Aimstutorial intermediate chemistry important question

CHEMISTRY - I YEAR

LAQ's: (8 Marks)

1. 2.	Write the postulates of Bohr's theory of hydrogen atom? Discuss the importance of th series of line spectra in hydrogen atom. How are the quantum numbers n,I and m, arrived and explain the significance of quantum numbers n,I and m, arrived and explain the significance of quantum numbers n,I and m, arrived and explain the significance of quantum numbers n,I and m, arrived and explain the significance of quantum numbers n,I and m, arrived and explain the significance of quantum numbers n,I and m, arrived and explain the significance of quantum numbers n,I and m, arrived and explain the significance of quantum numbers n,I and m, arrived and explain the significance of quantum numbers n,I and m, arrived and explain the significance of quantum numbers n,I and m, arrived and explain the significance of quantum numbers n,I and m, arrived and explain the significance of quantum numbers n,I and m, arrived and explain the significance of quantum numbers n,I arrived and explain the significance of quantum numbers n,I and m, arrived and explain the significance of quantum numbers n,I arrived and explain the significance of quantum numbers n,I arrived and explain the significance of quantum numbers n,I arrived and explain the significance of quantum numbers n,I arrived and explain the significance of quantum numbers n,I arrived and explain the significance of quantum numbers n,I arrived and explain the significance of quantum numbers n,I arrived and arrived and explain the significance of quantum numbers n,I arrived and arrived and explain the significance of quantum numbers n,I arrived and arrived and explain the significance of quantum numbers n,I arrived and arrived and explain the significance of quantum numbers n,I arrived and arrived and explain the significance of quantum numbers n,I arrived and arrived and explain the significance of quantum numbers n,I arrived and arrived and explain the significance of quantum numbers n,I arrived and arrived a	(Ch.No.1, Q.No.55) tum number?					
3. 4.	Write an essay on s,p,d and f block elements. What is a periodic property? How the following properties vary in a group and in a periodic property.						
5.	a) Atomic radius b) Electron gain enthalpy c) IE d) EN Define IE ₁ and IE ₂ . Why is IE ₂ >IE ₁ ? Disscuss the factors which effect IE?	(Ch.No.2, Q.No.87,88) (Ch .no 2, Qno. 90)					
6.	Give an account of VSEPR Theory and its applications.	(Ch.No.3, Q.No.44)					
7.	What do you understand by Hybridization? Explain different types of hybridization inv	u					
8.	Give the molecular orbital energy diagram of a) N_2 and b) O_2 . Caluculate the respective magnetic nature of N_2 and O_2 molecules.	(Ch.No.3, Q.No.46) ctive bond order. Write the (Ch.No.3, Q.No.48)					
SAQ's: (4 Marks)							
1.	Define Dipole moment. Write its applications?	(Ch.No.3, Q.No.20)					
2.	Explain the hybridization involved in PCI_{s} and SF_{s} molecule.	(Ch.No.3, Q.No.28)					
3.	Explain the formation of coordinate covalent bond with one example.	(Ch.No.3, Q.No.30)					
4.	State and explain Dalton's law of partial pressures	(Ch.No.4, Q.No.50)					
5.	State and explain Graham's law of diffusion.	(Ch.No.4, Q.No.49)					
6. 7	Derive an expression for kinetic energy of gas molecules.	(Ch.No.4, Q.No.53)					
7. 8.	Deduce gas laws from kinetic gas equation. Find RMS speed, average speed and most probable speed of CO, gas at 27ºC.	(Ch.No.4, Q.No.64) (Ch.No.4,Sp.Q.No. 7)					
9.	Calculate kinetic energy of 5 moles of Nitrogen at 27° C.	(Ch.No.4,Sp.Q.No. 8)					
10.	Write the postulates of Kinetic molecular theory of gases.	(Ch.No.4, Q.No.62)					
11.	Chemical analysis of a carbon compound gave the following percentage composition present. Carbon = 10.06%, hydrogen = 0.84%; chlorine = 89.10% calculate Empirica						
40		(Ch.No.5, Q.No.5)					
12.	A carbon compound contains 12.8% carbon, 2.1% hydrogen, 85.1% bromine. Th compound is 187.9 calculate molecular formula.	e molecular weight of the (Ch.No.5, Q.No.16)					
13.	Balance the following redox reactions by ion electron method?	(Ch.No.5, Q.No.61)					
10.	a) MnO ₄ (aq) + l ⁻ \rightarrow (aq) MnO ₂ (s) + l ₂ (s) (in basic medium) b) MnO ₄ + SO ₂ \rightarrow Mn ⁺² + HSO ₄ (in acidic medium)						
	c) $\operatorname{Cr}_2 \operatorname{O}_7^{2-} + \operatorname{SO}_2 \rightarrow \operatorname{Cr}^{3+} + \operatorname{SO}_4^{2-}$ (acidic medium)	(a)					
14.	What are disproportionation and comproportionation reactions? Give examples?	(Ch.No.5,					
15. 16.	Q.No.29,30) Calculate the volume of $0.1NH_2SO_4$ required to neutralise 200 ml of $0.2NNaOH$ Solution.? (Ch.No.5, Q.No.41) Calulate the volume of $0.1m$ KMnO4 required to react with 100ml of $0.1m$ H ₂ C ₂ O ₄ .2H ₂ O solution in presence of						
	H ₂ SO ₄ .?	(Ch.No.5, Q.No.43)					
17.	Show that $\Delta H = \Delta U + \Delta n RT$	(Ch.No.6, Q.No.49)					
18.	Define heat capacity. What are C_p and C_v ? Show that $C_p - C_v = R$	(Ch.No.6, Q.No.53)					
19.	Explain extensive and intensive properties ?	(Ch.No.6, Q.No.51)					
20.	Explain spontaneity of a process in terms of Gibbs energy?	(Ch.No.6, Q.No.81)					
21.	State and explain Hess's law of constant heat summation. Give example.	(Ch.No.6, Q.No.101)					
22.	Derive the relation between K_p and K_c for the equilibrium reaction $N_{2(g)} + 3H_{2(g)} \longleftarrow 3H_{2(g)}$	2NH _{3(G)} (Ch.No.7, Q.No.40)					
23. 24.	What is a conjugate acid - base pair ? Illustrate with examples. Explain briefly about Bronsted - Lowry theory with example.	(Ch.No.7, Q.No.58)					
25.	Define ionic product of water. What is its value at room temperature?	(Ch.No.7, Q.No.69)					
26.	Aqueous soluation of CH ₃ COONa is basic explain.	(Ch.No.7, Q.No.79)					
27.	Discuss the application of Lechaterlier's principle for the industrial synthesis of Ammo						
28.	Write notes on i) Common ion effect ii) The relation between $K_{_{SP}}$ and solubility (S) of a s	(Ch.No.7, Q.No.89) paningly soluble salt BaSo₄ (Ch.No.7, Q.No.99)					
29.	What is meant by dynamic equilibrium? Explain with suitable examples?	(Ch.No.7, Q.No.85)					
30.	Give the General characteristics of equilibria involving physical processes ?	(Ch.No.7, Q.No.86)					

Aimstutorial intermediate chemistry important question

31.	Explain Lewis acid-base t bases and show these ac a) OH ⁻	heory with suitable examp t as Lewis acid / base. b) F ⁻	le. Classify the follov c) H⁼	• •	ewis acids and Lewis (Ch.No.7, Q.No.94)	
32.		fine pH. What is buffer solution? Derive Henderson - equation for Calculating the pH of an acid buffer solution. (Ch.No.7, Q.No.96)				
33.	Write the chemical reacting agent.	rite the chemical reaction to justify that hydrogen peroxide can function as on oxidizing as well as reducing				
34. 35.		tility of hydrogen as a fuel.			(Ch.No.8, Q.No.21) (Ch.No.8, Q.No.26)	
36.	i) electron - deficient	(ii) electron - precise and ater and soft water: Write a		nydrides	(Ch.No.8, Q.No.29)	
37.	i) lon - exchange method	I lon - exchange method and (ii) Calgon method for the removal of hardness of water: Explain the significance of sodium, potassium, magnesium and calcuim in biological fluids. Boilogical importances				
	of Na amd K.			-	(Ch.No.9, Q.No.59)	
38. 39.	Explain borax bead test w	castner - kellner process ?	Write the principle ii		(Ch.No.9, Q.No.36) (Ch.No.10, Q.No.28)	
39. 40.	How is diborane prepared				(Ch.No.10, Q.No.38)	
41.	Explain the following :					
10	a) SIO_2 is treated with HF	b) Graphite is a lubricant lica. How does it react with	C) Diamond is an a	abrasive. ((Ch.No.11, Q.No.34) (Ch.No.11, Q.No.48)	
42. 43.	Write a note on the allotro				(Ch.No.11, Q.No.49)	
43. 44.	Define the terms Sink, CC				(Ch.No.12, Q.No.24)	
45.	What is green house effe				(Ch.No.12, Q.No.24)	
46.		etail. a) Golbal Warming; b)	Ozone depletion; c) Acid Rain; d) Eutr	rophication	
47.		action and name the produ	icts A, B and C.	,	(Ch.No.12, Q.No.34) (Ch.No.13, Q.No.11)	
	$CaC_2 \xrightarrow{H_2o} A \xrightarrow{hotmetaltub}$					
48.	•	and C fromed in the followi	ng reactions. Give th	ne equations for the		
	Ethylene $\xrightarrow{Br_2/CCl_4} A \xrightarrow{a}$				(Ch.No.13, Q.No.12)	
49.	Explain the mechanism of				(Ch.No.13, Q.No.18)	
50.		or position and functional g		•	Ch.No.13, Q.No.17)	
51.		Propene with the ionic me	echanism.		Ch.No.13, Q.No.24)	
52.	Explain Inductive effect w				(Ch.No.13, Q.No.49)	
53.		preparation of ethane. Give			Ch.No.13, Q.No.28)	
54.	Describe two methods of preparation of ethylene. Give equation for the reactions of ethylene with the follow a) Ozone d) Hypohalous acid c) Cold and dil.alk. $KMno_4$ d) Heated with O_2 at high pressure.					
F F	How doop post long roast	with the following recordents'	Cive the correspond		(Ch.No.13, Q.No.32)	
55.		with the following reagents') Acetic acid b) Water c) I				
	f) Ammonical AgNO ₃ and (iyuloyeli u) haloye		(Ch.No.13, Q.No.37)	
56.	$H_{\rm OW}$ do we get here and f	om acetylene? Give the co	rrosponding oquatio			
50.	acylation, natration and su		responding equatio		Ch.No.13, Q.No.39)	
57.	Discuss Markownikoff's ru				(Ch.No.13, Q.No.57)	
					(01.10.10, Q.10.07)	
	Q's: (2 Marks)					
1.	What are lsotherms.				(Ch.No.4, Q.No.4)	
2.		es faster among N_2 , O_2 ar			(Ch.No.4, Q.No.18)	
3. ⊿	-	e diffuses faster than sulphi	ar aloxide?		(Ch.No.4, Q.No.19)	
4.	What is Boltzman's const			~~	(Ch.No.4, Q.No.26)	
5. 6		erage and most probable sp	beed of gas molecule	38.	(Ch.No.4, Q.No.32)	
6. 7	What is Laminar flow of lig				(Ch.No.4, Q.No.44)	
7. °	What is compressibility fa		510am of alwars		(Ch.No.4, Q.No.34)	
8.	How many number of moles of glucose are present in 540gm of glucose. (Ch.No.5, Q.No.1)					
9. 10	How many molecules of Glucose are present in 5.23 gm of Glucose? (Ch.No.5, Q.No.3) Calculate the volume of O ₂ at S.T.P required to completely burn 100ml of acetylene. (Ch.No.5, Q.No.8)					
10.	The emperical formula of	v_2 at S. I.F required to comp someound is CH. Office m	bletery burn 100mm of	Colucto moloculor	(Ch.No.5, Q.No.8)	
11.						
12.	(Ch.No How many significant figures are present in the following: (Ch.No.					
	i) 0.0025	ii) 10.4107	iii) 0.04597	iv) 2808	v) 500.0	
13.	Assign oxidation numbers	to yhe undrlined i) NaH ₂ P	O ₄ II) H ₄ <u>P</u> 2O ₇ III) K	$\frac{1}{2}$ <u>Mn</u> O ₄ IV) H ₂ S ₂ O ₇	, (Ch.No.5, Q.No.82)	
14.	Explain the relationship be	etween Gibbs energy chan	ge and equilibrium c	onstant.	(Ch.No.6, Q.No.32)	

Aimstutorial intermediate chemistry important question

15.	State the third law of thermodynamics.		(Ch.No.6, Q.No.38)			
16.	What is homogeneous and heterogeneous equilib	rium reaction ? Give examples	(Ch.No.7, Q.No.4,5)			
17.	All Bronsted bases are Lewis bases. Explain.		(Ch.No.7, Q.No.30)			
18.	What is the pH of 10 ⁻⁸ M HCI?		(Ch.No 7, Q.No.29)			
19	Calculate the pH of the following solutions:		(Ch.No. 7, Q.No.13)			
	a) [H ⁺] = 0.05 M b) [OH] ⁻ = 2 x 10 ⁻⁴ M					
20.	Calculate of pH for		(Ch.No. 7, Q.No.23)			
	a) 0.001 M NaOH b) 0.0008 M Ba(OH) ₂					
21.	Water behaves as an amphoteric substance in the Bronsted sense. How do you explain?					
			(Ch.No.8, Q.No.10)			
22.	Explain the tem "SYNGS".		(Ch.No.8, Q.No.4)			
23.	23. What do you mean by autoprotolysis ? Give the equation to represent the autoprotolysis of water.					
			(Ch.No.8, Q.No.9)			
24.	What is meant by coal gasification? Explain with re	elevant, balanced equation.	(Ch.No.8, Q.No.5)			
25.	Lithium salts are mostly hydrated. Why?		(Ch.No.9, Q.No.3)			
26.	What happens when magnesium metal is burnt in	(Ch.No.9, Q.No.11)				
27.	Write the average composition of portland cement	(Ch.No.9, Q.No.18)				
28.	Why is gypsum added to cement ?	(Ch.No.9, Q.No.19)				
29.	Describe the important uses of caustic soda?	(Ch.No.9, Q.No.22)				
30.	Explain inert pair effect.		(Ch.No10, Q.No.8)			
31.	Give the formula of borazine. What is its common	name?	(Ch.No10, Q.No.13)			
32.	Give the formulae of (a) Borax (b) C	Colemanite	(Ch.No10, Q.No.14)			
33.	What is allotropy? Give the crystalline allotropes of	of carbon.	(Ch.No 11, Q.No.			
34.	Name any two man - made silicates.	(Ch.No. 11, Q.No. 8)				
35.	What are silicones?		(Ch.No. 11, Q.No. 18)			
36.	Write the use of ZSM - 5.		(Ch.No. 11, Q.No. 23)			
37.	Which oxides cause acid rain? and what is its \ensuremath{pH}	(Ch.No. 12, Q.No. 10)				
38.	Whatis classical smog? and what is its chemical of	(Ch.No 12, Q.No.13)				
39.	Write IUPAC name of the following compounds					
	i) $(CH_3)_3CCH_2C(CH_3)_3$ ii) $(CH_3)_2 C(C_2H_5)_2$	iii) Tetra-tert.butyl methane	(Ch. 13, SP.Q.No. 27)			
40.	Write IUPAC name of the following compounds					
	1) Trichlorethanoic acid 2) Neopentane	3) p-nitro benzaldehyde.	(Ch. 13, SP.Q.No. 6)			
41.	Explain the following:					
	a) Crystallisation b) Distillation		(Ch. 13, SP.Q.No. 10)			

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