Genesis Educates

"There is no element of genius Without some form of madness"

10th ICSE Mock Test 1

Subject : Chemistry
Topic: Periodic table, Chemical bonding and Acids, bases & salts
Time allowed: 50 Minutes (inclusive of reading time) **M.M.: 40**

ALL QUESTIONS ARE COMPULSORY.

1. Which one of the following does not increase while moving down the group of the periodic table?
   (1) Atomic radius (2) Metallic character
   (3) Valency (4) Number of shells in an element.

2. On moving from left to right in a period in the periodic table, the size of the atom
   (1) increases (2) decreases
   (3) does not change appreciably (4) first decreases and then increases.

3. An atom of an element has the electronic configuration 2, 8, 2. To which group does it belong?
   (1) 4th group (2) 6th group (3) 3rd group (4) 2nd group

4. In modern periodic table, elements are arranged according to their
   (1) atomic weight (2) density (3) atomic number (4) melting point

5. In which group are inert elements placed?
   (1) Group 8 (2) Group 10 (3) Group 1 (4) Group 18

6. Which of the following sets of atomic number belong to that of alkali metals?
   (1) 1, 12, 30, 4, 62 (2) 37, 19, 3, 55 (3) 9, 17, 35, 53 (4) 12, 20, 56, 88

7. When an atom of iodine becomes an iodide ion (I–) the radius will
   (1) decrease (2) increase (3) remain the same (4) none

8. The amount of energy released when one or more electrons is added to the neutral atom is
   (1) electron affinity (2) ionisation energy
   (3) electron negativity (4) atomicity

9. The valence shell of element A contains 3 electrons while the valence shell of element B contains 6 electrons. If A combines with B, the probable chemical formula of the compound is
(1) AB_2 (2) A_2B (3) A_2B_3 (4) A_3B_2

10. Arrange the following elements in the order of their increasing non-metallic character.
Li, O, C, Be, F
(1) F < O < C < Be < Li (2) Li < Be < C < O < F
(3) F < O < C < Be < Li (4) F < O < Be < C < Li

11. What type of oxide would Eka-aluminium form?
(1) EO_3 (2) E_3O_2 (3) E_2O_3 (4) EO

12. Which of these belong to the same period?

Elements	1	(2)	C
Atomic number	2.	10.	5

(1) A, B (2) B, C (3) C, A (4) A, B & C

13. Which of the following property will be common in group 1 elements?
(1) Mass number (2) Number of protons in nucleus
(3) Atomic number (4) Number of valence electrons

14. Element 'A' has electronic configuration 2, 7; 'B' has electronic configuration 2, 8, 5 and 'C' has electronic configuration 2, 8, 7. Which two elements will exhibit similar chemical properties?
(1) A and C (2) A and B (3) B and C (4) None of these

15. Which of the following element would lose an electron easily?
(1) Mg (2) Na (3) K (4) Ca

16. The atomic numbers of the elements Na, Mg, K and Ca are 11, 12, 19 and 20 respectively. The element have the largest atomic radius is:
(1) Mg (2) Na (3) K (4) Ca

17. An element common to all acid is
(1) Chlorine (2) Nitrogen (3) Oxygen (4) Hydrogen

18. Dissolution of acid or base in water is
(1) Exothermic (2) Endothermic (3) Violent (4) None of these

19. If water contains more H+ ions than OH- ions, then water is said to be
(1) Neutral (2) Basic
(3) Acidic (4) none of the above

20. On diluting an acid, concentration of H+ per unit volume.
(1) Increases (2) Decreases
(3) Remains unaffected (4) Depends on type of acid used

21. Which of the following is inorganic acid
(1) Citric acid (2) Hydrochloric acid
(3) Lactic acid (4) Both (1) and (3)

22. Which one of the following doesn't contain water of crystallization
1)Blue vitriol 2)Baking soda 3)gypsum 4)Washing soda

23. The number of lone pair of electrons in the nitrogen atom in ammonia molecule:
(1) One (2) Two (3) Three (4) Four

24. Ionic bonding is seen in:
1 Methane (2) Hydrogen (3) Ammonia (4) Sodium oxide

25. When an electron is added in the valence shell:
1) energy is released (2)energy is absorbed
(3) energy remains same (4)none of the above

26. The most electronegative element is:
1) Sodium (2)Aluminium (3)Bromine (4)Fluorine

27. The bond in Carbon Tetrachloride is:
1) Single Covalent Bond (2)Double Covalent Bond
(3)Ionic bond (4) Triple Covalent Bond

28. The type of bonding present in the nitrogen molecule:
1) Single Covalent Bond (2) Double Covalent Bond
(3) Polar Covalent bond (4)Triple Covalent Bond

29. During ionisation, metals lose electrons this change can be called:
1) Oxidation (2) Reduction (3) Redox (4) Displacement

30. The oxide of a metal that reacts both with acid and alkali to form salt and water:
1) Sodium oxide (2) Magnesium oxide
(3) Aluminium oxide (4) Ferrous oxide

31. Hydronium ion is formed when a molecule of water combines with:
1) Hydrogen atom (2) Proton
(3) Hydrogen molecule (4) Oxygen atom

32. H_2Y is the formula of a compound What is the valency exhibited by Y?
(1) 1 (2) 2 (3) 3 (4) none of the above

33. The particles which attract one another to form electrovalent compounds are:
(1) Electrons (2) Protons (3) Ions (4) Molecules

34. A chemical reaction does not involve:
1) Formation of new substances having entirely different properties than that of the reactants
(2) Breaking of old chemical bonds and formation of new chemical bonds
(3) Rearrangement of the atoms of reactants to form new products
(4) Changing of the atoms of on element into those of another element to form new products

35. Which of the following phenomena occur, when a small amount of acid is added to water?
i. Ionisation ii. Neutralisation iii. Dilution iv. Salt formation
(1) (i) and (ii) (2) (i) and (iii) (3) (ii) and (iii) (4) (ii) and (iv)

36. A gas is evolved when Dil. Sulphuric Acid reacts with Zinc granules. It gives a pop sound when lit match stick is introduced near it. Identify the gas?
(1) Nitrogen (2) Hydrogen (3) Oxygen (4) Carbon dioxide

37. pH is quite useful to us in a number of ways in daily life. Some of its applications are:
Control of pH of the soil : Plants need a specific pH range for proper growth. The soil may be acidic, basic or neutral depending upon the relative concentration of H* and OH-. The pH of any soil can be determined by using pH paper. If the soil is too acidic, it can be corrected by adding lime to it. If the soil is too basic, it can be corrected by adding organic manure which contains acidic materials.

Regaining shine of a tarnished copper vessel by use of acids : A copper vessel gets tarnished due to formation of an oxide layer on its surface. On rubbing lenion on the vessel, the surface is cleaned and the vessel begins to shine again. This is due to the fact that copper oxide is basic in nature, which reacts with the acid (citric acid) present in lemon to form a salt (copper citrate) which is washed away with water. As a result, the layer of copper oxide is removed from the surface of the vessel and the shining surface is expose(4)

Self-defence by animals through chemical warfare : Stings of bees and ants contain methanoic aci(4) When stung, it causes lot of pain and irritation. This can be cured by rubbing the affected area with mild base like baking sod1

(i) When black copper oxide placed in a beaker is treated with dilute HCl, its colour changes to
(1) white (2) dark red (3) bluish green (4) no change.

(ii) P is an aqueous solution of acid and Q is an aqueous solution of base. When these two are diluted separately, then
(1) pH of P increases while that of Q decreases till neutralisation.
(2) pH of P decreases while that of Q increases till neutralisation.
(3) pH of both P and Q decrease.
(4) pH of both P and Q increase.

(iii) Which of the following acids is present in bee sting?
(1) Formic acid (2) Acetic acid
(3) Citric acid (4) Hydrochloric acid

(iv) Sting of ant can be cured by rubbing the affected area with soap because
(1) it contains oxalic acid which neutralises the effect of formic acid
(2) it contains aluminium hydroxide which neutralises the effect of formic acid
(3) it contains sodium hydroxide which neutralises the effect of formic acid
(4) none of these.

Class-10th ICSE Mock Test 2

Subject –Chemistry **M.Marks-40**
Time duration-50 Minutes

Fill in the Blanks

1. Salts of normal elements [1 (IA) to 17 (VIIA)] are generally……
   (a) colourless (b) green (c) white (d) blue

2. Ferrous salts are ……. in colour.
   (a) colourless (b) light green (c) white (d) blue

3. An example of weak alkali solution is ……..
   (a) Sodium hydroxide (b) Nitrogen dioxide
   (c) Ammonium hydroxide (d) Potassium hydroxide

4. Both ammonium and sodium hydroxide are used in analytical chemistry for identifying ……. of salts.
   (a) Cations (b) Anions
   (c) Electrons (d) Both (a) and (b)

5. Zinc chloride solution reacts with ammonium hydroxide solution to give a ……..coloured precipitate.
   (a) blue (b) green (c) yellow (d) white

6. Calcium salts with sodium hydroxide give…….. precipitates.
   (a) pink (b) blue (c) white (d) green

7. Salts of which elements are generally coloured :
   (a) Transition (b) Normal
   (c) Lanthanides (d) Inner-transition

8. Which one of the following salt solutions on reaction with excess of ammonium hydroxide solution gives a deep blue solution ?
   (a) $FeCl_3(aq)$ (b) $CuSO_4(aq)$ (c) $Al_2(SO_4)_3(aq)$ (d) $ZnSO_4(aq)$

9. Which one of the following salt solutions on reaction with excess sodium hydroxide solution gives a clear solution finally ?
   (a) $Pb(NO_3)_2(aq)$ (b) $CuSO_4(aq)$ (c) $FeCl_3(aq)$ (d) $ZnSO_4(aq)$

10. The precipitate of which of the following compounds is soluble in excess of ammonia solution ?
    (a) Iron(II) chloride (b) Magnesium chloride
    (c) Copper(II) sulphate (d) Lead nitrate

11. Which one of the following salt solutions on reaction with excess of ammonium hydroxide solution results finally in dissolution of the precipitate first formed ?
(a) $AlCl_3(aq)$ (b) $FeSO_4(aq)$ (c) $Fe(SO_4)_3(aq)$ (d) $ZnSO_4(aq)$

12. Hydroxide of this metal is soluble in sodium hydroxide solution:
(a) Magnesium (b) Lead (c) Silver (d) Copper

13. If two compounds have the same empirical formula but different molecular formula, they must have
(a) Different percentage composition. (b) Different molecular weights.
(c) Same viscosity. (d) Same vapour density.

14. When two compounds R and S have same percentage composition. Then the compounds R and S are:
(a) identical (b) isomer
(c) either identical or isomer (d) All are correct

15. What indicates the actual number of constituent atoms in a molecule?
(a) Empirical formula (b) Molecular formula
(c) Empirical mass (d) Molecular mass

16. If two compounds have the same empirical formula but different molecular formulae, they must have
(a) different percentage composition. (b) different molecular mass.
(c) same viscosity. (d) same vapour density.

17. The starting material which takes part in chemical reaction is called:
(a) product (b) reactant (c) catalyst (d) starter

18. The formula which gives the simple ratio of each kind of atoms present in the molecule of a compound is called
(a) Molecular Formula (b) Empirical Formula
(c) Structural Formula (d) None of these

19. What is the percentage mass of copper in Blue Vitriol crystal?
(a) 25.45% (b) 36.07% (c) 49.56% (d) None of these

20. Percentage of oxygen [O] in sulphur dioxide [SO_2] :
(a) 2.5 (b) 50 (c) 60 (d) 40

21. Electrolysis is the passage of ..... through a liquid or a solution accompanied by a ……. change
(a) chemical, electricity (b) electricity, chemical
(c) electrons, chemical (d) electricity, physical

22. An electrically charged atom is called.....
(a) a proton (b) an ion (c) an electron (d) a cyclotron

23. An electrolyte is a …….
(a) metal (b) sugar (c) cell
(d) liquid that conducts electricity

24. A weak electrolyte is one which …….
(a) dissociates completely (b) is feebly ionised in the solution
(c) ionises completely (d) is having high electrical conductivity

25. A strong electrolyte is one which……..
(a) is completely ionised in the solution (b) dissociates partially in solution
(c) is having low electrical conductivity (d) Ionises partially

26. Pure water consists almost entirely of .....
(a) ions (b) atoms (c) ions and molecules (d) molecules

27. In the electrolysis of acidulated water, oxygen is produced by the discharge of.....ions at the anode.
(a) OH^- (b) SO_4^{2-} (c) Both(a)and(b) (d) None of these

28. Ionisation is a ..... process
(a) irreversible (b) reversible (c) Both (a) and (b) (d) None of these

29. The gas given off at cathode during the electrolysis of acidulated water is…… .
(a) Nitrogen (b) Hydrogen (c) Oxygen (d) None of these

30. With platinum electrodes, hydrogen is liberated at the …….. and oxygen at the ……. during the electrolysis of acidified water.
(a) cathode, anode (b) anode, cathode
(c) anode, anode (d) cathode, cathode

31. The negative electrode in electrolysis is called the …….. .
(a) anode (b) cathode (c) gas electrode (d) None of these

32. Cations migrate to……during electrolysis.
(a) electrode (b) anode (c) cathode (d) None of these

33. In a solution or molten state, a…….. electrolyte consists almost entirely of ions.
(a) non (b) strong (c) weak (d) None of these

34. What is the product formed at the cathode in the electrolysis of aqueous $CuSO_4$?
(a) Copper metal (b) Oxygen gas (c) Hydrogen gas (d) Sulphur

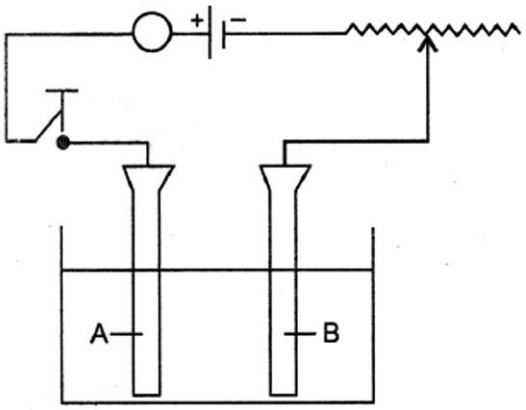
35. An electrolyte which completely dissociates into ions is:
(a) Alcohol (b) Carbonic acid
(c) Sucrose (d) Sodium hydroxide

36. The electrolysis of acidified water is example of:
(a) Reduction (b) Oxidation (c) Redox reaction (d) Synthesis

Figure Based Questions

Study the given figure and answer the question that follow:

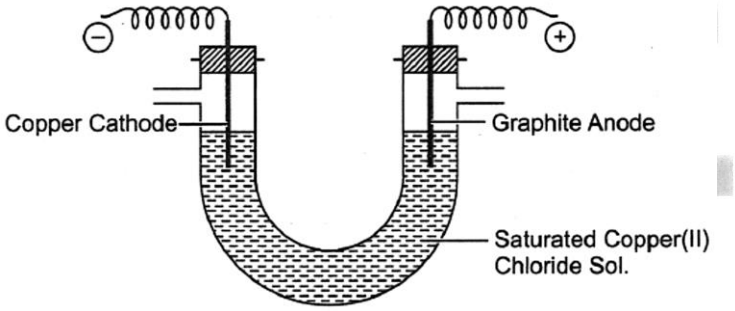
37. (A)



(i) Give the names of the electrodes A and B.
(a) A- Cathode B- Anode (b) A-Anode B-Cathode
(c) A-Anode B- Anode (d) A- Cathode B-Cathode

(ii) Which electrode is the oxidising electrode?
(a) A (b) B (c) Both (a) and (b) (d) None of these

38. (B)



(i) Name the ions which will migrate to cathode.
(a) Hydrogen ions (H^+) (b) Copper ions (Cu^{2+})
(c) Chloride ions (Cl^-) (d) Both (a) and (b)

(ii) Name the ions which will migrate to anode.
(a) Hydroxyl ions (OH^-) (b) Chloride ions (Cl^-)
(c) Both (a) and (b) (d) Hydrogen ions H^+

Class-10th ICSE Mock Test 3

Subject –Chemistry **M.Marks-40**
Time duration-50 Minutes

1. The metallic character……. in a group as one moves from top to bottom.
   (a) increases (b) decreases (c) remains same (d) one of the above

2. The electronegativity of elements …….. across the period and ……. down the group.
   (a) increases, increases (b) decreases; increases
   (c) increases; decreases (d) decreases, decreases

3. The energy required to remove an electron from a neutral isolated gaseous atom and convert it into a positively charged gaseous ion is called……
   (a) ionization potential (d) electronegativity
   (c) valency (d) electron affinity

4. Ionisation Potential increases over a period from left to right because the :
   (a) Atomic radius increases and nuclear charge increase
   (b) Atomic radius and nuclear charge decrease
   (c) Atomic radius increases and nuclear charge decreases
   (d) Atomic radius decreases and nuclear charge increase

5. Which of the following pairs have both the members from the same group of periodic table?
   (a) Mg, Be (b) Mg, Na (c) Mg, Cu (d) Mg, Cl

6. Which of the following types of elements show variable valenry?
   (a) Transition elements (b) s-block elements
   (c) p-block elements (d) d-block elements

7. Which is larger Na^+ or K^+ ? Why ?
   (a) K^+ is larger than Na^+ because of the larger ionic radius
   (b) Na^+ is larger than K^+ because of the larger ionic radius
   (c) K^+ is larger than Na^+ because K^+ belongs to period 4
   (d) Both are of same size

8. The electronegativities (according to pauling) of the elements in period 3 of the portion of Periodic Table are as follows when the elements arranged in alphabetical order :

Al	Cl	Mg	Na	P	S	Si
1.5	3.0	1.2	0.9	2.1	2.5	1.8

Arrange the elements in the order in which they occur in the Periodic Table from left to right. (The group 1 element first, followed by the group 2 element and so o& up to group T)

(a) Na, Mg, Al, Si, P, S, Cl. (b) Mg, Na, Al, Si, Cl, P, S
(c) Na, Al, Mg, P, Si, Cl, S (d) Mg, Al, Cl, P, S, Si, Na

9. The duplet or octet structure of valence shell makes …….. of an element chemically ……

(a) atom, active (b) atom, inactive (c) ions, active (d) ions, inactive

10. Ionic compounds have ..... melting points due to ……. ionic bonds

(a) high, weak (b) low, strong (c) high strong (d) low, weak

11. In NH_4^+ all the four bonds are.....

(a) covalent (b) not identical (c) identical (d) coordinate

12. Due to the presence of strong electrostatic forces of attraction between ions, ionic compounds.

(a) Have high melting and boiling points
(b) Conduct electricity in solid state
(c) Dissolve in kerosene
(d) All of the above

13. A polar covalent bond will be formed in which one of these pair of atoms

(a) HF (b) H_2 (c) Cl_2 (d) O_2

14. Write Lewis dot symbols for atoms of the following elements: Mg and Na.

(a) Mg, Na (b) $\dot{\dot{M}}g, \dot{N}a$ (c) $\dot{M}g, \dot{\dot{N}}a$ (d) $\dot{\dot{M}}g, Na$

15. Molecular reactions which are generally slow reactions are shown by :

(a) Covalent compounds
(b) Ionic compounds
(c) Coordinate compounds
(d) Both ionic and covalent compounds

16. The basicity of acetic acid is ……

(a) 1 (b) 2 (c) 3 (d) 4

17. As the pH of solution decreases, its acidic strength progressively ..... .
(a) Increases (b) Decreases (c) Does not change
(d) Depends on the quantity of solution

18. pH of acetic acid is greater than dilute sulphuric acid. So acetic acid contains ..... concentration of H^+ ions
(a) Same (b) Lower (c) Greater (d) cannot say

19. In terms of acidic strength, which one of the following is in the correct increasing order?
(a) Water < Acetic acid < Hydrochloric acid
(b) Water < Hydrochloric acid < Acetic acid
(c) Acetic acid < Water < Hydrochloric acid
(d) Hydrochloric acid < Water < Acetic acid

20. Methyl orange is:
(a) Pink in acidic medium, yellow in basic medium
(b) Yellow in acidic medium, pink in basic medium
(c) Colourless in acidic medium, pink in basic medium
(d) Pink in acidic medium, colourless in basic medium

21. You are supplied with five solutions : A, B , C, D and E with pH values as follows:
A = 1.8, B = 7, C = 8.5, D = 13 and E = 5
(a) A is neutral (b) A is strong base (c) A is strong acid (d) cannot say

22. Which one of the following will not produce an acid when made to react with water ?
(a) Carbon monoxide (b) Carbon dioxide
(c) Nitrogen dioxide (d) Sulphur trioxide

23. Ammonium hydroxide is a weak alkali which dissociates partially to furnish ……... OH^- ions precipitate.....metal hydroxides.
(a) Sufficient, Soluble (b) Insufficient Insoluble
(c) Sufficient, Insoluble (d) Insufficient, Soluble

24. Hydroxide of this metal is soluble in NaOH.
(a) Magnesium (b) Lead (c) Silver (d) Copper

25. Match the columns:

Column A	Column B
(1) Copper(II) nitrate	(A) Green
(2) Iron(II) sulphate	(B) White
(3) Magnesium chloride	(C) Pink
(4) Cobalt chloride	(D) Blue

(a) 1-C, 2-B, 3-A, 4-D (b) 1-D, 2-B, 3-A, 4-C
(c) 1-D, 2-A, 3-B, 4-C (d) 1-D, 2-4, 3-C, 4-B

26. Match the columns:

Column A	Column B
(1) $Pb(NO_3)_2$ from PbO	(A) Simple
(2) $MgCl_2$ from Mg	(B) Displacement
(3) $FeCl_3$ from Fe	(C) Titration
(4) $NaNO_3$ from NaOH	(D) Neutralization

(a) 1-C, 2-B, 3-A, 4-D (b) 1-B, 2-C, 3-D, 4-A
(c) 1-D, 2-A, 3-B, 4-C (d) 1-D, 2-A, 3-C, 4-B

Choose the correct balanced chemical equations to show the reactions of the following :

27. Aluminium and caustic potash solution.
(a) $2Al + 2KOH + 2H_2O \longrightarrow 2KAl + 3H_2O$
(b) $2Al + 2KOH + 2H_2O \longrightarrow 2KAlO_2 + 3H_2$
(c) $2Al + 2KOH + 2H_2O \longrightarrow KAlO_2 + 3H_2$
(d) $2Al + 2KOH + 2H_2O \longrightarrow 2KAlO + 3H_2$

28. Relation between vapour density and molecular weight
(a) Molecular weight = 2/ vapour density
(b) Molecular weight = 2 × vapour density
(c) Molecular weight × 2 = vapour density
(d) None of these

29. The vapour density of carbon dioxide [C = 12, O = 16] is :
(a) 12 (b) 16 (c) 44 (d) 22

30. Find the percentage of chlorine in calcium chloride.
(Molecular mass of calcium is 40, chlorine is 35.50)
(a) 63.96% (b) 36.04% (c) 31.98% (d) 50%

31. In Na_2CO_3, percentage mass of oxygen is:
(a) 62.93 (b) 45.3 (c) 59.6 (d) 40.3

32. If the empirical formula of a compound is CH and its vapor density is 13.
Its molecular formula will be (C = 12, H = 1)
(a) CH (b) C_2H_2 (c) $C_4 + H_4$ (d) C_3H_3

33. An organic compound contains carbon hydrogen and oxygen. Its elemental analysis gave C, 38.71% and H, 9.67%. The empirical formula of the compound would be:

(a) CHO (b) CH_4O (c) CH_3O (d) CH_2O

34. As we descend in the electrochemical series containing cations, the tendency of the cations to get ……..... at the cathode increases.
(a) oxidised (b) reduced (c) increased (d) None of these

35. Identify the weak electrolyte from the following :
(a) Sodium chloride solution (b) Dilute hydrochloric acid
(c) Dilute sulphuric acid (d) Aqueous acetic acid

36. During the electrolysis of molten lead bromide which of the following takes place :
(a) Bromine is released at the cathode (b) Lead is deposited at the anode
(c) Bromine ions gain electrons (d) Lead is deposited at the cathode

37. The cathode production of the electrolysis of zinc iodide is:
(a) Iodine (b) Zinc (c) Zinc oxide (d) Chloride

38. _____; the chemical change that occurs at this electrode is called _____.
(a) anode, oxidation (b) anode, reduction
(c) cathode, oxidation (d) cathode, reduction

39. Which of these will act as a non-electrolyte?
(a) Liquid carbon tetrachloride
(b) Acetic acid
(c) Sodium hydroxide aqueous solution
(d) Potassium chloride aqueous solution

40. Which statement best explains the generation of electrical energy in a simple cell?
(a) Free moving ions in the electrolyte.
(b) Free moving electrons in the electrolyte.
(c) Transfer of electrons from a more reactive metal to a less reactive metal.
(d) Transfer of electrons from a less reactive metal to a more reactive metal.

ANSWER KEYS

MOCK TEST 1

1. C	2. B	3. D	4. C	5. D	6. B	7. B	8. A	9. C	10. A
11. C	12. D	13. D	14. A	15. C	16. C	17. D	18. A	19. C	20. B
21. B	22. B	23. A	24. D	25. A	26. D	27. A	28. D	29. A	30. C
31. B	32. B	33. C	34. D	35. B	36. B	37. i-A, ii-A, iii-A, iv-C			

MOCK TEST 2

1. A	2. B	3. C	4. A	5. D	6. C	7. A	8. B	9. A	10. C
11. D	12. B	13. B	14. D	15. B	16. B	17. B	18. B	19. B	20. B
21. B	22. B	23. D	24. B	25. A	26. D	27. A	28. B	29. B	30. A
31. B	32. C	33. B	34. A	35. D	36. C	37. (A) i-B, ii-A		38. (B) i-D, ii-C	

MOCK TEST 3

1. A	2. C	3. A	4. D	5. A	6. A	7. C	8. A	9. B	10. C
11. C	12. A	13. A	14. B	15. A	16. A	17. A	18. B	19. A	20. A
21. C	22. A	23. D	24. B	25. C	26. C	27. A	28. B	29. D	30. A
31. B	32. B	33. C	34. B	35. D	36. D	37. B	38. D	39. A	40. C