Pre Board Examination-I, 2019-20
Chemistry
Class – XII

Max. Marks: 70

Date:21 January, 2019 Time Allowed: 3hr.

General Instructions:

1. *All questions are compulsory. There are 37 questions in all.*
2. *This question paper has four sections: Section A, Section B, Section C and Section D.*
3. *Question number 1 to 20 of section A carries 1 mark each.*
4. *Question number 21 to 27of section B are short answer questions and carry 2 marks each.*
5. *Question number 28 to 34 of section C are also short answer questions and carry 3 marks each.*
6. *Question number 35 to 37 of section D are long answer questions and carry 5 marks each.*
7. *There is no overall choice. However, an internal choice has been provided in 4 questions of one mark, 3 questions of two marks, 3 questions of three marks and three questions of five marks. You have to attempt one of the choices in such questions.*
8. *Use Log tables if necessary, Calculators are not allowed.*

SECTION-A

1. Which of the following ore is concentrated by froth floatation process? [1]
   a. Siderite.
   b. Malachite.
   c. Haematite.
   d. Galena.

2. The term ‘sorption’ stands for: [1]
   a. Adsorption.
   b. Both adsorption and desorption.
   c. Desorption.
   d. Chemisorption.

3. A chelating agent has two or more than two donor sites to bind a single metal ion. Which of the following is not a chelating agent? [1]
   a. Oxalato.
   b. EDTA.

	c. Ethane-1,2- diamine. d. Thiosulphato.	
4.	Which among the following is not soluble in water? a. Vitamin B_1 b. Vitamin B_2 c. Vitamin B_{12} d. Vitamin B_6	[1]
5.	The poisonous gas prepared from chlorine is... a. Laughing gas. b. Mustard gas. c. Stranger gas. d. Phosphine.	[1]
6.	The antiseptic which is used as an eye lotion is… a. Boric acid. b. Betadine. c. Soframycine. d. Equanil. OR Choose the antioxidant from the following: a. Tetracycline. b. BHT c. Alitame. d. Ranitidine.	[1]
7.	The correct order of increasing boiling point of hydrides of group 16 elements are.. a. $H_2O>H_2Te>H_2S>H_2S$ b. $H_2O>H_2S>H_2Se>H_2Te$ c. $H_2O>H_2Te>H_2Se>H_2S$ d. $H_2O>H_2Se>H_2S>H_2O$	[1]

8.	The reason for greater range of oxidation state of actinoids are due to: a. Actinoid contraction. b. Radioactive nature. c. Comparable energies of 4f, 5d and 6s orbitals. d. Comparable energies of 5f, 6d and 7s orbitals.	[1]
9.	The molar conductivity of a solution is known as limiting molar conductivity when the concentration approaches to…. a. 1 M b. 0 c. 1.5M d. 0.5M	[1]
10.	What is the minor product obtained when aniline is treated with Nitric acid? a. 2- Nitro aniline. b. 4- Nitro aniline. c. 2,4,6- Tri Nitro aniline. d. 3- Nitro aniline.	[1]
	Questions 11 to 13 are assertion and reason type. Choose the correct option.	
11.	Assertion: Trimethyl amine does not reacts with benzene sulphonyl chloride. Reason: Trimethyl amine is a teritiary amine, does not contain hydrogen on amino group. a. Assertion and reason both are correct statements and reason is the correct explanation for assertion. b. Assertion and reason both are correct statements and reason is not the correct explanation for assertion. c. Assertion is correct statement but reason is wrong statement. d. Assertion is wrong statement but reason is correct statement.	[1]
12.	Assertion: Zn and Cd are transition metals. Reason: Both Zn and Cd have d^{10} configuration. a. Assertion and reason both are correct statements and reason is the correct explanation for assertion.	[1]

	b. Assertion and reason both are correct statements and reason is not the correct explanation for assertion. c. Assertion is correct statement but reason is wrong statement. d. Assertion is wrong statement but reason is correct statement	
13.	Assertion: Helium is used in diving apparatus. Reason: Helium is less soluble in water and due to its small size can easily pass through cell walls. a. Assertion and reason both are correct and reason is the correct explanation for assertion. b. Assertion and reason both are correct statements and reason is not the correct explanation for assertion. c. Assertion is correct statement but reason is wrong statement. d. Assertion is wrong statement but reason is correct statement.	[1]
14.	Give the structure of monomers of: Melamine polymer. OR PHBV.	[1]
15.	Among the lanthanoids, Ce(III) is easily oxidised to Ce(IV). Why?	[1]
16.	Give the structure of the compound: 2-Ethyl cyclopentanol. OR But-2-en-1-ol.	[1]
17.	The C-O-C bond angle in dimethyl ether is more than $109^0 28'$. Give reason.	[1]
	Read the passage and answer the questions 18,19 and 20. DDT is a white powder insoluble in water, but soluble in oil. It results in pollution due to its extreme stability. It is non-biodegradable. It was discovered to have high toxicity in fish. The chemical stability and its fat solubility compounded the problem. DDT is not metabolised rapidly by animals.	
18.	Give the structure of DDT.	[1]
19.	What is its use?	[1]
20.	Give its IUPAC name.	[1]
	SECTION-B	

21.	Why are cimetidine and ranitidine better antacids than sodium hydrogencarbonate or magnesium hydroxide? OR a. What is an antipyretic? Give example. b. Why is the use of aspartame limited to cold foods and soft drinks?	[2]
22.	What happens when I_2 is added to sodium chlorate solution? Explain. Also write the balanced chemical equation. OR a. Iron on reaction with HCl forms $FeCl_2$ and not $FeCl_3$. b. How the supersonic jet aeroplanes are responsible for the depletion of ozone layers?	[2]
23.	Give mechanism of polymerization of ethane to polythene. Peroxide $nCH_2 = CH_2 \longrightarrow (\ CH_2 -- CH_2)_n$	[2]
24.	Define electrochemical cell. What happens when applied external potential becomes greater than E^0_{cell} of electro chemical cell?	[2]
25.	Complete the balanced chemical reactions: a. $Cr_2O_7^{2-} + (OH)^- \longrightarrow$ b. $MnO_4^- + S_2O_3^{2-} + H_2O \longrightarrow$ (faintly alkaline medium)	[2]
26.	Draw the structure of: a. H_2SO_4 b. BrF_3 OR a. H_2SO_3 b. XeF_4	[2]
27.	Give the chemical equation: a. Kolbe's reaction. b. Williamson's ether synthesis.	[2]
	SECTION-C	
28.	Chromium metal is electroplated using an acidic solution containing CrO3 according to the following equation:	[3]

	$CrO_3(aq) + 6H^+ + 6e^- \longrightarrow Cr(s) + 3H_2O$. Calculate how many grams of chromium will be electroplated by 24,000 coulombs. How long will it take to electroplate 1.5g of chromium using 12.5A current? [Atomic mass of Cr = 52g/mol, 1Faraday = 96500 C/mol]	
29.	Explain the hybridization, geometry and magnetic behaviour of: a. $[Ni(CN)_4]^{2-}$ b. $[Cr(H_2O)_2(en)_2]^{3+}$ OR a. Draw all the geometrical isomers of $[Co(en)_3]^{3+}$. Is it optically active? b. Explain the hybridization, geometry and magnetic behaviour of $[Ni(CO)_4]$.	[3]
30.	Give reasons: a. NH_3 gas is adsorbed more readily than N_2 on the surface of charcoal. b. Gelatin which is a peptide is added in ice creams. c. A delta is formed at the meeting point of river water and sea water.	[3]
31.	Give the principle of: a. Refining of Zirconium by Van-Arkel process. b. Electrolytic refining. c. What is the role of silica in the extraction of copper? OR a. What is hydrometallurgy? b. What is the role of lime stone in the extraction of Iron? c. What is aluminothermy?	[3]
32.	An element 'A' belongs to chalcogens exists as a yellow solid in standard state. It forms a volatile hydride 'B' which is a foul smelling gas and is extensively used in qualitative analysis of salts for group 2 and 4 cations. When treated with oxygen 'B' forms an oxide 'C' which is colourless, pungent smelling gas. This gas when passed through acidified potassium permanganate solution, decolourises it. It oxidised to another oxide D in presence of a vanadium compound. Identify A, B,C, D also give the chemical equation of the reaction of 'C' with acidified KMnO4.	[3]
33.	Give reason:	[3]

	a. On electrolysis in acidic solution amino acids migrate towards cathode, while in alkaline solution these migrate towards anode. b. What is the difference between glycosidic linkage and peptide linkage? OR a. Draw the pyranose structure of Alpha-D (+) glucose. b. What is the structure of product formed when glucose treated with Con.HNO_3? c. What is meant by denaturation of proteins?	
34.	Give the structure of A,B and C in the following reactions: a. $C_6H_5NO_2 \xrightarrow{Fe/HCl}$ 'A' $\xrightarrow{(CH_3CO)_2O}$ ' B' $\xrightarrow{Br_2/H_2O}$ 'C' b. $CH_3NH_2 + CHCl_3 + 3\ KOH \longrightarrow$ 'A' + 3 'B' + 3 'C'	[3]
	SECTION-D	
35.	Given reasons: a. When mercuric iodide is added to an aqueous solution of KI the freezing point is raised. b. A person suffering from high blood pressure is advised to take minimum quantity of common salt. c. A 0.1M solution of potassium ferrocyanide is 50% dissociated at 300K. Calculate the osmotic pressure of the solution. (R= 0.082 Latm/Kmol). OR a. What type of deviation is shown by a mixture of acetone and ethanol? Give reason. b. Henry's law constant for CO_2 in water is $1.67x10^8$ Pa at 298K. Calculate the quantity of CO_2 in 500ml of soda water when packed under 2.5 atm pressure at 298K.	[5]
36.	Define: a. Rate constant. b. Elementary process. c. The decomposition of A in to product has value of rate constant as $4.5x\ 10^3\ sec^{-1}$ at $10\ ^0C$ and energy of activation is 60 KJ/mol. At what temperature the rate constant would be $1.5x\ 10^4\ sec^{-1}$? OR a. The chemical reaction $2NH_3 \xrightarrow{Pt} N_2 + 3H_2$. Is zero order. Give reason. b. Sucrose decomposes in acidic solution in to glucose and fructose according to the first order rate law with $t_{1/2}$ = 3 hours. What fraction of sample of sucrose remains after	[5]

	8 hours?	
37.	a. Carry out the following conversions: (i) Propanoic acid to acetic acid. (ii) Ethanal to but-2-enal. b. A compound X (C_2H_4O) on oxidation gives Y ($C_2H_4O_2$). X undergoes haloform reaction. On treatment with HCN 'X' forms a product 'Z' which on hydrolysis gives 2-hydroxy propanoic acid. (i) Write the structure of X and Y. (ii) Write down the equations for the reactions involved. OR a. Give a chemical test to distinguish between: (i) Acetaldehyde and benzaldehyde. (ii) Ethanoic acid and phenol. b. An organic compound A (C_3H_4) on hydration in presence of H_2SO_4/ $HgSO_4$ gives a compound B (C_3H_6O). Compound B gives white crystalline product D with sodium hydrogen sulphite. It gives positive iodoform test and negative Tollen's test. On drastic oxidation B gives compound C ($C_2H_4O_2$) along with formic acid. Identify A,B and C and explain all the reactions.	[5]
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