

Dr.K.K.R GOWTHAM EDUCATIONAL INSTITUTIONS-A.P

X CHEMISTRY HALF MARK QUESTION & ANSWERS

1. ACIDS BASES AND SALTS

- Identify the wrong statement
X: Acids react with metals and produce CO_2 gas.
Y : Acids react with metals and produce H_2 gas.
- What happens when an acid or a base is mixed with water?
- How does a strong acid differ from a concentrated acid
- A : In acidic medium methyl orange solution turns to red
B : In basic medium methyl orange solution turns to colourless
Which of the above statement is wrong ?
- Name the scientist who introduce pH scale.
- Write the molecular formulae of common salt and baking soda which are widely used at home
- While diluting an acid, why is it recommended that the acid should be added to water not water to the acid ?
- During the dilution of acid , Rani added water to acid, ravi added acid to water. Who is correct ?
- If you heat blue coloured copper sulphate crystals in a test tube, what do you observe on sides of the test tube ?
- What is the nature of a non – metal oxide ?
- Write pH range of a base ?
- What is the colour of CuSO_4 ?
- What type of reaction takes place in stomach when an antacid tablet is consumed ?
- Which statement is wrong ?
P : In acidic medium methyl orange solution turns to red ?
Q : In basic medium methyl orange solution turns to colourless ?
- Give one example to the neutralization reaction
- What is baking powder ?
- Give examples to acids and bases.

2. ATOMIC STRUCTURE

- The electronic configuration of Nitrogen is

$\uparrow\downarrow$	$\uparrow\downarrow$	$\uparrow\downarrow$	\uparrow	
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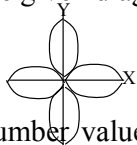
 which rule is deviated in this configuration
- An element has an atomic number 12. How many electrons will be present in K,L and M shells of its atom?
- “No two electrons of the atom can have all the four quantum numbers same “. Name the principle involved in this statement
 - Hund’s rule
 - Pauli’s exclusion principle
 - Aufbau principle

21. Which rule is violated in the electronic configuration $1s^0 2s^2 2p^4$?

22. Choose the suitable answers of section-B with section-A

Quantum number	values
A) principal quantum number	p) shape of orbitals
B) Angular momentum quantum number	Q) Intrinsic property of electrons
	R) size and energy of an orbit
	S) special orientation of orbitals

23. Which orbital does the given diagram represent ?



24. The four quantum number values of the 21st electron of scandium(Sc) are given in the following table.

n	l	m _l	m _s
3	2	-2	$+\frac{1}{2}$

Write the values of the four quantum numbers for the 20th electron of scandium in the form of the table

25. Match the following and select correct answer

- | | |
|---|----------------------|
| a) The maximum number of electrons in any shell is | i) $(2l+1)$ |
| b) Electrons are assigned to orbitals in order of increasing value of | ii) $(n+l)$ |
| c) For 'l' number of values of m _l are | iii) $2n^2$ |
| A) a-i , b-iii , c-ii | B) a-ii, b- i, c-iii |
| B) a-ii, b- i, c-iii | C) a-iii , b-ii, c-i |

26. What is Planck's constant ?

27. What is the maximum value of 'l' for n=4 ?

28. What is the maximum number of electrons that can occupy a main shell (n) ?

29. Match the following

Group -A	Group - B
i) Principal quantum number	a) Spatial orientation of orbitals
ii) Angular momentum quantum number	b) size and energy of orbitals
	c) Intrinsic property of electron
	d) shape of the orbitals

30. What is an orbital ?

31. Write the set of quantum numbers for the electron in Hydrogen atom.

32. What is the use of line spectra ?

3. PERIODIC CLASSIFICATION OF ELEMENTS

33. I am the element belongs to Halogen family and I have highest electro negativity value. Who am I ?

34. What is the atomic weight of Se, if S, Se, Te are Dobernier triads ?[A.wt of s=32 , Te=125]

35. A teacher asked to give an example for Dobereiner's Triad. Ramu wrote them as "Li, Na, Mg." In these three, identify which elements does not belong to this triad.

36. $[Cl], [X], [I]$ is an example of triad, what is X .

37. Which group elements are called chalcogens ?

38.

d-block elements	:	Transition elements	::	f- block elements	:	X
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 What is 'X' ?

39.

Mendeleeff's Periodic law	→	Atomic weight	→	Modern periodic law	→	?
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What is at ?

40. Write any two p-block elements
 41. Write any one of the Dobereiner Traid.
 42. Which of the following is more stable ?
 a) $1s^2 2s^2 2p^4$ b) $1s^2 2s^2 2p^3$ c) $1s^2 2s^2$
 43. How many groups and periods are there in the Mendeleev's periodic table ?
 44. Write the electronic configuration of ${}_{11}\text{Na}^+$.
 45. What is general electronic configuration of alkali metal family ?
 46. Write modern periodic law
 47. Define Ionization energy ?
 48. What is the basis of modern periodic table ?
 49. State the law of octaves.
 50. Which one between *Cl* and *Cl* would have more size ? why?
 51. a) Metallic character increases as we go along a period from left to right
 b) Metallic character decreases as we go along a group from top to bottom.
 A) a & b are true B) a&b are false
 c) a is true, b is false d) a is false, b is true
 52. Who proposed the "law of octaves" ?

4. CHEMICAL BONDING

53. Name the scientist who proposed VSEPR ?
 54. Name the scientist who proposed valence bond theory ?
 55. Which of the following is correct regarding the repulsion force between lone pair and bond pair of electrons.
 A) $b.p - b.p > b.p - l.p > l.p - l.p$ B) $b.p - b.p > b.p - b.p = l.p - l.p$
 c) $l.p - l.p > l.p - b.p > b.p - b.p$ d) $l.p - b.p = l.p - l.p = b.p - b.p$
 56. What is the bond angle ($\hat{H\hat{O}H}$) in a water molecule ?
 57. Expand VSEPR ?
 58. How many 'σ' and 'π' bonds are in O_2 molecule ?
 59. What is the shape of water molecule ?
 a) pyramidal shape b) Linear
 c) 'V' shape d) Dumbell
 60. What is a coordination number ?

5. PRINCIPLES OF METALLURGY

61. X : platinum occurs in free state
 Y : Platinum is a least reactive metal
 a) X is correct, Y is incorrect b) X is incorrect, y is correct C) Both X, Y are correct
62. Which method do you suggest for extraction of high reactive metals like sodium
63. In which furnace there is no direct contact between the hearth and fire box ?
64. In which method a low melting metal can be made to flow on a slopy surface to separate it from high melting impurities ?
 a) Liqutation b) Distillation c) polling d) Froth floatation
65. Which method is suitable to enrich sulphide ores
66. Which is used as the reducing agent in thermite process
67. Fe_2O_3 , NaCl , HgS , CaCO_3
 Which of the above is an carbonate ore ?
68. Matching.

Group –A	Group- B
i) Metallic oxides	p) Neutral
ii) Non – metallic oxides	Q) Basic in nature
	R) Acidic in nature
69. Give one situation where do we use hand picking method in our daily life.
70. What is the differences between Roasting and calcination ?

6. CARBON AND ITS COMPOUNDS

71. Which of the following is not an alkane ?
 CH_4 , C_3H_8 , C_2H_4 , C_5H_{12}
72. “I am produced by the action of chlorine on dry slaked lime and used as a reagent in the preparation of chloroform . “ who am I ?
73. In the diagram x is ?



74. Which of the following is correct regarding IUPAC name of the compound ?
 $\text{CH}_3 - \text{CH}_2 - \underset{\substack{| \\ \text{CH}_3}}{\text{CH}} - \text{CH}_3$

A) 3- Methyl butane B) 2- methyl butane c) pentane d) Hexane

75.

General formula of Alkanes	→	$\text{C}_n\text{H}_{2n+2}$	→	General formula of Alkynes	→	A
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A

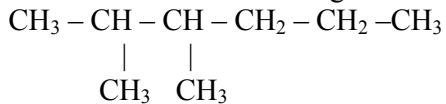
What is A ?

76. The reaction between ethyl alcohol and carboxylic acid in the presence of con. H_2SO_4 is known as
 a) Saponification reaction b) Addition reaction

c) Esterification reaction d) Substitution reaction

77. Which of the following is aldehyde
A) R-OH B) R-CHO C) R-O-R D) R-COOH

78. Write IUPAC name to the given compound.



79. Which of the following compound is not available ?

A) Ethyne B) Methyne C) Propyne

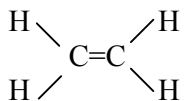
80. What is the suffix used for naming -COOH functional group ?

81. Give the names of functional groups.



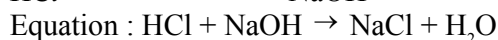
82. Write the general formula for Alkenes.

83. Which type of hybridization does undergo in the formation of the given molecule ?

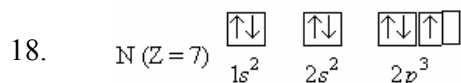


Key

1. 'X' is the wrong statement.
2. When an acid or base is mixed with water it changes into dilute acid or dilute base.
3. A strong acid is one that fully dissociates to form ions in aqueous solution. A concentrated acid on the other hand is one that has a very high concentration of Ions in aqueous solution.
4. B
5. Sorenson
6. NaCl, NaHCO₃
7. 1) If water is added to a concentrated acid, the heat generated may cause the mixture to splash out and cause burns.
2) The glass container may also break due to excessive local heating.
8. Ravi
9. We notice water droplets on sides of the test tube.
10. Acidic nature
11. 7-14
12. Blue colour
13. Neutralisation reaction
14. 'Q'
15. Hydrochloric Acid + Sodium Hydroxide → Sodium Chloride + Water



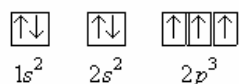
16. **Baking Powder** : Baking powder is a mixture of baking soda and a mild edible acid.
17. Acids – HCl, H₂SO₄
Bases – NaOH, KOH



This electron configuration does not support Hund's rule.

According to Hund's rule, the orbitals of equal energy are occupied with one electron each before pairing of electrons starts.

Hence the correct electron configuration is as follows.



19. Mg – $1s^2 2s^2 2p^6 3s^2$
K shell – 2 electrons
L shell – 8 electrons
M shell – 2 electrons
20. b

21. Aufbau principle is violated in this electronic configuration because according to Aufbau principle, electron enters orbital of lowest energy. Among 1s, 2s and 2p, 1s has least energy. So 1 s orbital must be filled before the electron should enter 2s.

22. A) principal quantum number (R) p) shape of orbitals
 B) Angular momentum quantum number (P) Q) Intrinsic property of electrons
 R) size and energy of an orbit
 S) special orientation of orbitals

23. $d_{x^2-y^2}$

24. Sc – 21
 $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^1$

n	l	m _l	m _s
4	0	0	$+\frac{1}{2}$
			or
			$-\frac{1}{2}$

25. C

26. 6.625×10^{-27} erg sec (or) 6.625×10^{-34} Joule sec

27. $l = 3$

28. $2n^2$

29. i) b ii) d

30. The region of space around the nucleus where the probability of finding electron is maximum is called orbital. Whereas orbit is the path of the electron around the nucleus.

31. $H - 1 - 1s^1$

$$n=1 \quad l=0 \quad m=0 \quad s=+\frac{1}{2}$$

32. The lines in atomic spectra can be used to identify unknown atoms, just like fingerprints are used to identify people.

33. Fluorine

34.

Sulphur (S)	Selenium (Se)	Tellurium (Te)	$\frac{32+125}{2} = 78.5 \sim 78$
32.0	78.0	125.0	

35. Magnesium . The Dobereiner triad is Li, Na , K

36. Bromine

37. VI A (Or) 16th group elements are called chalcogens

38. Inner transition elements

39. Atomic Number

40. Carbon & Nitrogen

41. Li, Na, K

42. b

43. 8, 7

44. $1s^2 2s^2 2p^6$

45. ns^1
46. The properties of the elements are the periodic functions of their atomic numbers.
47. Ionization energy : The energy required to remove an electron from the outermost orbit or shell of a neutral gaseous atom is called ionization energy.
48. Atomic number
49. When elements are arranged in the ascending order of their atomic weight, every element starting from a given element resembles in its properties to that of the starting element are called octaves.
50. 1) The electronic configuration of chlorine is $1s^2 2s^2 2p^6 3s^2 3p^5$ and the electronic configuration of chloride (Cl^-) ion is $1s^2 2s^2 2p^6 3s^2 3p^6$
- 2) Both chlorine and chloride ions have 17 protons each but there are 17 electrons in chlorine atom, whereas 18 electrons in chloride ion.
- 3) Therefore, the nuclear attraction is less in Cl^- ion when compared with chlorine atom.
- 4) Therefore the size of the chlorine (Cl) atom is less than size of chloride ion.
51. B
52. A.R. Newland
53. Sidgwick and Powell
54. Linus Pauling
55. C
56. $104^0 . 31^1$
57. Valency shell Electron Pair repulsion theory
58. 1 σ & 1 π bond
59. C
60. The number of ions of opposite charge that surround a given ion of given charge is known as coordination number of that given ion.
61. C
62. Electrolysis
63. Retort furnace
64. a
65. Froath floatation method
66. Sodium, Calcium, Aluminium
67. $CaCO_3$
68. i) Q ii) R
69. 1) Separating mud particles from rice is an example for hand picking because the colour and size of these two are different.
- 2) Similarly, the ore particles and the impurities are different in one of the properties like colour, size, etc. are separated by hand picking.
70. **Roasting** : The pyrochemical process in which the ore is heated in the presence of oxygen or air, below its melting point is called roasting.
- Calcination** : The pyrochemical process in which the ore is heated in the absence of air.
71. C_2H_4
72. Bleaching powder ($CaOCl_2$)
73. Hydrophobic end
74. B
75. C_nH_{2n-2}
76. C
77. B
78. 2, 3 – dimethyl hexane
79. B
80. -Oic acid
81. i) aldehyde ii) ketone
82. C_nH_{2n}
83. sp^2

