CHEMISTRY

BOOKS - PEARSON IIT JEE FOUNDATION

ATOMIC STRUCTURE AND TRANSFORMATION OF MATTER

Test Your Concepts Fill In The Blanks

1. The symbol of calcium is _____.

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2. Magnesium attains an octet configuration by _____ electrons.

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3. The electronic arrangement of an atom with two electrons in the first shell is called _____ if the first shell is the valence shell.

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4. Two molecules of sulphur trioxide are indicated by_____.

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5. _____ is the suffix used while naming the salt of a metal with lower valency.

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6. Name of the radical PO^{-3_4} is _____ .

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7. Formulae of sodium sulphite and sodium sulphate are, respectively _____ and _____ .

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8. Generally _____ changes are reversible because there is no change in the _____ of the substance.

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9. Decomposition of solid ammonium chloride is associated with _____ change.

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Test Your Concepts

1. The number of atoms of a molecule or compound is balanced on either side of a chemical equation by keeping appropriate _____ .

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2. The number of electrons present in the K shells of hydrogen and helium are

A. 2 and 1 respectively

B. 2 in both the elements

C. 1 and 2 respectively

D. 1 in both the elements

Answer: 3

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3. The charge possessed by permanganate is the same as _____ radical.

A. magnesium

B. bisulphate

C. sulphate

D. potassium

Answer: 2

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4. If the formulae of respective chlorides of X and Y are $XCl_3 \text{and} YCl_4$, respectively, then the valencies of X and Y are

A. 3 and 2

B. 3 and 4

C. 1 and 1

D. 1 and 4

Answer: 2

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5. The formula of a compound when a positive radical with valency 2 and negative radical with valency 1 combine is _____ .

A. B_2A

B. A_2B

C. AB_2

D. AB

Answer: 3

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6. Sugar gets charred when treated with conc. H_2SO_4 This is an example of _____ .

A. physical change.

B. chemical change.

C. simultaneous physical and chemical change.

D. chemical combination reaction.

Answer: 2

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7. Melting of wax is a _____.

A. chemical change

B. decomposition reaction

C. both physical and chemical change

D. physical change

Answer: 4

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8. Corrosion of a metal involves change in _____.

A. chemical composition

B. only colour and shape

C. only density

D. malleability and ductility

Answer: 1

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9. Formation of clouds , mist and fog are the examples of _____.

A. chemical combination of O_2 and H_2O.

B. physical change which involves condensation of water vapour

C. physical change which involves sublimation.

D. chemical change which involves absorption of huge amounts of energy.

Answer: 2

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10. The reaction $AgNO_3 + NaCl \rightarrow AgCl + NaNO_3$ is a _____ reaction.

A. chemical displacement

B. chemical combination

C. double displacement

D. decomposition

Answer: 3

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11. Which of the following elements is chemically inactive ?

A. Nitrogen

B. Neon

C. Hydrogen

D. Copper

Answer: 2

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12. The formula of chloride of corresponding metal is MCl_2. What is the valncy of the metal?

A. 4

B. 3

C. 1

D. 2

Answer: 4

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13. What will be the formula of the sulphate and sulphite of a trivalent metal?

A. $M_2(SO_4)_3, M_2(SO_3)_3$

B. $MSO_4, M_2(SO_3)_3$

C. M_2SO_4, M_2SO_3

D. MSO_4, MSO_3

Answer: 1

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14. Identify the atomic numbers of the pair of elements which possesses same number of electrons in L and M shells.

A. 12 , 18

B. 19 , 20

C. 18 , 16

D. 17 , 18

Answer: 2

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15. Which of the following is a physical change ?

A. Dissolution of lime in water.

B. Dissolution of CO_2 in water at high pressure.

C. Dissolution of concentrated acid in water.

D. Electrolysis of water.

Answer: 3

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16. Which of the following is not a chemical change?

A. Passing of steam over red hot coke.

B. Colour change of dilute nitric acid upon long standing.

C. Absorption of moisture by P_2O_5.

D. Absorption of moisture by $CaCl_2$.

Answer: 4

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17. Arrange the following point in sequence for derivation of formulae of compounds.

(a) The valencies of the ions or radicals are written below the radicals without positive and negative sing.

(b) If the valencies have common factors , they are divided by the highest common factor.

(c) The magnitude of valencies should be interchanged and written as subscripts on the right side of the respective ions.

(d) The positive radical followed by negative radical are written with their chatges.

(e) If the radicals contain more than one atom , they are enclosed in brackets and the appropriate valency (more than one) written as subscripts outside the bracket.

A. bcdea

B. dacbe

C. abcde

D. dabce

Answer: 2

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18.

	Column A			Column B
A.	$3O_2$	( )	a.	4 atoms of helium
B.	2Na	( )	b.	3 oxygen atoms
C.	4He	( )	c.	2 ions of sodium
D.	$8Cl_2$	( )	d.	2 atoms of sodium
		( )	e.	3 molecules of oxygen
		( )	f.	8 chlorine atoms
		( )	g.	8 molecules of chlorine

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19.

	Column A Name of radical			Column B Charge
A.	Zincate	( )	a.	− 3
B.	Stannic	( )	b.	+ 1
C.	Nitride	( )	c.	+ 2
D.	Potassium	( )	d.	+ 4
		( )	e.	- 2

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20.

	Column A			Column B
A.	$X + Y \rightarrow XY$	( )	a.	Displacement reaction
B.	$X + YZ \rightarrow XZ + Y$	( )	b.	Combination reaction
C.	$AB + XY \rightarrow AY + XB$	( )	c.	Decomposition reaction
D.	$AB \rightarrow A + B$	( )	d.	Double displacement reaction

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Very Short Answer Type Questions

1. What is the difference between symbol and formula ?

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2. Compara the mass of proton , neutron and electron?

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3. How do not the energy of orbits in an atom vary?

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4. The atomic number and mass number of an element are 13 and 27 respectively. Find the number of neutrons.

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5. Define valency.

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6. Name two metals that can exhibit variable valency .Also give the names of redicals.

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7. What is meant by synthesis reaction ? Given an example.

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8. $A + BC \rightarrow AC + B$ In the above equation , compare the reactivities of A and B.

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9. What is meant by electrolytic decomposition? Give an example.

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10. Give reason for the stability of inert gases.

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11. What is the valence shell ? What is the maximum number of electrons it can have in an atom?

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12. An atom is electrically neutral .

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13. What is photolytic decomposition ? Give an example.

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14. Identify physical and chemical changes among the following.

(a) Boiling of milk

(b) Ripening of fruits

(c) Curding of milk

(d) Melting of candle

(e) Rusting of iron

(f) Blackening of silverware

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15. Why should a chemical equation be balanced ?

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16. Dissolution of calcium oxide in water is which type of reaction?

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17. In a double decomposition reaction , one of the products is insoluble . What type of reaction is that ?

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18. Potassium chlorate on strong heating gives potassium chloride and oxygen . What type of reaction is this?

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19. Balance the following chemical equations.

(i) $NH_3 + Br_2 \rightarrow N_2 + NH_4Br$

(ii) $FeS_2 + O_2 \rightarrow Fe_2O_3 \rightarrow SO_2$

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20. In the table given below , some compounds are listed . In listed . In each case , identify the positive and negative radicals present in the compound.

		Positive radical	Negative radical
No.	Compound		
(i)	$CaSiO_3$		
(ii)	H_2SO_3		

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Short Answer Type Questions

1. Give the charactercs (symbol , change , mass) of all fundamental particles.

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2. Why do metals form cations and non - metals form anions?

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3. Calculate the number of neutrons in the following.

(a) ${}_{15}X^{31}$

(b) ${}_{92}\mathrm{U}^{235}$

(c) ${}_{19}\mathrm{K}^{39}$

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4. For each of the following reactions identify the products formed and balance the reaction.

$NaCl + AgNO_3 \rightarrow$

(b) $Zn + HCl \rightarrow$

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5. Define radical . Give some examples of bivalent negative radicals.

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6. How do you distinguish physical change and chemical change?

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7. Mention different types of combination reactions with example.

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8. What is meant by thermal decomposition ? Give an example.

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9. Difine double decomposition reaction . Give an example.

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10. What is a chemical displacement reaction ? Mention the condition required for it.

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11. Distinguish between cations and anions.

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12. In the table given below , some commonly used positive and negative radicals are listed . Use the crisscross method to obtain the formulae of the compound that is formed using the given radicals . Name the compound thus obtained.

No.	Positive radicals	Nagative radicals	Formula	Name of the compou
1.	Al^{+3}	PO_4^{-3}		
2.	Ca^{+2}	NO_3^{-1}		
3.	NH_4^{+1}	SO_4^{-2}		
4.	Al^{+3}	Ca^{-4}		

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13. Distinguish between atomic number and mass number with an example.

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14. Draw the geometrical representation of sulphur.

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15. Derive the formula of the following compounds.

(a) Ammonium nitrate

(b) Ferrous sulphate

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16. How do you distinguish metals and non - metals with respect to electronic arrangement?

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17. Write the electronic configurations of the following elements.

(a) magnesium

(b) Silicon

(c) Sulphur

(d) Argon

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18. Explain the following of sodium chloride.

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19. Write the symbols of the following elements.

(a) Cadmium

(b) Bismuth

(c) Silicon

(d) Argon

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20. Explain the observable change taking place during reaction of iron with the aqueous solutions of H_2SO_4 and $CuSO_4$ respectively.

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Essy Type Questions

1. Explain in detail the modern structure of atom.

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2. Give the electronic configuration and geometrical representation of the following elements.

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3. Classify the chemical reactions into various types depending on the way the products are formed by giving suitable examples.

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4. Mention the postulates and limitations of Dalton's atomic theory.

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5. Write the step in balancing a chemical equation with an example.

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6. What is valency ? Write short note on different types of valencies of cations with examples.

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Concept Application Level 1

1. The number of electrons in second shell of a metal with three valence electrons in the third shell is eight.

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2. The valency of helium is zero.

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3. The name of CrO_4^{-2} radical is dichromate ion.

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4. Rusting of iron is an example of both physical and chemical change.

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5. Sublimation of camphor is a physical change.

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6. The central part of the atom called nucleus accounts for the mass of an atom.

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7. Both protons and neutrons possess the same magnitude of charge but opposite signs.

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8. The maximum number of electrons in L shell is two.

Watch Video Solution

9. An atom is electrically neutral .

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10. In phosphide ion , the total number of electrons is equal to 12.

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11. The symbol of cobalt is _____.

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12. The mass of an electron is _____ times that of mass of a proton.

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13. The maximum number of electrons that can be accommodated in the outermost orbit is equal to _____.

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14. The valency of argon is _____.

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15. In the formation of sodium chloride , each chlorine gains_____ electron.

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16. The formula of a zincate radical is _____.

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17. The combining capacity of the metal which can exhibit more than one valency is called_____.

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18. Balackening of silverware is a _____ change.

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19. $2HOCl \rightarrow 2HCl + O_2$ is a _____ decomposition reaction.

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20. Atomic number of a metal having 12 neutrons and mass number 23 is _____ .

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21. The nucleus consists of

A. proton and electrons

B. electrons and neutron

C. protons and neutrons

D. All the above

Answer: 3

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22. The maximum number of electrons that can be accommodated in an orbit is equal to _____ where n is the number of orbits.

A. $4n^2$

B. $2n^2$

C. $(2n+1)^2$

D. n^2+4

Answer: 2

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23. Among the noble gases which gas does not have octet configuration?

A. Neon

B. Helium

C. Argon

D. Xenon

Answer: 2

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24. Which among the following pairs of elements forms cation and anion respectively ?

A. Sulphur and neon

B. Chlorine and sodium

C. Potassium and phosphorus

D. Aluminum and lithium

Answer: 3

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25. Which is a negative a radical among the following ?

A. Silcate

B. Ammonium

C. Ferrous

D. Chromium

Answer: 1

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26. Which among the following reactions is not balanced ?

A. $2KClO_3 \rightarrow 2KCl + 3O_2$

B. $2Fe(OH)_3 + 4H_2SO_4 \rightarrow Fe_2(SO_4)_3 + 6H_2O$

C. $2Pb(NO_3)_2 \rightarrow 2PbO + 4NO_2 + O_2$

D. $2KNO_3 + FeSO_4 \rightarrow FeSO_4 \rightarrow K_2SO_4 + Fe(NO_3)_2$

Answer: 2

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27. Among the following reactions , identify the synthesis reaction.

A. $2SO_2 + O_2 \rightarrow 2SO_3$

B. $C + O_2 \rightarrow CO_2$

C. $CaO + H_2O \rightarrow Ca(OH)_2$

D. $2H_2O \rightarrow 2H_2 + O_2$

Answer: 2

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28. Identify a useful change among the following chemical changes.

A. Blackening of silverware

B. Rusting of iron

C. Curding of milk

D. All the above

Answer: 3

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29. Which among the following is not a characteristic of a physical change?

A. The change is temporary.

B. No new substance is formed.

C. Molecular formula of a compound changes.

D. Change of state of matter takes place without any change in molecular composition.

Answer: C

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30. Among the following types of chemical reactions,application of metal reactivity series is involved with which reaction?

A. chemical combination of O_2 and H_2O.

B. Chemical displacement

C. Chemical decomposition

D. Double decomposition.

Answer: 2

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31. If a solid non-metal X forms oxide of type X_2O_5,then the formula of its corresponding chloride is _____ .

A. XCl_3

B. XCl_5

C. X_2Cl_5

D. X_3Cl_2

Answer: 2

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32. If the formula of a metal nitrite is $M(NO_2)_2$, then the formula of its dihydrogen phosphate is

A. $M_2(PO_4)_3$

B. $MHPO_4$

C. $M(H_2PO_4)_2$

D. M_2HPO_4

Answer: 3

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33. Identify the number of neutrons present in a pair of elements with atomic numbers 20 and 13, if their mass numbers are 40 and 27, respectively.

A. 20 and 13

B. 20 and 13

C. 17 and 20

D. 20 and 14

Answer: 4

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34. Heating solid ammonium chloride involves change in the _____.

A. physical state only

B. physical state as well as chemical composition

C. colour only

D. both colour and volume only

Answer: 2

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35. Which of the following is a chemical change ?

A. Formation of clouds

B. Formation of rust

C. Manufacture of milk powder from milk

D. Formation of black coating on the walls of tube light

Answer: 2

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36. Arrange the following sequence in order to derive the formula of zine oxide.

(a) The valencies of ions formed by zine and oxygen are written below without positive and negative sign.

(b) The positive ion that is Zn^{+2} followed by the negative ion , that is oxide $\left(O^{-2}\right.$ ion are written with ther charges.

(c) The valencies of zinc and oxide ion have common factors and hence they are divided by their highest common factor.

(d) The magnitude of valencies of the ions should be interchanged and written as subscripts on right side of the respective ions.

A. badc

B. abcd

C. bacd

D. cabd

Answer: 3

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37.

	Column A			Column B
A.	$4SO_2$	( )	a.	Three atoms of oxygen.
B.	$2Na^+$	( )	b.	Three oxygen molecules.
C.	$3O_2$	( )	c.	Eight molecules of chlorine.
D.	$8Cl_2$	( )	d.	Eight chlorine atoms.
		( )	e.	Two sodium atoms.
		( )	f.	Four sulphur dioxide molecules.
		( )	g.	Two sodium ions

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38.

	Column A Name of the radical			Column B Charge
A.	Aluminium	( )	a.	–1
B.	Stannous	( )	b.	+3
C.	Bisuphite	( )	c.	+2
D.	Silicate	( )	d.	+4
		( )	e.	–2

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39.

	Column A			Column B
A.	$2Pb(NO_3) \rightarrow PbO + 4NO_2 + O_2$	( )	a.	Combination reaction
B.	$Zn + FeSO_4 \rightarrow ZnSO_4 + Fe$	( )	b.	Double decomposition reaction
C.	$NaCl + AgNO_3 \rightarrow NaNO_3 + AgCl$	( )	c.	Decomposition reaction
D.	$S + O_2 \rightarrow SO_2$	( )	d.	Displacement reaction

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Level 2

1. X and Y are non mtals in which M shell is valence shell . Y is precedent to X . X shows uninegative valence . Identify the formulae of the compounds formed when X and Y react with divalent metal M.

A. MX_2, MY

B. MX, MY_2

C. M_3X_2, M_2Y_3

D. M_2X_3, M_3Y_2

Answer: 1

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2. Identify the formula of the corresponding hydride of a nonmetal 'X' which attains octet by gaining three electrons.

A. XH

B. XH_2

C. XH_3

D. X_2H_4

Answer: 3

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3. The number of positively charged particles in the elements A, B, C are 10, 18, 8 respectively . Identify the element which is chemically reactive?

A. A

B. B

C. C

D. Both A and B

Answer: 3

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4. If a dispositve ion of an element 'X' consists of 12 protons and 12 neutrons and another dipositve ion of an element 'Y' consists of 18 electrons and twice the number of electrons of dipostive ion X is the number of neutrons of Y. Then the mass number would be in the ratio of

A. $1:2$

B. $3:5$

C. $12:19$

D. $2:3$

Answer: 2

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5. If a uninegative ion has 10 neutrons and 9 protons , electronic configuration of the atom of the element is

A. 2, 8, 1

B. 2, 7

C. 2, 8

D. 2, 8 , 8

Answer: 2

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6. Mass of total positive charge present in an atom is 55110 times to that of mass of electron . Write the electronic configuration of the element.

A. 2, 8 , 9 , 2

B. 2 , 8 , 18 , 1

C. 2, 8 , 18 , 2

D. 2 , 8 , 8 2

Answer: 3

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7. The ratio of difference in the number of electrons between K and M shells is $3:2$ for X and Y elements respectively . 'X' possesses stable electronic configuration and M is the valence shell for both X and Y. Give the electronic configurations of X and y.

A. 2 , 8 , 5 and 2 , 8 , 4

B. 2 , 8 , 8 and 2 , 8 , 6

C. 2 , 8 , 8 and 2 , 6 , 6

D. 2 , 8 , 6 and 2 , 8 , 4

Answer: 2

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8.

$2KMnO_4 + H_2SO_4 + H_2C_2O_4 \rightarrow K_2SO_4 + 2MnSO_4 + 10CO_2 + 8H_2O$

Potassium permanganate oxidizes oxalic acid in acidic medium as per the above chemial reaction . Identify the coefficients of H_2SO_4 and $H_2C_2O_4$ in the above equation.

A. 3 , 5

B. 4 , 4

C. 5 , 3

D. 4 , 2

Answer: 1

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9. Heating of a mixture consisting of potassiumm nitrate , carbon and sulphur involves which of the following chemical changes ?

A. Decomposition and combination.

B. Double decomposition.

C. Combination and displacement.

D. Displacement and decomposition.

Answer: 1

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10. $CuSO_4 + X \rightarrow XSO_4 + Cu$, $CuSO_4 + Y \rightarrow YSO_4 + Cu$,

$XSO_4 + Y \rightarrow No$ reaction , $CuSO_4 + Z \rightarrow No$ reaction,

Arrange Cu , X, Y and Z in the ascending order of reactivity.

A. X, Y, Z, Cu

B. Cu , Y , X , Z

C. Cu , X, Z, Y

D. Z , Cu , Y , X

Answer: 4

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11. A metal M shows variable valencies 2 and 3. Calculate the ratio of oxygen atom present in their corresponding sulphates.

A. $1:3$

B. $3:1$

C. $3:4$

D. $3:2$

Answer: 1

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12. Identify the formula of the corresponding hydride of a nonmetal 'X' which attains octet by gaining two electrons.

A. XH

B. XH_3

C. XH_4

D. XH_2

Answer: 4

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13. The number of valence electrons in the valece shells , 1 , 2 , 3 of the X , Y , Z elements are 2 , 8 , 6 respectively . Identify the element which doesn ' t exist monoatomic state.

A. X

B. Z

C. Y

D. X and Y

Answer: 2

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14. The number of neutrons are equal to the number of protons present in the nucleus of two elements and their respective dinegative ions possess 8 electrons in L and M shells respectively . Then the ratio of mass numbers of the two elements is

A. $1:2$

B. $3:3$

C. $3:4$

D. $2:5$

Answer: 1

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15. Tripositive ion of an element has 13 protons and 14 neutrons . Calculate the of number of electrons present in K and M shells of the neutral atom.

A. $2:3$

B. $2:1$

C. $1:1$

D. $2:5$

Answer: 1

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16. The ratio of number of electrons present I four shells of an element is $1:4:4:1$, fourth shell is the valence shell . Then mass of total positive charge present in the atom is _____ times to that of mass of electron

A. 36 , 704

B. 27 , 555

C. 18 , 370

D. 55, 110

Answer: 1

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17. The difference in the number of elelctrons between K, L and L, M shells in the same for an atom of element 'X' (M shell is the valence shell) and the difference value is the number of valence electrons in M shell of the other element 'Y' . Give the electronic configurations of their stable ions.

A. 2 , 8 , 2 and 2 , 8 , 6

B. 2 , 8 and 2 , 8

C. 2 , 8 and 2 , 8 , 8

D. 2 , 8 , 8 and 8 , 8

Answer: 3

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18. The colour change of $CuSO_4$ solution can observed when it is made to react with

A. silver

B. silver chloride solution

C. zinc

D. gold

Answer: 3

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19. Identify the ratio of the coefficients of the products CuO, NO_2 and H_2O formed respectively when hydrated copper nitrate

is thermally decomposed.

$2Cu(NO_3)_2.6H_2O \rightarrow NO_2 + H_2O + O_2 + 2CuO$

A. $2:3:1$

B. $1:2:3$

C. $1:1.5:1$

D. $3:2:1$

Answer: 2

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20. Which of the following chemical change is a photolytic decomposition reaction?

A. Decomposition of HOCl on standing.

B. Formation of hydrogen chloride from their constituent elements.

C. Decomposition of limestone .

D. Both 1 and 2.

Answer: 1

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21. While explaining modern concept of atom , Jack asked the teacher " why are electrons , assumed to be in continuous motion around the nucleus instead of being stationary" ? What could be the explanation given by the teacher?

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22. A stable neutral atom 'X' contains two completely filled orbits . Find out its mass number if it consists of 10 neutrons.

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23. Mass of total positive charge present in an atom is 7348 times to that of the mass of a negativity charged particle . Find the atomic number of an element . Find out its valency.

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24. While coming back from school in the school bus , Bill asked his friend Gill to predict the atoms, X and Y while form a stable dinegative ion and a uninegative ion respectively . They have same number of electrons in the L shell which is the shell inner to the valence shell . predict the answer given by gill .

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25. Predict the valencies of the elements with atomic numbers 7 , 15 , 16 , 18 , 19 and justify Also give the formulae of hydrides formed by the above elements if any.

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26. In an atom , L and M shells have the same number of electrons . N shell has one electron less than K shell . Explain the formation of compound by this element and oxygen atom.

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27. Explain the formation of the compound formed by two elements with Z = 20 and Z = 17 .

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28. An atom of an element has the electrons distributed in four shells . If the electrons present in I and IV shells is in $1:1$ ration and , the ratio of electrons in II and III shell is also $1:1$, predict its valency and justofy .Write the formulae of (a) nitride (b) silicate (c) chloride.

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29. A negative ion of an atom element X has 18 electrons and 16 protons . Calculate the number of electrons and protons in its corresponding atom . Also calculate the number of nuetrons , if the mass number is units than double the number of protons.

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30. If the formula of metal sulphite of a metal M is MSO_3 , give the formulae of its

(a) phosphate

(b) hydrogen phosphate

(c) chloride

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31. In a chemical laboratory , a student broke the thermometer while performing an experiment . Immediately , the mercury which was spilled

over was removed by the lab - incharge by sprinkling sulphur on it . The teacher asked the students to predict the type of change / reaction associated with the above process. Explain with apporpriate reasons.

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32. Asha 's mother asked her daughter Asha to boil the milk and after some time , she told Usha , Asha 's sister to add little curd in the same luke warm milk . Next day , their father while teaching " Transformation of matter " to his daughters wanted to relate the given activity . so he asked them - " what type of change was involved in the activities performed by you yesterday ?" Predict the answer given by them and justify.

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33. What is the valency of iron in the products formed

(a) When iron is exposed to humid air for a long time?

(b) When red hot iron is made to react with steam?

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34. Give the necessary chemical equations and balance them.

(a) Reaction of red hot iorn with steam to give Fe_3O_4 .

(b) burning magnesiun ribbon in an atmosphere of nitrogen.

(c) Displacement of copper from the solution of its sulphate by zinc.

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35. In a science fair , a student took two test tubes labelled A and B filled with copper sulphate solution, then he put magnesium ribbon in test tube A silver foil in tube B. Predict the observation and justify.

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Level 3

1. An atom of an element 'X' has three completely filled shell . The ratio of electrons in 1 and 4 shells is $1:1$. Find the atomic number of 'X' . Also write the formulae of its bicarbonate , chromate and phosphide.

Watch Video Solution

2. A metal (M) and a non - metal (X) form a compound with formula M_4X_3 . Predict the electronic arrangements of M and X assuming that M has three occupied shells and X has two occupied shells. Also derive the formulae of (a) sulphate (b) dihydrogen phosphate (c) hydroxide of ion of M.

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3. Two metals A and B possess the same number of electrons in L shell and they differ by 1 unit in the number of electrons present in valence shell and number of valence electrons are greater in B than A. The ions formed get the configuration of the nearest inert gases namely argon

and neon respectively. Give the probable electronic configurations of metals corresponding to A and B and give the formulae of their corresponding nitrite , nitrate , sulphite and bisulphite.

View Text Solution

4. Number of atoms on either side of a chemical equation is balanced by keeping appropriate coefficients and not by changing the subscripts of the element in the formulae . Justify .

Watch Video Solution

5. An atom of an element has two shells with electrons.The valence shell has 2n + 1 electrons where n is the number of electrons in the innershell. This element can form a radical X with hydrogen and two radicals Y and Z with oxygen, Z has more number of oxygen than Y. Identify the element and the radicals. Write the reaction taking place between solutions of two salts, AgZ and XCl. Identify the type of reaction.

Watch Video Solution

Assessment Test 1

1. Which of the following involves only physical change ?

A. Dissolution of lime in water.

B. Dissolution of carbon dioxide in water at high pressure.

C. Dissolution of concentrated acid in water.

D. Electrolysis of water.

Answer: 3

Watch Video Solution

2. Arrange the points in sequence to draw the geometrical representation of an atom which is resprecented as $_{}(Z)X^{A}$.

(a) Calculation of the number of protons and neutrons.

(b) Identification of the atomic number and mass number of the given element.

(c) Placement of the electrons in shells around the nucleus according to the electronic configuration.

(d) Wirting the electronc configuration of the atom.

(e) Protons and neutrons are shown in nuleus.

A. baedc

B. bacde

C. abcde

D. ecbad

Answer: 1

Watch Video Solution

3. (a) $H_2 + Br_2 \rightarrow 2HBr$

(b) $HBr + NaOH \rightarrow NaBr + H_2O$

(c) $2NaBr + Cl_2 \rightarrow 2NaCl + Br_2$

(d) $2NaCl \rightarrow 2Na + Cl_2$ Arrange the above reactions in order s double displacement reaction, combination reaction, decomposition reaction and displacement reaction.

A. badc

B. bdac

C. bacd

D. abdc

Answer: 1

Watch Video Solution

4. $2KMnO_4 + H_2C_2O_4 \rightarrow K_2SO_4 + 2MnSO_4 + 10CO_2 + 8H_2O.$ ltvrgt Potassium permanganate oxidises oxalic acid in acidic medium as per the above chemical reaction. Identify the coefficient of H_2SO_4 in the above equatio.

A. 3

B. 4

C. 5

D. 2

Answer: 1

Watch Video Solution

5. What will be the formula of the sulphate and sulphite of a trivalent metal that is M^{+3} ?

A. $M_2(SO_4)_3$

B. MSO_4

C. M_2SO_4

D. MSO_3

Answer: 1

Watch Video Solution

6. Match the element in column A with the electronic configuration given in column B.

	Column A			Column B
(A)	Chlorine	$()$	(a)	$2,2$
(B)	Scandium	$()$	(b)	$2,8,7,$
(C)	Manganese	$()$	(c)	$2,8,9,2$
(D)	Beryllim	$()$	(d)	$2,8,13,2$

A. $A \to C, \quad B \to d, \quad C \to a, \quad D \to b$

B. $A \to d, \quad B \to a, \quad C \to b, \quad D \to c$

C. $A \to b, \quad B \to a, \quad C \to d, \quad D \to a$

D. $A \to d, \quad B \to a, \quad C \to c, \quad D \to b$

Answer: 3

Watch Video Solution

7. Assertion (A) : Mass number of a carbon is 12.

Reason (R) : Carbon possesses equal number of all three fundamental

particles.

A. Both A and R are true and R is the correct explanation For A.

B. Both A and R are true but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer: 2

Watch Video Solution

8. Identify the atomic numbers of the pair of elements which possesses same number of electrons in L and M shells.

A. 18

B. 19

C. 16

D. 18

Answer: 2

Watch Video Solution

9. If $\overline{X}$ ion has 10 neutrons and 9 protons , then the electronic configuration of the atom of the element x is

A. 1 , 8 , 1

B. 2 , 1

C. 2 , 8

D. 2 , 8 , 8

Answer: 2

Watch Video Solution

10. Assertion (A): Copper exhibits variable valency.

Reason (R): Copper loses two electrons from its valence shell and it can

also lose one more electron from the second last shell.

A. Both A and R are true and R is the correct explanation For A.

B. Both A and R are true but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer: 3

Watch Video Solution

11. The ratio of difference in the number of electrons between K and M shells is $3:2$ for X and Y elements respectively . 'X' possesses stable electronic configuration and M is the valence shell for both X and Y. The electronic configurations of X and Y are respectively.

A. 2 , 8 , 5 and 2 , 8 , 4

B. 2 , 8 , 8 and 2 , 8 , 6

C. 2 , 8 , 8 and 2 , 6 , 6

D. 2 , 8 , 6 and 2 , 8 , 4

Answer: 2

Watch Video Solution

12. Which of the following is not a chemical change ?

A. Passing of steam over red hot coke.

B. Change in the colour of dilute nitric acid upon long standing.

C. Absorption of moisture by P_2O_5.

D. Absorption of moisture by $CaCl_2$.

Answer: 4

Watch Video Solution

13. The atomic number of three elements A, B and C are 10 , 18 and 8 respectively . Identify the element which is chemically reactive ?

A. A

B. B

C. C

D. Both a and B

Answer: 3

Watch Video Solution

14. If a dispositve ion of an element 'X' consists of 12 protons and 12 neutrons and another dipositve ion of an element 'Y' consists of 18 electrons and twice the number of electrons of dipostive ion X is the number of neutrons of Y. Then the mass number would be in the ratio of

A. $1:2$

B. $3:5$

C. $12:19$

D. $2:3$

Answer: 2

Watch Video Solution

15. The formula of chloride of corresponding metal is MCl_2. What is the valncy of the metal?

A. 4

B. 3

C. 1

D. 2

Answer: 4

Watch Video Solution

Assessment Test 2

1. Heating solid ammonium chloride involves change in the _____.

A. physical state only

B. physical state as well as chemical composition

C. colour only

D. both colour and volume only

Answer: 2

Watch Video Solution

2. Arrange the following points in a sequence to draw the geometrical representation of $_{20}Ca^{40}$. (1)Protons and neutrons are shown in the nucleus.(2) Writing the electronic configuration of the atom.(3)Arrange the electrons in shells around the nucleus following the electronicco

nfiguration.(4) Calculation of the number of protons and neutrons. (5)Identification of the atomic number and mass number of the atom.

A. edcba

B. edabc

C. abcde

D. cabde

Answer: 2

Watch Video Solution

3. Four types of reactions are given below in a particular order.

(1) Displacement reaction

(2) Combination reaction

(3) Double displacement displacement

(4) Decomposition reaction

Following this sequence to arrange the reaction given below.

(a) $A + B \rightarrow AB$.

(b) $AB \rightarrow A + B$

(c) $AB + C \rightarrow CB + A$

(d) $AC + BD \rightarrow AD + BC$

A. cadb

B. bacde

C. bdac

D. acbd

Answer: 1

Watch Video Solution

4. Identify the coefficients of the product CuO and NO2 formed respectively when hydrated copper nitrate is themally decomposed.

$2Cu(NO_3)_2.6H_2O \rightarrow CuO + NO_2 + 6H_2O + O_2$

A. 3 , 4

B. 2 , 4

C. 4 , 5

D. 2 , 3

Answer: 2

Watch Video Solution

5. If the formula of a metal ion is M^{+2} then the formula of its dihydrogen phosphate is

A. $M_2(PO_4)_3$

B. $MHPO_4$

C. $M(H_2PO_4)_2$

D. M_2HPO_4

Answer: 3

Watch Video Solution

6. Match the element in column A with the valency exhibited by the element given in column B

	Column A			Column B
(A)	Neon	$()$	(a)	4
(B)	Oxygen	$()$	(b)	3
(C)	Potassium	$()$	(c)	2
(D)	Boron	$()$	(d)	1
(E)	Silicon	$()$	(d)	0

A. $A \to b, \quad B \to c, \quad C \to d, \quad D \to e, \quad E \to a$

B. $A \to b, \quad B \to c, \quad C \to a, \quad D \to e, \quad E \to d$

C. $A \to e, \quad B \to d, \quad C \to a, \quad D \to b, \quad E \to c$

D. $A \to e, \quad B \to c, \quad C \to d, \quad D \to b, \quad E \to a$

Answer: 4

Watch Video Solution

7. Assertion (A) : The total mass of the protons of a boron atom is 6185 times the total mass of electrons.

Reason (R) : Mass of one proton is 1837 times the mass of electron.

A. Both A and R are true and R is the correct explanation For A.

B. Both A and R are true but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer: 4

Watch Video Solution

8. Identify the number of neutrons present in a pair of element with atomic numbers 20 and 13 , if their mass numbers are 40 and 27 respectively.

A. 20 and 13

B. 20 and 20

C. 17 and 20

D. 20 and 14

Answer: 4

Watch Video Solution

9. Tripositive ion of an element has 13 protons and 14 neutrons . Calculate the of number of electrons present in K and M shells of the neutral atom.

A. 2

B. 1

C. 3

D. 5

Answer: 3

Watch Video Solution

10. Assertion (A): Sodium forms a monovalent ion.

Reason (R): Sodium loses only one electron from the second last shell.

A. Both A and R are true and R is the correct explanation For A.

B. Both A and R are true but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer: 3

Watch Video Solution

11. The difference in the number of elelctrons between K, L and L, M shells in the same for an atom of element 'X' (M shell is the valence shell) and the difference value is the number of valence electrons in M shell of the other element 'Y' . Give the electronic configurations of their stable ions.

A. 2 , 8 , 2 and 2 , 8 , 6

B. 2 , 8 and 2 , 8

C. 2 , 8 and 2 , 8 , 8

D. 2 , 8 , 8 and 2, 8 , 8

Answer: 3

Watch Video Solution

12. Which of the following is a chemical change ?

A. Formation of clouds

B. Formation of rust

C. Manufacture of milk powder from milk

D. Formation of black coating on the walls of tube light

Answer: 2

Watch Video Solution

13. The atomic numbers of the elements X, Y and Z are 2, 10 and 16, respectively. Identify the element which does not exist in monoatomic state.

A. X

B. Z

C. Y

D. X and Y

Answer: 2

Watch Video Solution

14. The number of neutrons are equal to the number of protons present in the nucleus of two elements and their respective dinegative ions possess 8 electrons in L and M shells respectively . Then the ratio of mass numbers of the two elements is

A. $1:2$

B. $2:3$

C. $3:4$

D. $2:5$

Answer: 1

Watch Video Solution

15. If a solid non - metal 'X' forms oxide of type X_2O_5 , the valency of X is

A. 3

B. 5

C. 6

D. 4

Answer: 2

Watch Video Solution

Example

1. Calculate the number of neutrons in the following.

$_{15}X^{31}$

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2. Calculate the number of neutrons in the following. $_{92}U^{235}$

Watch Video Solution

3. Calculate the number of neutrons in the following. $_{19}K^{39}$

Watch Video Solution

4. Give the electronic configureation and geometrical representation of the following element ? Flourine.

Watch Video Solution

5. Give the electronic configureation and geometrical representation of the following element ? Sodium.

Watch Video Solution

6. Give the electronic configureation and geometrical representation of the following element ? Chlorine.

Watch Video Solution

7. Give the electronic configureation and geometrical representation of the following element ? Carbon.

Watch Video Solution

8. Derive the formulae of the following compound Ammonium nitrate.

Watch Video Solution

9. Derive the formulae of the following compound Ferrous sulphate.

Watch Video Solution

10. Give the necessary chemical equations and balance them.

Reaction of red hot iron with steam to give Fe_3O_4.

Watch Video Solution

11. Give the necessary chemical equations and balance them.

Burning magnesium ribbon in an atomsphere of nitrogen.

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12. Give the necessary chemical equations and balance them.

Displacement of copper from its sulphate salt solution by zinc.

Watch Video Solution

Watch Video Solution

13. Explain the observable change taking place during reaction of iron with the aqueous solutions of H_2SO_4 and $CuSO_4$ respectively.

Watch Video Solution

14. In the table given below, some compounds are listed. In each case identify the positive and negative radicals present in the compound.

	Compounds	Positive radical	Negative radical
(a)	SiO_2		
(b)	CuS		
(c)	H_2O_2		
(d)	BaO_2		
(e)	MgS		
(f)	$NaAlO_2$		
(g)	MnO_2		
(h)	LiH		
(i)	$KMnO_4$		
(j)	$CaSiO_3$		
(k)	CaF_2		
(l)	HOCl		
(m)	$CaCO_3$		

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Test Your Concepts Very Short Answer Type Questions

1. The symbol of calcium is _____ .

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2. Magnesium attains an octet configuration by _____ electrons.

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3. The electronic arrangement of an atom with two electrons in the first shell is called _____ if the first shell is the valence shell.

Watch Video Solution

4. Two molecules of sulphur trioxide are indicated by_____.

Watch Video Solution

5. _____ is the suffix used while naming the salt of a metal with lower valency.

Watch Video Solution

6. Name of the radical PO^{-3_4} is _____ .

Watch Video Solution

7. Formulae of sodium sulphite and sodium sulphate are, respectively _____ and _____ .

Watch Video Solution

8. Generally _____ changes are reversible because there is no change in the _____ of the substance.

Watch Video Solution

9. Decomposition of solid ammonium chloride is associated with _____ change.

Watch Video Solution

10. The number of atoms of a molecule or compound is balanced on either side of a chemical equation by keeping appropriate _____ .

Watch Video Solution

11. The number of electrons present in the K shells of hydrogen and helium are

A. 2 and 1, respectively

B. 2 in both the elements

C. 1 and 2, respectively

D. 1 in both the elements

Answer: C

Watch Video Solution

12. The charge possessed by permanganate is the same as _____ radical.

A. magnesium

B. bisulphate

C. sulphate

D. potassium

Answer: b

Watch Video Solution

13. If the formulae of respective chlorides of X and Y are $XCl_3 \text{and} YCl_4$, respectively, then the valencies of X and Y are

A. 3 and 2

B. 3 and 4

C. 1 and 1

D. 1 and 4

Answer: b

Watch Video Solution

14. The formula of a compound when a positive radical with valency 2 and negative radical with valency 1 combine is _____ .

A. B_2A

B. A_2B

C. AB_2

D. AB

Answer: c

Watch Video Solution

15. Sugar gets charred when treated with conc. H_2SO_4 This is an example of _____ .

A. physical change

B. chemical change

C. simultaneous physical and chemical changes

D. chemical combination reaction

Answer: b

Watch Video Solution

16. Melting of wax is a _____.

A. chemical change

B. decomposition reaction

C. both physical and chemical change

D. physical change

Answer: d

Watch Video Solution

17. Corrosion of a metal involves change in _____.

A. chemical composition

B. only colour and shape

C. only density

D. malleability and ductility

Answer: a

Watch Video Solution

18. Formation of clouds , mist and fog are the examples of _____.

A. chemical combination of O_2 and H_2O.

B. physical change which involves condensation of water vapour.

C. physical change which involves sublimation.

D. chemical change which involves absorption of huge amounts of energy.

Answer: b

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19. The reaction $AgNO_3 + NaCl \rightarrow AgCl + NaNO_3$ is a _____ reaction.

A. chemical displacement

B. chemical combination

C. double displacement

D. decomposition

Answer: c

Watch Video Solution

20. Which of the following elements is chemically inactive ?

A. Nitrogen

B. Neon

C. Hydrogen

D. Copper

Answer: b

Watch Video Solution

21. The formula of chloride of a corresponding metal is MCl_2. What is the valency of the metal?

A. 4

B. 3

C. 1

D. 2

Answer: d

Watch Video Solution

22. What will be the formula of the sulphate and sulphite of a trivalent metal?

A. $M_2(SO_4)_3$, $M_2(SO_3)_3$

B. MSO_4, $M_2(SO_3)_3$

C. M_2SO_4, M_2SO_3

D. MSO_4, MSO_3

Answer: a

Watch Video Solution

23. Identify the atomic numbers of the pair of elements which possesses same number of electrons in L and M shells.

A. 12, 18

B. 19, 20

C. 18, 16

D. 17, 18

Answer: b

Watch Video Solution

24. Which of the following is a physical change ?

A. Dissolution of lime in water.

B. Dissolution of CO^2 in water at high pressure.

C. Dissolution of concentrated acid in water.

D. Electrolysis of water.

Answer: c

Watch Video Solution

25. Which of the following is not a chemical change?

A. Passing of steam over red hot coke.

B. Colour change of dil nitric acid upon longstanding.

C. Absorption of moisture by P_2O_5.

D. Absorption of moisture by $CaCl_2$.

Answer: d

Watch Video Solution

26. Arrange the following points in a sequence for derivation of formulae of compounds.

(1) The valencies of the ions or radicals are written below the radicals without positive and negative sign

(2) If the valencies have common factors, then they are divided by the highest common factor.

(3) The magnitude of valencies should be inter changed and written as subscripts on the right side of the respective ions.

(4) The positive radical followed by negative radical are written with their charges.

(5) If the radicals contain more than one atom, they are enclosed in brackets and the appropriate valency (more than one) written as subscriptsoutside the bracket.

A. 2, 3, 4, 5, 1

B. 4, 1, 3, 2,5

C. 1, 2, 3, 4, 5

D. 4, 1, 2, 3,5

Answer: b

View Text Solution

Column A		Column B
A. $3O_2$	( )	a. 4 atoms of helium
B. 2Na	( )	b. 3 oxygen atoms
C. 4He	( )	c. 2 ions of sodium
D. $8Cl_2$	( )	d. 2 atoms of sodium
	( )	e. 3 molecules of oxygen
	( )	f. 8 chlorine atoms
	( )	g. 8 molecules of chlorine

27.

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28.

Column A Name of radical		Column B Charge
A. Zincate	( )	a. −3
B. Stannic	( )	b. +1
C. Nitride	( )	c. +2
D. Potassium	( )	d. +4
	( )	e. −2

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29.

Column A		Column B
A. $X + Y \rightarrow XY$	( )	a. Displacement reaction
B. $X + YZ \rightarrow XZ + Y$	( )	b. Combination reaction
C. $AB + XY \rightarrow AY + XB$	( )	c. Decomposition reaction
D. $AB \rightarrow A + B$	( )	d. Double displacement reaction

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30. What is the difference between symbol and formula ?

Watch Video Solution

31. Compara the mass of proton , neutron and electron?

Watch Video Solution

32. How do not the energy of orbits in an atom vary?

Watch Video Solution

33. The atomic number and mass number of an element are 13 and 27 respectively. Find the number of neutrons.

Watch Video Solution

34. Define valency.

Watch Video Solution

35. Name two metals that can exhibit variable valency .Also give the names of redicals.

Watch Video Solution

36. What is meant by synthesis reaction ? Given an example.

Watch Video Solution

37. $A + BC \rightarrow AC + B$ In the above equation , compare the reactivities of A and B.

Watch Video Solution

38. What is meant by electrolytic decomposition? Give an example.

Watch Video Solution

39. Give reason for the stability of inert gases.

Watch Video Solution

40. What is the valence shell ? What is the maximum number of electrons it can have in an atom?

Watch Video Solution

41. An atom is electrically neutral .

Watch Video Solution

42. What is photolytic decomposition ? Give an example.

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43. Identify physical and chemical changes among the following.

(a) Boiling of milk

(b) Ripening of fruits

(c) Curding of milk

(d) Melting of candle

(e) Rusting of iron

(f) Blackening of silverware

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44. Why should a chemical equation be balanced ?

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45. Dissolution of calcium oxide in water is which type of reaction?

Watch Video Solution

46. In a double decomposition reaction , one of the products is insoluble . What type of reaction is that ?

Watch Video Solution

47. Potassium chlorate on strong heating gives potassium chloride and oxygen . What type of reaction is this?

Watch Video Solution

48. Balance the following chemical equations.

(i) $NH_3 + Br_2 \rightarrow N_2 + NH_4Br$

(ii) $FeS_2 + O_2 \rightarrow Fe_2O_3 \rightarrow SO_2$

Watch Video Solution

49. In the following table, some compounds are listed.In each case, identify the positive and negative radicals present in the compound.

No.	Compounds	Positive radical	Negative radical
(i)	C_4SiO_3		
(ii)	H_2SO_3		

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Test Your Concepts Short Answer Type Questions

1. Give the charactercs (symbol , change , mass) of all fundamental particles.

Watch Video Solution

2. Why do metals form cations and non - metals form anions?

Watch Video Solution

3. Calculate the number of neutrons in the following.

(a) ${}_{.15}X^{31}$

(b) ${}_{.92}\mathrm{U}^{235}$

(c) ${}_{.19}\mathrm{K}^{39}$

Watch Video Solution

4. For each of the following reactions identify the products formed and balance the reaction.

$NaCl + AgNO_3 \rightarrow$

(b) $Zn + HCl \rightarrow$

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5. Define radical . Give some examples of bivalent negative radicals.

Watch Video Solution

6. How do you distinguish physical change and chemical change?

Watch Video Solution

7. Mention different types of combination reactions with example.

Watch Video Solution

8. What is meant by thermal decomposition ? Give an example.

Watch Video Solution

9. Difine double decomposition reaction . Give an example.

Watch Video Solution

10. What is a chemical displacement reaction ? Mention the condition required for it.

Watch Video Solution

11. Distinguish between cations and anions.

Watch Video Solution

12. In the table given below , some commonly used positive and negative radicals are listed . Use the crisscross method to obtain the formulae of the compound that is formed using the given radicals . Name the compound thus obtained.

No.	Positive radicals	Nagative radicals	Formula	Name of the compou
1.	Al^{+3}	PO_4^{-3}		
2.	Ca^{+2}	NO_3^{-1}		
3.	NH_4^{+1}	SO_4^{-2}		
4.	Al^{+3}	Ca^{-4}		

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13. Distinguish between atomic number and mass number with an example.

Watch Video Solution

14. Draw the geometrical representation of sulphur.

Watch Video Solution

15. Derive the formula of the following compounds.

(a) Ammonium nitrate

(b) Ferrous sulphate

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16. How do you distinguish metals and non - metals with respect to electronic arrangement?

Watch Video Solution

17. Write the electronic configurations of the following elements.

(a) magnesium

(b) Silicon

(c) Sulphur

(d) Argon

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18. Explain the formation of sodium chloride.

Watch Video Solution

19. Write the symbols of the following elements.

(a) Cadmium

(b) Bismuth

(c) Silicon

(d) Argon

Watch Video Solution

20. Explain the observable change taking place during reaction of iron with the aqueous solutions of H_2SO_4 and $CuSO_4$ respectively.

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Test Your Concepts Essay Type Questions

1. Explain in detail the modern structure of atom.

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2. Give the electronic configuration and geometricalatomic theory representation of the following elements:

(a) fluorine

(b) sodium

(c) chlorine

(d) carbon

Watch Video Solution

3. Classify the chemical reactions into various types types of valencies of cations with examples. depending on the way the products are formed by giving suitable examples.

View Text Solution

4. Mention the postulates and limitations of Dalton's atomic theory.

Watch Video Solution

5. Write the steps in balancing a chemical equation with an example.

View Text Solution

6. What is valency ? Write short note on different types of valencies of cations with examples.

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Concept Application Level 1

1. The number of electrons in second shell of a metal with three valence electrons in the third shell is eight.

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2. The valency of helium is zero.

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3. The name of CrO_4^{-2} radical is dichromate ion.

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4. Rusting of iron is an example of both physical and chemical change.

Watch Video Solution

5. Sublimation of camphor is a physical change.

Watch Video Solution

6. The central part of the atom called nucleus accounts for the mass of an atom.

Watch Video Solution

7. Both protons and neutrons possess the same magnitude of charge but opposite signs.

Watch Video Solution

8. The maximum number of electrons in the L shell is two.

Watch Video Solution

9. An atom is electrically neutral .

Watch Video Solution

10. In phosphide ion , the total number of electrons is equal to 12.

Watch Video Solution

11. The symbol of cobalt is _____.

Watch Video Solution

12. The mass of an electron is _____ times that of mass of a proton.

Watch Video Solution

13. The maximum number of electrons that can be accommodated in the outermost orbit is equal to _____.

Watch Video Solution

14. The valency of argon is _____.

Watch Video Solution

15. In the formation of sodium chloride , each chlorine gains_____ electron.

Watch Video Solution

16. The formula of a zincate radical is _____.

Watch Video Solution

17. The combining capacity of the metal which can exhibit more than one valency is called_____.

Watch Video Solution

18. Balackening of silverware is a _____ change.

Watch Video Solution

19. $2HOCl \rightarrow 2HCl + O_2$ is a _____ decomposition reaction.

Watch Video Solution

20. Atomic number of a metal having 12 neutrons and mass number 23 is _____ .

Watch Video Solution

21. The nucleus consists of

A. proton and electrons.

B. electrons and neutron.

C. protons and neutrons.

D. all the above.

Answer: C

Watch Video Solution

22. The maximum number of electrons that can be accommodated in an orbit is equal to _____ where n is the number of orbits.

A. $4\pi^2$

B. $2\pi^2$

C. $(2n+1)^2$

D. π^2+4

Answer: b

Watch Video Solution

23. Among the noble gases which gas does not have octet configuration?

A. neon

B. helium

C. argon

D. xenon

Answer: b

Watch Video Solution

24. Which among the following pairs of elements forms cation and anion respectively ?

A. sulphur and neon

B. chlorine and sodium

C. potassium and phosphorus

D. aluminium and lithium

Answer: c

Watch Video Solution

25. Which is a negative a radical among the following ?

A. silicate

B. ammonium

C. ferrous

D. chromium

Answer: a

Watch Video Solution

26. Which among the following reactions is not balanced ?

A. $2KClO_3 \rightarrow 2KCl + 3O_2$

B. $2Fe(OH)_3 + 4H_2SO4 \rightarrow Fe_2(SO_4)_3 + 6H_2O$

C. $2Pb(NO_32 + 2PbO + 4NO_2 + O_2$

D. $2KNO_3 + FeSO_4 \rightarrow K_2SO_4 + Fe(NO_3)_2$

Answer: b

Watch Video Solution

27. Among the following reactions, identify the synthesis reaction.

A. $S + O_2 \rightarrow SO_2$

B. $C + O_2 \rightarrow CO_2$

C. $CaO + H_2O + Ca(OH)_2$

D. $2H_2O \rightarrow 2H_2 + O_2$

Answer: b

View Text Solution

28. Identify a useful change among the following chemical changes.

A. blackening of silverware.

B. rusting of iron.

C. curdling of milk.

D. all the above.

Answer: c

Watch Video Solution

29. Which among the following is not a characteristic of a physical change?

A. The change is temporary.

B. No new substance is formed.

C. Molecular formula of a compound changes.

D. Change of state of matter takes place withoutany change in molecular composition.

Answer: c

Watch Video Solution

30. Among the following types of chemical reactions,application of metal reactivity series is involved with which reaction?

A. chemical combination

B. chemical displacement

C. chemical decomposition

D. double decomposition

Answer: b

Watch Video Solution

31. If a solid non-metal X forms oxide of type X_2O_5,then the formula of its corresponding chloride is _____ .

A. XCl_3

B. XCl_5

C. X_2Cl_5

D. X_2Cl_2

Answer: b

Watch Video Solution

32. If the formula of a metal nitrite is $M(NO_2)_2$, then the formula of its dihydrogen phosphate is

A. $M_2(PO_4)_3$

B. $MHPO_4$

C. $M(H_2PO_4)_2$

D. M_2HPO_4

Answer: c

Watch Video Solution

33. Identify the number of neutrons present in a pair of elements with atomic numbers 20 and 13, if their mass numbers are 40 and 27, respectively.

A. 20 and 13

B. 20 and 13

C. 17 and 20

D. 20 and 14

Answer: d

Watch Video Solution

34. Heating solid ammonium chloride involves change in the _____.

A. physical state only

B. physical state as well as chemical composition.

C. colour only.

D. both colour and volume only.

Answer: b

Watch Video Solution

35. Which of the following is a chemical change?

A. formation of clouds.

B. formation of rust.

C. manufacture of milk powder from milk.

D. formation of black coating on the walls of atube light.

Answer: b

Watch Video Solution

36. Arrange the following sequence in order to derive the formula of zinc oxide.

(1) The valencies of ions formed by zinc and oxygen are written below without positive and negative sign.

(2) The positive ion, i.e., Zn^{+2} followed by the negative ion, i.e., oxide $\left(O^{-2}\right)$ ion are written with their charges.

(3) The valencies of zinc and oxide ion have common factors, and hence, they are divided by their highest common factor.

(4) The magnitude of valencies of the ions should be interchanged and written as subscripts on right side of the respective ions.

A. 2, 1, 4,3

B. 1, 2, 3, 4

C. 2, 1, 3, 4

D. 3, 1, 2, 4.

Answer: c

View Text Solution

Column A		Column B
A. $4SO_2$	( )	a. Three atoms of oxygen

37.

Column A		Column B
B. $2Na^+$	( )	b. Three oxygen molecules
C. $3O_2$	( )	c. Eight molecules of chlorine
D. $8Cl_2$	( )	d. Eight chlorine atoms
	( )	e. Two sodium atoms
	( )	f. Four sulphur dioxide molecules
	( )	g. Two sodium ions

Watch Video Solution

Column A Names of the radical		Column B Charges	
A.	Aluminium	( )	a. −1
B.	Stannous	( )	b. +3
C.	Bisulphate	( )	c. +2
D.	Silicate	( )	d. +4
		( )	e. −2

38.

Watch Video Solution

	Column A		Column B
A.	$2Pb(NO_3) \rightarrow PbO + 4NO_2 + O_2$	( )	a. Combination reaction
B.	$Zn + FeSO_4 \rightarrow ZnSO_4 + Fe$	( )	b. Double decomposition reaction
C.	$NaCl + AgNO_3 \rightarrow NaNO_3 + AgCl$	( )	c. Decomposition reaction
D.	$S + O_2 \rightarrow SO_2$	( )	d. Displacement reaction

39.

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Concept Application Level 2

1. X and Y are non mtals in which M shell is valence shell . Y is precedent to X . X shows uninegative valence . Identify the formulae of the compounds formed when X and Y react with divalent metal M.

A. MX_2, MY

B. MX, MY_2

C. M_3X, M_2Y_3

D. M_2X_3, M_2Y_2

Answer: a

Watch Video Solution

2. Identify the formula of the corresponding hydride of a nonmetal 'X' which attains octet by gaining three electrons.

A. XH

B. XH_2

C. XH_3

D. X_2H_4

Answer: c

Watch Video Solution

3. The number of positively charged particles in the elements A, B, C are 10, 18, 8 respectively . Identify the element which is chemically reactive?

A. A

B. B

C. C

D. both A and B

Answer: c

Watch Video Solution

4. If a dispositve ion of an element 'X' consists of 12 protons and 12 neutrons and another dipositve ion of an element 'Y' consists of 18 electrons and twice the number of electrons of dipostive ion X is the number of neutrons of Y. Then the mass number would be in the ratio of

A. 1:2

B. 3:5

C. 12:19

D. 2:5

Answer: b

Watch Video Solution

5. If a uninegative ion has 10 neutrons and 9 protons , electronic configuration of the atom of the element is

A. 2, 8, 1

B. 2,7

C. 2,8

D. 2, 8, 8

Answer: b

Watch Video Solution

6. Mass of total positive charge present in an atom is 55110 times to that of mass of electron . Write the electronic configuration of the element.

A. 2, 8, 9, 2

B. 2, 8, 18, 1

C. 2, 8, 18,2

D. 2, 8, 8,2

Answer: c

Watch Video Solution

7. The ratio of difference in the number of electrons between K and M shells is $3:2$ for X and Y elements respectively . 'X' possesses stable electronic configuration and M is the valence shell for both X and Y. The electronic configurations of X and Y are respectively.

A. 2, 8, 5 and 2, 8, 4

B. 2, 8, 8 and 2, 8,6

C. 2, 8, 8 and 2, 6, 6

D. 2, 8, 6 and 2, 8, 4

Answer: b

Watch Video Solution

8.

$2KMnO_4 + H_2SO_4 + H_2C_2O_4 \rightarrow K_2SO_4 + 2MnSO_4 + 10CO_2 + 8H_2O$

Potassium permanganate oxidizes oxalic acid in acidic medium as per the above chemial reaction . Identify the coefficients of H_2SO_4 and $H_2C_2O_4$ in the above equation.

A. 3,5

B. 4,4

C. 5,3

D. 4,2

Answer: a

Watch Video Solution

9. Heating of a mixture consisting of potassiumm nitrate , carbon and sulphur involves which of the following chemical changes ?

A. decomposition and combination

B. double decomposition

C. combination and displacement

D. displacement and decomposition

Answer: a

Watch Video Solution

10. $CuSO_4 + X \rightarrow XSO_4 + Cu$, $CuSO_4 + Y \rightarrow YSO_4 + Cu$,

$XSO_4 + Y \rightarrow No$ reaction , $CuSO_4 + Z \rightarrow No$ reaction,

Arrange Cu , X, Y and Z in the ascending order of reactivity.

A. X, Y, Z, Cu

B. Cu, Y, X, Z

C. Cu, X, Z, Y

D. Z, Cu, Y, X

Answer: d

Watch Video Solution

11. A metal M shows variable valencies 2 and 3. Calculate the ratio of oxygen atom present in their corresponding sulphates.

A. 1:3

B. 3:1

C. 3:4

D. 3:2

Answer: a

Watch Video Solution

12. Identify the formula of the corresponding hydride of a nonmetal 'X' which attains octet by gaining two electrons.

A. XH

B. XH_3

C. XH_4

D. XH_2

Answer: d

Watch Video Solution

13. The number of valence electrons in the valece shells , 1 , 2 , 3 of the X , Y , Z elements are 2 , 8 , 6 respectively . Identify the element which doesn ' t exist monoatomic state.

A. X

B. Z

C. Y

D. X and Y

Answer: b

Watch Video Solution

14. The number of neutrons are equal to the number of protons present in the nucleus of two elements and their respective dinegative ions possess 8 electrons in L and M shells respectively . Then the ratio of mass numbers of the two elements is

A. 1:2

B. 2:3

C. 3:4

D. 2:5

Answer: a

Watch Video Solution

15. Tripositive ion of an element has 13 protons and 14 neutrons . Calculate the of number of electrons present in K and M shells of the neutral atom.

A. 2:3

B. 2:1

C. 1:1

D. 2:5

Answer: a

Watch Video Solution

16. The ratio of number of electrons present I four shells of an element is $1:4:4:1$, fourth shell is the valence shell . Then mass of total positive charge present in the atom is _____ times to that of mass of electron

A. 36740

B. 27555

C. 18370

D. 55110

Answer: a

Watch Video Solution

17. The difference in the number of elelctrons between K, L and L, M shells in the same for an atom of element 'X' (M shell is the valence shell) and the difference value is the number of valence electrons in M shell of the other element 'Y' . Give the electronic configurations of their stable ions.

A. 2, 8, 2 and 2, 8, 6

B. 2, 8 and 2,8

C. 2, 8 and 2, 8, 8

D. 2, 8, 8 and 2, 8, 8

Answer: c

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18. The colour change of $CuSO_4$ solution can observed when it is made to react with

A. silver

B. silver chloride solution

C. zinc

D. gold

Answer: c

Watch Video Solution

19. Identify the ratio of the coefficients of the products CuO, NO_2 and H_2O formed respectively when hydrated copper nitrate is thermally decomposed.

$2Cu(NO_3)_2.6H_2O \rightarrow NO_2 + H_2O + O_2 + 2CuO$

A. 2:3:1

B. 1:2:3

C. 1:1.5:1

D. 3:2:1

Answer: b

Watch Video Solution

20. Which of the following chemical change is a photolytic decomposition reaction?

A. Decomposition of HOCI on standing

B. Formation of hydrogen chloride from their constituent elements

C. Decomposition of limestone

D. Both 1 and 2

Answer: a

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21. While explaining the modern concept of an atom,Jack asked the teacher why are electrons, assumed to be in continuous motion around the nucleus instead of being stationary? What could be the explanation given by the teacher?

View Text Solution

22. A stable neutral atom X contains two completely filled orbits. Find out its mass number if it consistsof 10 neutrons. 23. Mass of total positive charge present in an atomis 7348 times to that of the mass of a negativily charged particle. Find the atomic number of an element. Find out its valency.

View Text Solution

23. Mass of total positive charge present in an atom is 7348 times to that of the mass of a negativity charged particle . Find the atomic number of

an element . Find out its valency.

Watch Video Solution

24. While coming back from school in the school in the school bus , Bill asked his friend Gill to predict the atoms, X and Y while form a stable dinegative ion and a uninegative ion respectively . They have same number of electrons in the L shell which is the shell inner to the valence shell . predict the answer given by gill .

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25. Predict the valencies of the elements with atomic numbers 7 , 15 , 16 , 18 , 19 and justify Also give the formulae of hydrides formed by the above elements if any.

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26. In an atom , L and M shells have the same number of electrons . N shell has one electron less than K shell . Explain the formation of compound by this element and oxygen atom.

Watch Video Solution

27. Explain the formation of the compound formed by two elements with Z = 20 and Z = 17 .

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28. An atom of an element has the electrons distributed in four shells . If the electrons present in I and IV shells is in $1:1$ ration and , the ratio of electrons in II and III shell is also $1:1$, predict its valency and justofy .Write the formulae of (a) nitride (b) silicate (c) chloride.

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29. A negative ion of an atom of element X has 18 electrons and 16 protons. Calculate the number of electrons and protons in its corresponding atom. Also calculate the number of neutrons, if the mass number is 2 units more than double the number of protons.

Watch Video Solution

30. If the formula of metal sulphite of a metal M is MSO_3 , give the formulae of its

(a) phosphate

(b) hydrogen phosphate

(c) chloride

Watch Video Solution

31. In a chemical laboratory , a student broke the thermometer while performing an experiment . Immediately , the mercury which was spilled over was removed by the lab - incharge by sprinkling sulphur on it . The

teacher asked the students to predict the type of change / reaction associated with the above process. Explain with apporpriate reasons.

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32. Asha's mother asked her daughter Asha to boil the milk and after some time, she told Usha, Asha's sister, to add a little curd in the same lukewarm milk. Next day, their father while teaching 'transformation of matter to his daughters wanted to relate the given activity. So, he asked them, 'what type of change was involved in the activities performed by you yesterday?' Predict the answer given by them and justify.

View Text Solution

33. What is the valency of iron in the products formed

(a) When iron is exposed to humid air for a long time?

(b) When red hot iron is made to react with steam?

Watch Video Solution

34. Give the necessary chemical equations and balance them.

(a) Reaction of red hot iorn with steam to give Fe_3O_4 .

(b) burning magnesiun ribbon in an atmosphere of nitrogen.

(c) Displacement of copper from the solution of its sulphate by zinc.

Watch Video Solution

35. In a science fair , a student took two test tubes labelled A and B filled with copper sulphate solution, then he put magnesium ribbon in test tube A silver foil in tube B. Predict the observation and justify.

Watch Video Solution

Concept Application Level 3

1. An atom of an element 'X' has three completely filled shell . The ratio of electrons in 1 and 4 shells is $1:1$. Find the atomic number of 'X' . Also

write the formulae of its bicarbonate , chromate and phosphide.

Watch Video Solution

2. A metal (M) and a non - metal (X) form a compound with formula M_4X_3 . Predict the electronic arrangements of M and X assuming that M has three occupied shells and X has two occupied shells. Also derive the formulae of (a) sulphate (b) dihydrogen phosphate (c) hydroxide of ion of M.

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3. Two metals A and B possess the same number of electrons in the L shell and they differ by 1 unit in the number of electrons present in valence shell and number of valence electrons is greater in B than A. The ions formed get the configuration of the nearest inert gases namely argon and neon, respectively.Give the probable electronic configurations of the metals corresponding to A and B and also give the formulae of their corresponding nitrite, nitrate, sulphite and bisulphite.

Watch Video Solution

4. Number of atoms on either side of a chemical equation is balanced by keeping appropriate coefficients and not by changing the subscripts of the element in the formulae . Justify .

Watch Video Solution

5. An atom of an element has two shells with electrons.The valence shell has 2n + 1 electrons where n is the number of electrons in the innershell. This element can form a radical X with hydrogen and two radicals Y and Z with oxygen, Z has more number of oxygen than Y. Identify the element and the radicals. Write the reaction taking place between solutions of two salts, AgZ and XCl. Identify the type of reaction.

Watch Video Solution

Assessment Test Test 1

1. Which of the following involves only physical change ?

A. dissolution of lime in water.

B. dissolution of carbon dioxide in water at high pressure.

C. Dissolution of concentrated acid in water.

D. electtrolysis of water.

Answer: c

Watch Video Solution

2. Arrange the points in sequence to draw the geometrical representation of an atom which is represented as ZXA (1) calculation of the number of protons and neutrons. (2) identification of the atomic number and mass number of the given element. (3) placement of the electrons in shells around the nucleus according to the electronic configuration (4) writing the electronic configuration of the atom. (5) protons and neutrons are shown in nucleus.

A. 2, 1, 5, 4,3

B. 2, 1, 3, 4, 5

C. 1, 2, 3, 5, 4

D. 5, 3, 2, 1,4

Answer: a

Watch Video Solution

3. (a) $H_2 + Br_2 \rightarrow 2HBr$

(b) $HBr + NaOH \rightarrow NaBr + H_2O$

(c) $2NaBr + Cl_2 \rightarrow 2NaCl + Br_2$

(d) $2NaCl \rightarrow 2Na + Cl_2$ Arrange the above reactions in order s double displacement reaction, combination reaction, decomposition reaction and displacement reaction.

A. 2, 1, 4,2

B. 2, 4, 1,2

C. 2, 1, 3, 3

D. 1, 2, 4,2

Answer: a

Watch Video Solution

4. $2KMnO_4 + H_2C_2O_4 \rightarrow K_2SO_4 + 2MnSO_4 + 10CO_2 + 8H_2O.$ ltvrgt Potassium permanganate oxidises oxalic acid in acidic medium as per the above chemical reaction. Identify the coefficient of H_2SO_4 in the above equatio.

A. 3

B. 4

C. 5

D. 2

Answer: a

Watch Video Solution

5. What will be the formula of the sulphate and sulphite of a trivalent metal that is M^{+3} ?

A. $M_2(SO_4)_3$

B. MSO_4

C. M_2SO_4

D. MSO_3

Answer: a

Watch Video Solution

6. Match the element in column A with the electronic configuration given in column B. Column A Column B

Column A			Column B	
(A)	Chlorine	( )	(a)	2, 2
(B)	Scandium	( )	(b)	2, 8, 7
(C)	Manganese	( )	(c)	2, 8, 9, 2
(D)	Beryllium	( )	(d)	2, 8, 13, 2

A. $A \to c, B \to c, C \to a, D \to b$

B. $A \to d, B \to a, C \to d, D \to c$

C. $A \to b, B \to a, C \to d, D \to a$

D. $A \to d, B \to a, C \to c, D \to b$

Answer: c

Watch Video Solution

7. Assertion (A) : Mass number of a carbon is 12.

Reason (R) : Carbon possesses equal number of all three fundamental particles.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer: b

Watch Video Solution

8. Identify the atomic numbers of the pair of elements which possesses same number of electrons in L and M shells.

A. 18

B. 19

C. 16

D. 18

Answer: b

Watch Video Solution

9. If $\overline{X}$ ion has 10 neutrons and 9 protons , then the electronic configuration of the atom of the element x is

A. 2,8,1

B. 2,7

C. 2,8

D. 2,8,8

Answer: b

Watch Video Solution

10. Assertion (A): Copper exhibits variable valency.

Reason (R): Copper loses two electrons from its valence shell and it can also lose one more electron from the second last shell.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true but R is not the correct explanation for A.

C. A is true and R is false.

D. S false and R is true.

Answer: c

Watch Video Solution

11. The ratio of difference in the number of electrons between K and M shells is $3:2$ for X and Y elements respectively . 'X' possesses stable electronic configuration and M is the valence shell for both X and Y. The electronic configurations of X and Y are respectively.

A. 2, 8, 5 and 2, 8, 4

B. 2, 8, 8 and 2, 8, 6

C. 2, 8, 8 and 2, 6, 6

D. 2, 8, 6 and 2, 8, 4

Answer: b

Watch Video Solution

12. The atomic number of three elements A, B and C are 10 , 18 and 8 respectively . Identify the element which is chemically reactive ?

A. A

B. B

C. C

D. both A and B

Answer: c

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13. If a dispositve ion of an element 'X' consists of 12 protons and 12 neutrons and another dipositve ion of an element 'Y' consists of 18

electrons and twice the number of electrons of dipostive ion X is the number of neutrons of Y. Then the mass number would be in the ratio of

A. 1:2

B. 3:5

C. 12:19

D. 2:3

Answer: b

Watch Video Solution

14. The formula of chloride of a metal is MCI. What is the valency of the metal?

A. 4

B. 3

C. 1

D. 2

Answer: d

Watch Video Solution

Assessment Test Test 2

1. Heating solid ammonium chloride involves change in the _____.

A. physical state only.

B. physical state as well as chemical composition.

C. colour only.

D. both colour and volume only

Answer: b

Watch Video Solution

2. Arrange the following points in a sequence to draw the geometrical representation of $_{20}Ca^{40}$. (1)Protons and neutrons are shown in the nucleus.(2) Writing the electronic configuration of the atom.(3)Arrange the electrons in shells around the nucleus following the electronicco nfiguration.(4) Calculation of the number of protons and neutrons. (5)Identification of the atomic number and mass number of the atom.

A. 5, 4, 3, 2, 1

B. 5, 4, 1, 2, 3

C. 1, 2, 3, 4, 5

D. 3, 1, 2, 4, 5

Answer: b

Watch Video Solution

3. Four types of reactions are given below in a particular order.

(1) Displacement reaction

(2) Combination reaction

(3) Double displacement displacement

(4) Decomposition reaction

Following this sequence to arrange the reaction given below.

(a) $A + B \rightarrow AB.$

(b) $AB \rightarrow A + B$

(c) $AB + C \rightarrow CB + A$

(d) $AC + BD \rightarrow AD + BC$

A. cadb

B. bacd

C. bdac

D. acdb

Answer: a

Watch Video Solution

4. Identify the coefficients of the product CuO and NO2 formed respectively when hydrated copper nitrate is themally decomposed.

$2Cu(NO_3)_2.6H_2O \rightarrow CuO + NO_2 + 6H_2O + O_2$

A. 3, 4

B. 2, 4

C. 4, 5

D. 2, 3

Answer: b

Watch Video Solution

5. If the formula of a metal ion is M^{+2} then the formula of its dihydrogen phosphate is

A. $M_2(PO_4)_3$

B. $MHPO_4$

C. $M(H_2PO_4)_2$

D. M_2HPO_4.

Answer: c

Watch Video Solution

6. Match the elements in column A with the valency exhibited by the element given in column B.

Column A			Column B	
(A)	Neon	( )	(a)	4
(B)	Oxygen	( )	(b)	3
(C)	Potassium	( )	(c)	2
(D)	Boron	( )	(d)	1
(E)	Silicon	( )	(e)	0

A. $A \to b, B \to c, C \to d, D \to e, E \to a$

B. $A \to b, B \to c, C \to a, D \to e, E \to d$

C. $A \to e, B \to b, C \to a, D \to b, E \to c$

D. $A \rightarrow e, B \rightarrow c, C \rightarrow d, D \rightarrow b, E \rightarrow a$

Answer: d

Watch Video Solution

7. The total mass of the protons of a boron atom is 6185 times the total mass of electrons.

Reason (R): Mass of one proton is 1837 times the mass of electron.

(a) Both A and R are true and R is the correct explanation for A.

(b) Both A and R are true but R is not the correct explanation for A.

(c) A is true and R is false.

A false and R true.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer: d

View Text Solution

8. Identify the number of neutrons present in a pair of elements with atomic numbers 20 and 13, if their mass numbers are 40 and 27, respectively.

A. 20 and 13

B. 20 and 13

C. 17 and 20

D. 20 and 14

Answer: d

Watch Video Solution

9. Tripositive ion, i.e., X^{+3} has 13 protons and 14 neutrons. Calculate the number of electrons present in the M shell of the neutral atom.

A. 2

B. 1

C. 3

D. 5

Answer: c

Watch Video Solution

10. Assertion (A): Sodium forms a monovalent ion.

Reason (R): Sodium loses only one electron from the second last shell.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer: c

Watch Video Solution

11. The difference in the number of elelctrons between K, L and L, M shells in the same for an atom of element 'X' (M shell is the valence shell) and the difference value is the number of valence electrons in M shell of the other element 'Y' . Give the electronic configurations of their stable ions.

A. 2, 8, 2 and 2, 8, 6

B. 2, 8 and 2, 8

C. 2, 8 and 2, 8, 8

D. 2, 8, 8 and 2, 8, 8

Answer: c

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12. Which of the following is a chemical change?

A. formation of clouds

B. formation of rust

C. manufacture of milk powder from milk

D. formation of black coating on the walls of a tube light

Answer: b

Watch Video Solution

13. The atomic numbers of the elements X, Y and Z are 2, 10 and 16, respectively. Identify the element which does not exist in monoatomic state.

A. X

B. Z

C. Y

D. X and Y

Answer: b

Watch Video Solution

14. The number of neutrons are equal to the number of protons present in the nucleus of two elements and their respective dinegative ions possess 8 electrons in L and M shells respectively . Then the ratio of mass numbers of the two elements is

A. 1:2

B. 2:3

C. 3:4

D. 2:5

Answer: a

Watch Video Solution

15. If a solid non - metal 'X' forms oxide of type X_2O_5 , the valency of X is

A. 3

B. 5

C. 6

D. 4

Answer: b

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