

KENDRIYA VIDYALAYA NO. 1 SHAHIBAUG AHMEDABAD
SCHOOL LEVEL EXAMINATION: AUGUST 2016
CLASS: XII
SUBJECT: CHEMISTRY

TIME: 3 Hrs

M M: 70

General Instructions :

- (i) *All questions are compulsory.*
- (ii) *Questions number 1 to 5 are very short answer questions and carry 1 mark each.*
- (iii) *Questions number 6 to 10 are short answer questions and carry 2 marks each.*
- (iv) *Questions number 11 to 22 are also short answer questions and carry 3 marks each.*
- (v) *Question number 23 is a value based question and carry 4 marks.*
- (vi) *Questions number 24 to 26 are long answer questions and carry 5 marks each.*
- (vii) *Use log tables, if necessary. Use of calculators is **not** allowed.*

Q.No.		MARKS
1	Can a reaction have zero activation energy ?	1
2	A reaction is 50 % complete in 2 hours and 75% complete in 4 hours. What is the order of the reaction ?	1
3	Name the main ore of aluminium.	1
4	What is the role of cryolite in the metallurgy of Aluminium ?	1
5	What causes Brownian movement in a colloidal solution ?	1
6	Which one of the following is effective for coagulation of Fe(OH) ₃ sol and why ? NaCl, Na ₂ SO ₄ , Na ₃ PO ₄	2
7	a) A delta is formed at the meeting place of river and sea water . Why ? b) Why are medicines more effective in the colloidal form ?	2
8	Distinguish between rate of a reaction and rate constant .	2
9	Explain average rate of a reaction and instantaneous rate of a reaction.	2
10	Derive the integrated rate expression for a zero order reaction.	2
11	The rate of a reaction becomes four times when the temperature changes from 293 K to 313 K. Calculate the energy of activation of the reaction assuming that it does not change with temperature. (R=8.314 J/K/mol)	3
12	The following data were obtained for the decomposition of SO ₂ Cl ₂ at a constant volume : SO ₂ Cl ₂ (g) → SO ₂ (g) + Cl ₂ (g)	3
	Experiment Time / s Total pressure / atm	
	1 0 0.5	
	2 100 0.6	
	Calculate the rate of reaction when the total pressure is 0.65 atm.	
13	Sucrose decomposes in acid solution into glucose and fructose according to the first order rate law with t _{1/2} =3.00 hours. What fraction of the sample of sucrose remains after 8 hours ?	3
14	In a reaction between A and B , the initial rates of reaction was measured for different initial concentrations of A and B as given below :	3
	A (mol/l) 0.20 0.20 0.40	
	B (mol/l) 0.30 0.10 0.05	
	Rate (mol/l/s) 5.07 x10 ⁻⁵ 5.07x10 ⁻⁵ 7.16x10 ⁻⁵	
	What is the order of the reaction with respect to A and B ?	
15	Explain the process of leaching of bauxite ore to get pure alumina . Write the reactions involved.	3
16	i) Give the principle of zone refining . For which metals is this method used ? ii) What is the role of graphite in the electrometallurgy of aluminium ?	3
17	Give the chemical reactions which take place in the following processes :	3

		i) Electrolytic reduction of Al_2O_3	
		ii) Extraction of zinc from zinc blende	
18		Give two uses each of copper , iron and zinc.	3
19		i) Out of C and CO , which would be a better reducing agent for ZnO ? Why?	3
		ii) Although thermodynamically feasible , magnesium metal is not used for the reduction of alumina in the metallurgy of aluminium . Why ?	
20		What is the difference between multimolecular and macro molecular colloids ? how are they different from associated colloids ?	3
21		Give differences between physisorption and chemisorption .	3
22		The extraction of gold by leaching with NaCN involves both oxidation and reduction. Justify giving equations.	3
23		Wasim went to purchase bricks to build his house from a nearby unit.He was shocked to see a lot of smoke ,dust,and other gases coming out of the chimney.He saw that the nearby areas were getting polluted too and decided to do something about it.	4
		i) What type of colloidal system is smoke ?	
		ii) As a science student which process will you suggest to the unit owner to manage smoke and gases ?	
		iii) Name the principle behind the process .	
		iv) Write the values shown by Wasim.	
24	i)	What happens when light is passed through a colloidal solution ?	5
	ii)	Sun looks red at the time of setting . Why ?	
	iii)	Physical adsorption is multi-layered while chemisorption is monolayered.	
	iv)	Gelatin is added to ice creams. Why ?	
	v)	How does the addition of alum help in the purification of water ?	
25	a)	A reaction is second order in A and first order in B .	5
	i)	Write the differential rate equation.	
	ii)	How is the rate affected when the concentration of A is increased three times ?	
	lii)	How is the rate affected when the concentration of both A and B are doubled ?	
	b)	i) Give an example of a zero order reaction.	
	ii)	Write the expression for the half life of a zero order reaction.	
26	a)	Define i) elementary reaction ii) pseudo first order reactions	5
	b)	The rate constant for a first order reaction is 60 s^{-1} . How much time will it take to reduce the initial concentration of the reactant to 1/16 of its original value ?	