Once Again I wish everyone success in their examination ...at the end of this examination our results shall be testimonies

By the grace of God we are done with the GSTs exam but lest not forget that we are just about to start the main examination.... please I implore everyone of us to go through the calculations in the manual don't just go through them study them and understand it....because during the exam they might change something in the questions example like the parameters and so on ...so please study the calculations well..and also the questions at the back of the manual ... please that is also very important learn them well ...everything because the system will shuffle your questions and you might be opportuned to get the ones you didn't learn so please learn every exercise at the back of the manual

SUCCESS IN YOUR EXAMINATION

BEST REGARDS

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CHM 101 QUESTIONS AND ANSWER

1 : The ability of an element to participate in a chemical reaction is measured in form of its --------- a) electron density b) electron cloud c) ionization energy d) nuclear charge

Ans - ionization energy

2 : Electron affinity can be affected by all but one of the following a) effective nuclear charge b) atomic radius c)mass number d) electronic configuration

Ans - mass number

3 : In the mordern form of Mendeleev peroidic table, elements are arranged in --------horizontal rows. Ans - 7

4 : _____ used the Law of the Octave to arrange atoms Ans - John Newlands

5 : _____states that as far as possible in a given atom in the ground state, electrons in the same sub shell will occupy different orbitals and will have parallel spins. a)Pauli exclusion principle b) Hund's rule c) Gay Lussac law d) Aufbau principle

Ans - Hund's rule

6 : _____ arranged elements in order of increasing atomic weight on a line which spiraled around a cylinder from bottom to top

a) Robert Millikan b) De Chanourtios c) J.J Thompson d) Rydberg

Ans - De Chanourtios

7 : Halogens have ------ electron affinity a) exothermic b) endothermic c) zero d) positive

Ans - exothermic

8 : _____and_____ tried to classify elements into periods Ans- De Chancourtois and Dobereiner

9 : An orbital can have at the most two electrons of opposite spin can be called the ------- a) Aufbau principle b) hendry principle c) Hund's rule d) Exclusion principle

Ans - Exclusion principle

10 : Increase in principal quantum number(n) means-----of the atomic radii a) decrease b) increase c) constant d) none of the above

Ans - increase

11 : The alkali metals belong to the ------ elements a) s-block b)p-block c) d-block d) d-block

Ans - s-block

12 : The second ionization energy of alkaline earth metals is less than that of corresponding alkali metals because-------- Ans - of stability of a closed shell configuration

13 : ____is the energy released or absorbed when an electron is added to the gaseous atom in its ground state a) electron charge

b) electronegativity c) ionization energy d) electron affinity

Ans - electron affinity

14 : The properties of elements are periodic functions of their atomic numbers is the ----------

Ans - Mordern periodic law

15 : _____is the enthalpy change when one mole of crystal lattice is formed from the isolated gaseous ions Ans - Lattice energy

16 : _____is the tendency of an atom to attract towards itself the shared electron pair of a bond in which it is involved Ans - electronegativity

17 : What property was used by Mendeleev to classify the elements? Ans - chemical properties

18 : In the equation for ionization,effective nuclear charge is represented as------ Ans - Z

19 : Which is of these peroids of the peroidic table has only eight elements? Ans - 3

20 : The positions of K and Ar,Co and Ni do not remain anomalous any longer since --------- is used in arranging the elements. Ans - atomic number

21 : Arrange the following metals in an increasing order of their boiling point LI,Cs,Rb,K Ans - Cs,K,Rb,Li

22 : Arrange the following alkali metals in order of their atomic number,Na,K,Li, Ans - Li,Na,K

23 : According to,electronegativity is equated to the force of attraction between an atom and the electron seperated by a distance equal to the covalent radius of the atom. Ans- AlfredRochow

24: Which of these metals can their compounds be used in photography ? Ans - K

25 : All these are types of metal lattices exceptAns - hexagonal

26 : Which of these statements is not true of metallic elements? Ans - They form acidic oxides

27 : _____is a requirement in the electrolysis of beryllium chloride Ans - Sodium Chloride

28 : In the extraction of calcium from fused calcium chloride,is used as the anode Ans - graphite

29 : All these are uses of Beryllium except Ans - used for making aircraft

30 : Calcuim oxide is a constituent of all but one of the following Ans - barium

31 : On exposure to air alkaline earth metals lose their silvery luster becauseAns - a layer of oxide is formed on their surface

32 : All the alkaline earth metals form ionic compounds except Ans- beryllium

33 : Calcium compounds give out a characteristic flame colouration Ans - brick red

34 : The hydrogen energies of alkaline earth metal ions are much greater than those of alkali metals becauseAns - they are smaller with increased cationic charge

35 : Which of these statements is not true of alkaline earth metals? Ans -They are less dense than alkali metals

36 : The first ionization energy of alkaline earth metals is more than that of corresponding alkali metals becauseAns - the alkaline earth metals have higher nuclear charge and are smaller in size

37 : _____ is extremely rare and it is a radioactive element Ans - raduim

38 : _____ is the second most abundant metallic element in sea water Ans - magnesuim

39 : Which of these statements is not true of Lithium? Ans - Lithium reacts spontaneously with water

40 : The strong cohesive forces present in the lithium atom gives rise to all but one of the following Ans - softness

41 : Hydrides of alkali metals react with water to librate which of these?_____ Ans - hydrogen

42 : Which of these alkalis has the most stable floride?_____ Ans- Lithium

43 : Why was Newlands law of octaves rejected?_____

Ans - It could not hold good for elements heavier than calcium

44: Which of these statements is not true of metallic hydrides? _____ Ans - they are volatile

45 : Which property was used by Mendeleev to classify elements?_____

Ans - chemical properties

46 : Which of these alkali metals is the most electropositive?_____ Ans - caesuim

47 : The presence of hydrogen bond in most molecules is responsible for the following EXCEPT _____.

Ans – Low boiling point

48 : The tendency of an atom to attract towards itself shared electron pair of a bond is known as _____.

Ans – Electronegativity

49 : Which of the isotopes of hydrogen is radioactive?_____ Ans - Tritium

50 : All these can be used as raw materials for the production of oxygen except _____.

Ans - Nitrogen

51 : Which of these is not a covalent hydride?_____ Ans - NaH

52 : The most abundant metal in sea water is called _____. Ans - Sodium

53 : Which of these statements is not true of metallic elements?_____

Ans - They form acidic oxides

54 Which of the following is not true as we move down a group of s and pblock elements in the periodic table?

_____ Ans - Electronegativity also increases

55 Stability of alkali salts depends on which of the following?_____

Ans - enthalpy of formation of the salt

56 : How many electrons are in potassium atom?_____ Ans - 19

57 How many elements are there in period 6 of the periodic table ? _____ Ans - 32

58 : Which of these elements behave partly as the alkaline metals as well as a halogen element?

_____ Ans - Hydrogen

59 : Which of these periods of the peroidic table has only eight elements? _____ Ans - 3

60 : Which of these elements has the electronic configuration of $1s^2,2s^2,2p^6,3s^2,3p^6,3d^{10},4s^1$? Ans - Cu

61 : In the periodic table,period 6 contains elements Ans - 32

62 : Which of these is not an isotope of hydrogen? Ans - Neutrium

63 : _____ forms an oxide also known as heavy water. Ans - Deutrium

64 : Which of the isotopes of hydrogen is radioactive? Ans - Tritium

65 : All these can be used as raw materials for the production of oxygen except Ans - Nitrogen

66: Hydrogen can be obtained economically as a biproduct in the electrolysis of Ans - brine

67 : Which if these is not a property of hydrogen? Ans - it has a pungent smell

68 : Hydrogen may be used for all but one of the following. Ans - synthesis of zinc

69 : Hydrogen may not be advantagous as a fuel becauseAns

- it is a secondary source of energy

70 _____types of hydride compounds can be formed depending on the electronegativity of the elements Ans

-3

71 : When alkali metals are heated with hydrogen they formhydrides Ans - ionic

72 : Silt is an example of hydride Ans - Covalent

73 : Which of these statements is not true metallic hydrides? Ans - they are volatile

74 : Sodium Hydride is an example of hydride Ans - ionic

75 : Which of these statements is not true of metallic elements? Ans - They form acidic oxides

76 : All these are consequences of the sole valence electron in alkali metals except Ans

- the metals are soft

77 : Which of these statements is not true? Ans - All metals react with carbon to form carbides

78 : In the group of the alkali metals the degree of hydrationdown the group. Ans - decreases

79 : Arrange the following in order of increasing atomic radius

a) Li ,K ,Ti

b) Be, Mg, Zn

Ans : Li ->K-> Ti. b) Be->Mg-> Zn

80 : Arrange the following in order of decreasing order of first ionization potential

a) Be, N, O

b) Mg, Na^+, Al

Ans : O, N, Be b) Na^+->Al->Mg

81 : Write the electronic configuration of an element M,whose atomic number is mass 17

Ans: $1s^2 2s^2 2p^6 3s^2 3p^5$

82 : What would be the electronic configuration of the following positively charged ions ; K^+, Ca^{2+}, Al^{3+}

K^+ - $1s^2 2s^2 2p^6 3s^2 3p^6$

Ca^{2+}- $1s^2 2s^2 2p^6 3s^2 3p^6$

Al^{3+} - 1s2, 2s2, 2p6

83 : What would be the electronic configuration of the following negatively charged ions F^-, Cl^-,Br^-, O^{2-}

Ans : F^- ; $1s^2 2s^2 2p^6$

Cl^- ; $1s^2 2s^2 2p^6 3s^2 3p^6$

O^{2-} ; $1s^2 2s^2 2p^5$

84 : which of the following has the highest kinectic Energy? a) solid b) Liquid c) Gas d) all of the above

Ans : C

85 : who discovered the electron a) Micheal Faraday b) J.J Thompson c) Dalton d) Robert Millikan

Ans : J.J Thompson

86 : who discovered the proton a) Rutherford b) Faraday c) Dalton d) Robert Millikan

Ans : Rutherford

87 : Electron emmits energy in form of a) photon b) quantum c) phantom d) kinectic Energy

Ans : photon

88 : Elements in the same group have the same a) physical properties b) magnetic properties c) chemical properties d) all of the above

Ans : chemical properties

89 : who postulated this theory "electron moves in an orbit around the central Nucleus" a) John Dalton b)Neil's Bohr c) Pensoul d) Micheal Faraday

Ans : Neil's Bohr

90 : which one of these orbitals does not have a degenerate sub orbital (a) s (b) p (c) d (d) f

Ans : s

91 : Group 7 Elements are called a) Alkali metals b) Halogen c) boron family d) chalogen

Ans : Halogen

92 : which of these is used to express the factor of 10^{-6} a) m b) M c)μ d) n

Ans : μ

93 : which group of element react violently with water a) Halogen b) Noble gas c) Alkali metals d) Boron family

Ans : Alkali metals

94 : how many proton (p) and neutron (n) are in an atom of (90)Sr(38) a) 90p, 38n b) 38p, 90n c) 38p, 52n d) 52p, 38n

Ans : 38p, 52n

95 : which of the following equation Represent Charles Law

a) P/V=K b) V/T=K c) PV=K d) P/n=K

Ans : V/T=K

96 : when an electron moves from n=3 to n=1 what type of Light is released a) visible Light b) ultraviolet c) infared d) non visible Light

Ans : ultraviolet

97 : The balmer series is associated with a) visible light b) ultraviolet d) infared d) normal light

Ans : visible light

98 : which of the following properties increase along the period a) atomic radius b) ionic radius c) ionization energy d) atomic size

Ans : ionization energy

Three identical flask contains three different gases at STP. Flask A contains C_4H_{10}, flask B contains SO_2 and flask C contains He. which flask contains the largest number of molecule a) Flask A b) flask B c)flask C d) All contain the same no of molecule

An unknown gas has a rate of effusion that is 4times faster than oxygen gas calculate /determine the identify of this gas a) Hydrogen b) Oxygen c) Chlorine d) Ammonia

Ans Hydrogen

it takes 3.12 seconds for a sample of Krypton to effuse from one compartment into another at a certain temperature.Determine the time is takes for an equivalent sample of neon to do the same job

a) 1.5secs b) 3secs c) 5secs d) 6secs

Ans : 1.5secs

soln : mass number for Krypton is 84 while for Neon is 20 if. $(3.12)^2 = 84g$

$(x)^2 = 20g$

therefore $x^2 = (3.12)^2 * 20/84 = 2.317$

$\sqrt{x^2} = 1.5$ secs

if the principal quantum number n=3 determine the azimuthal quantum number a)1 b) 2 c) 3 d) 4

Ans : 2

what happens when an electron falls from higher energy level to lower energy level a) it absorbs energy b) it dissolves energy c) it releases energy d) none of the above

Ans : it releases energy

which of the following quantum number determine the shape and orientation of an orbital

a) principal magnetic b) Azimuthal spin c) principal Azimuthal d) Azimuthal magnetic

Ans: Azimuthal magnetic

which orbital is occupied by an electron described by the quantum number n=2 l=1 a) 1s b)2s c) 2p d) 3s

Ans : 2p

A storage tank contains 2 moles of Ar, 3 moles of O_2 and 5 moles of N_2 at a total pressure of 1000torr calculate the partial pressure of Ar a)1000 torr b) 50torr c) 200 torr d) 500 torr

Ans: 200 torr

soln first find the mole fraction of Ar which is 2/2+3+5 =0.2

partial pressure = mole fraction * total pressure 0.2 * 1000= 200

The volume of 200ml of gas at 20°C is decreased to 30ml .calculate the final pressure a) 4721mmHg b) 42mmHg c) 300mmHg d) 4728mmHg

Ans : 4721mmHg

soln P1 =760, V1=200 T1=293(20+273) P2 =x V2= 30 T2=273

x= 760*200*273/30*293 = 41496000/8790=4720.8mmHg

what happens if the volume of gas is decreased a) the pressure will increase b) the temperature will increase c) the pressure remains the same d) the temperature remains the same

Ans : The pressure will increase

A substance that donates a pair of electron to form a coordinate covalent bond is called a) Lewis acid b) Lewis base c) Bronsted Lowry acid d) bronsted Lowry base

Ans: Lewis base

A mixture of CH3COOH and CH3COONa behaves as a) basic buffer b) ionic buffer c) acidic buffer d) neutral buffer

Ans : Acidic buffer

what is the Henderson Hansebatch equation a) Pka + Log{salt/acid } b) Pka + Log {acid/salt} c) Pka - Log{salt/acid } d)Pka - Log {acid/salt}

Ans : Pka + Log{salt/acid }

if the ksp of a salt A2B3 is given by 10^-25 what is the solubility of the salt a) 10^-3 b) 10^-4 c) 10^-5 d)10^-6

Ans :10^-5

soln represent A as X and B as X

ksp= $[X]^2[X]^3$ ksp in the question is 10^-25

10^-25=X^5

X = 10^-25*1/5 =10^-5

which of the following ksp will precipitate first

a) 10^2 b)10 c) 10^-1 d) 10^-2

Ans 10^-2

Hydrogen bond is the attractive force which arises when hydrogen is covalently linked to element like a) Nitrogen , oxygen and fluorine b) Nitrogen,boron and oxygen c) Nitrogen fluorine and carbon d) Nitrogen ,oxygen and sodium

ans : Nitrogen , oxygen and fluorine

The NH3 molecule contains 3 single bond and one Line pair of the central Nitrogen atom true or false

Ans : true

which of these are covalent bond a) PCl3/Al3 b)MgOH c) NaCl d) none of the above

Ans PCl3/Al3

Atoms that readily accept an electron are a) group 1 and 2 b) group 3 and 4 c) group 5 and 8 d) group 6 and 7

ans:group 6 and 7

electrovalent bond can be formed between atom that readily____ their electron a) offer ,give b) Lose and attract c) attack ,Lose c) Lose,attract

ans : Lose and attract

NH3 has how many Lone pair a) 1 b) 2 c)3 d) 4

ans :1

write the chemical equation of MgO a) Mg + 2e- --> Mg^2-+O -2e- -->O^2+ b) Mg -2e- -->Mg^2- + O + 2e- -->O^2- c) Mg -2e- -->Mg^2+ + O + 2e- --> O^2-

Ans Mg -2e- -->Mg^2+ + O + 2e- --> O^2-