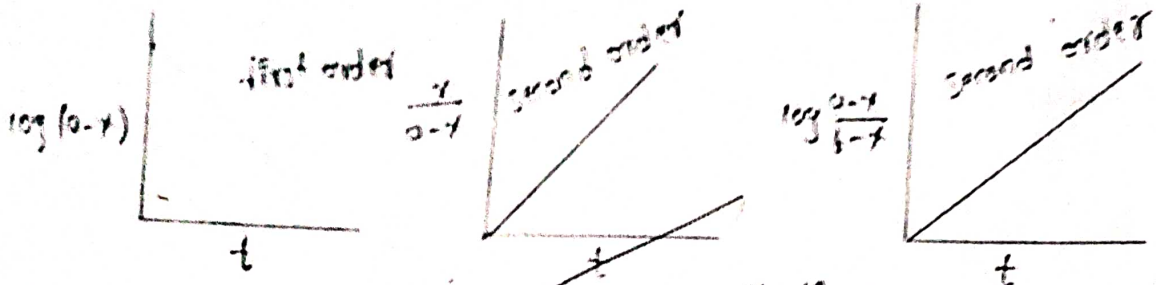
$$k_2 = \frac{2.303}{t(a-b)} \log \frac{b(a-x)}{a(b-x)} \qquad k_3 = \frac{1}{2t}\left[\frac{1}{(a-x)^2} - \frac{1}{a^2}\right] \quad \text{(third order)}$$

The equation which gives constant value of rate constant indicates the appropriate order of the reaction

i. Graphical method:- In a straight line is obtained by plotting log (a-x) against time is of first order reaction.

ii. A straight line is obtained by plotting $\frac{x}{a-x}$ against time is second order reaction. In which the concentrations of reactants are equal.

iii. A straight line is obtained by plotting $\log\frac{a-x}{b-x}$ against time also is of second order in which the concentration of reactants are not equal.



iii) Half life method or fractional change method:- The time for 50% change in concentration of the reactants is called time for half change.

It has been proved that the time (t) required to complete half of the reaction is independent of initial concentration for a first order reaction.

i.e $t \propto \frac{1}{a^0}$ --- (first order)

The time (t) required to complete half of the reaction is inversely proportional to the initial concentration for a second order reaction.

i.e $t \propto \frac{1}{a}$ --- (second order).

The time (t) required to complete half of inversely proportional to square of initial concentration for a third order reaction.

i.e $t \propto \frac{1}{a^2}$ --- (third order).

In general, the time (t) required to complete for order reaction puts as

$t \propto \frac{1}{a^{n-1}}$ (nth order).

Then $t_1 \propto \frac{1}{a_1^{n-1}}$ and $t_2 \propto \frac{1}{a_2^{n-1}}$ $\quad \frac{t_1}{t_2} = \left[\frac{a_2}{a_1}\right]^{n-1}$ where n is the order of reaction.

iv. Ostwald's isolation method:- This method involves by taking of all the reactants in large amounts except one. so that concentration remains constant through out this change. The order of the reaction is determined with respect to isolated reactant which is not taken in large amount. The experiment is repeated by isolating each reactant in turn. The total sum of the order obtained in each case gives the order of reaction

eg:- $2FeCl_3 + SnCl_2 \longrightarrow 2FeCl_2 + SnCl_4$.

In the first experiment, the reactant $FeCl_3$ is taken in large quantity. the order of reaction with respect to $SnCl_2$ is first order.

In the second experiment, the reactant $SnCl_2$ is taken in large quantity. the order of reaction with respect to $FeCl_3$ is second order.

Thus over all order of reaction is (1+2) = 3 i.e third order.