



CHEMISTRY

BOOKS - NDA PREVIOUS YEARS

CHEMISTRY OF METAL AND NON-METALS

(H₂, O₂ AND N₂)

Mcqs

1. Which are most abundant elements in the universe ?

A. Oxygen and Nitrogen

B. Hydrogen and Oxygen

C. Hydrogen and Helium

D. Carbon and Nitrogen

Answer: A



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2. Consider the following statements :

Nitrogen is an essential constituent of

1. soils 2. animals

3. plants

Which of the statements given above is/are correct ?

A. 3 only

B. 1 and 3 only

C. 1 and 2 only

D. 1 , 2 and 3 only

Answer: C



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3. What is the colour of oxygen in solid state ?

A. Pale yellow

B. Pale blue

C. Light green

D. Greenish yellow

Answer: A



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4. Why is H_2O a liquid and H_2S a gas?

A. Oxygen forms stronger hydrogen bond than sulphur

- B. Oxygen is less electronegative than sulphur
- C. Atomic radius of oxygen is less than that of sulphur
- D. Atomic radius of oxygen is greater than that of sulphur

Answer: A



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5. In chemical terms , what are alums used for purifying water for drinking purposes ?

- A. Hydrated chlorides
- B. Double nitrate
- C. Double sulphates
- D. Nitrates of aluminium

Answer: C

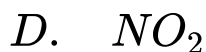


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6. Match the List-I and the List-II and select the correct answer using the codes given below the

lists :

List-I
(Compounds of Nitrogen)



List -II
(Valency)

1. 1

2. 2

3. 3

4. 4

5. 5

A. A B C D
(a) 1 4 5 2

B. A B C D
(b) 5 2 3 4

C. A B C D
(c) 1 2 5 4

D. A B C D
(d) 5 4 3 2

Answer: C



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7. Why is nitrogen molecule chemically less active ?

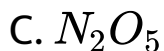
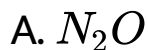
- A. It has small atomic radius
- B. It has high electronegativity
- C. It has high dissociation energy
- D. It has stable electronic configuration

Answer: C



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8. Yellow colour of usual nitric acid is due to the presence of which one of the following ?



Answer: D



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9. When iron is left exposed in open air , it gets rusted . Which constituent(s) of air is/are responsible for rusting iron ?

1 Oxygen gas present in air

2. Moisture present in air

3. Carbon dioxide gas present in air

Select the correct answer using the code given below

A. 1 only

B. 2 only

C. 1 and 2

D. 2 and 3

Answer: C



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10. Which one of the following elements cannot displace hydrogen gas from a dilute acid ?

A. Zinc

B. Copper

C. Magnesium

D. Iron

Answer: B



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11. When an alkali-metal reacts with water , which one of the following gases is produced ?

A. Hydrogen

B. Oxygen

C. Hydrogen peroxide

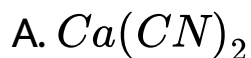
D. Ozone

Answer: A



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12. Which of the following is not a nitrogenous fertilizer ?



D. Urea

Answer: A



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13. Which one of the following is the correct order in which the gases H_2 , Ne , O_2 and N_2 are evolved on fractional distillation of liquid air ?

A. H_2 , Ne , O_2 , N_2

B. H_2 , Ne , N_2 , O_2

C. N_2 , O_2 , Ne , H_2

D. O_2 , N_2 , H_2 , Ne

Answer: B



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14. Which of the following is an element which never exhibits positive oxidation state in any of its compounds ?

A. Oxygen

B. Chlorine

C. Fluorine

D. Carbon

Answer: C



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15. The metal compound commonly found in Sindhoor or kumkum is based on

A. tin

B. lead

C. copper

D. zinc

Answer: B



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16. Which among the following elements (metals) pollutes the air of a city having large number of automobiles ?

A. Cadmium

B. Lead

C. Chromium

D. Nickel

Answer: B



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17. Oxygen and ozone are

A. allotropes

B. isomers

C. isotopes

D. isobars

Answer: A



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18. Which among of the following is an element ?

A. Alumina

B. Brass

C. Graphite

D. Silica

Answer: A



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19. Which one among the following is used as a moderator in nuclear reactors ?

A. Ozone

B. Heavy hydrogen

C. Heavy water

D. Hydrogen peroxide

Answer: C



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20. Which one of the following elements exists in liquid state at room temperature ?

A. Mercury

B. Lead

C. Sodium

D. Calcium

Answer: A



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21. Aluminium is more reactive than iron. But aluminium is less easily corroded than iron because.

A. oxygen forms a protective oxide layer

B. it is a noble metal

C. iron undergoes reaction easily with water

D. iron forms ions

Answer: D



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22. Equal quantities (50 ml) of the following four samples of water are placed in four beakers of 100 ml capacity . Their boiling points are determined accurately using the same thermometer . Which sample of water will having the lowermost boiling point as compared to other three samples ?

A. Distilled water

B. Bottled mineral water

C. Well water

D. Seawater

Answer: A



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23. Which one among the following metals is more reactive than hydrogen ?

A. Mercury

B. Copper

C. Silver

D. Tin

Answer: D



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24. Which one of the following is a transition metal ?

A. Aluminium (Al)

B. Manganese (Mn)

C. Magnesium (Mg)

D. Calcium (Ca)

Answer: B



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25. Which one of the following gases , present in the air near the surface of the Earth , has maximum concentration ?

A. Oxygen (O_2)

B. Hydrogen (H_2)

C. Nitrogen (N_2)

D. Methane (CH_4)

Answer: C



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26. Which one of the following elements will replace hydrogen from acids to form salts ?

A. Sulphur (S)

B. Silicon (Si)

C. Zinc(Zn)

D. Phosphorus (P)

Answer: C



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27. Which of the following represents a chemical change ?

- 1 . Magnetization of iron
2. Condensation of liquid
3. Burning of fuel
4. Rusting of iron

Select the correct answer using the code given below :

Code :

A. 1 and 2

B. 2 and 3

C. 3 and 4

D. 1 and 4

Answer: C



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28. Which of the following is correct order of the reactivity of the metals?

A. $Cu > Mg > Zn > Na$

B. $Na > Zn > Mg > Cu$

C. $Cu > Zn > Mg > Na$

D. $Na > Mg > Zn > Cu$

Answer: D



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29. Consider the following statements with regard to the properties of water

I . Water is a good solvent for ionic compound but poor solvent for covalent compound .

II . Water is a good solvent for covalent compound

but poor solvent for ionic compound .

III . Water has maximum density at the temperature 277 K .

Which of the statements given above are correct ?

A. I and III only

B. II and III only

C. I and II only

D. I , II and III

Answer: A



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30. When aqueous solutions of two salts are mixed, the third salt formed may appear as a solid precipitate or a clear solution depending upon the solubility of its ions. It is observed that all salts of Na, K, NH_4 are soluble. All nitrates and bicarbonates are also soluble. All halides (chlorides, bromides, iodides) are soluble except those of Ag, Hg (I) and Pb. Which one among the following combinations of solutions will produce a solid precipitate?

A. Sodium sulphate and barium chloride

B. Magnesium sulphate and barium bicarbonate

C. Lithium iodide and barium chloride

D. Ammonium sulphate and potassium bromide

Answer: A::B



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31. A mixture containing SiO_2 , $NaCl$ and NH_4Cl is taken for separating the constituents. The suitable steps required for this are

A. Sublimation-dissolution-filtration-
crystallisation

B. Dissolution-filtration-crystallisation-
distillation

C. Sublimation-evaporation-dissolution-
decomposition

D. Dissolution-distillation-decomposition-
evaporation.

Answer: A



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32. Which one among the following is a chemical process ?

- A. Distillation of sea (salty) water
- B. Crystallisation of impure salt (NaCl)
- C. Production of Iodine (I_2) from sea-weeds
- D. Sublimation of iodine (I_2)

Answer: C



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33. Iron nails are dipped into blue copper sulphate solution.

After sometime iron nails are

A. dissolved and blue colour is discharged

B. dissolved but blue colour is not discharged

C. not dissolved and blue colour is not discharged

D. not dissolved but blue colour is discharged

Answer: D



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34. Silverware turns black after a period of time due to formation of

- A. nitrate coating on silver
- B. sulphide coating on silver
- C. chloride coating on silver
- D. oxide coating on silver

Answer: B



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35. Which of the statements given below is/are correct ?

Permanent hardness of water is due to the presence of soluble.

1. chloride of calcium
2. bicarbonate of calcium
3. sulphate of magnesium
4. bicarbonate of magnesium

Select the correct answer using the codes give below

A. 1 only

B. 1 and 3

C. 2 and 4

D. 1 , 2 and 3

Answer: B



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36. Which one among the following methods is not effective in removing arsenic from contaminated ground water ?

A. Boiling

B. Reverse osmosis

C. Ion exchange

D. Coagulation adsorption

Answer: A



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37. Bronze is often used to make statues and medals whereas brass is used in making utensils , scientific apparatus and cartridges . Both brass and bronze are copper containing alloys , yet they differ in their chemical composition for additionally containing

- A. zinc in brass and tin in bronze
- B. chromium in brass and nickel in bronze
- C. nickel in brass and tin in bronze
- D. iron in brass and nickel in bronze

Answer: A



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38. Solutions in test tubes containing H_2O and aqueous NaOH can be differentiated with the help of

A. red litmus

B. blue litmus

C. Na_2CO_3

D. HCl (aqueous)

Answer: A



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39. A student heated some sulphur in a spatula and collected the gas 'X' . Which one among the following is correct about 'X' ?

A. X is SO_2 and it turns moist litmus to blue

B. X is SO_3 and it turns moist litmus to red

C. X is SO_2 and it turns moist litmus to red

D. X is SO_3 and it turns dry litmus to blue

Answer: C



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40. All the elements in a group (family) have a common valency. For example , all the elements of the carbon family (carbon, silicon , germanium , tin and lead) have common valency four . However ,

some of these elements can also have valency two .

Which of the following can have valency two ?

A. Silicon , germanium and tin

B. Only germanium and tin

C. Germanium , tin and lead

D. Only tin and lead

Answer: C



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41. When a copper rod is dipped in aqueous silver nitrate solution , the colour of the solution changes to blue . This is because

- A. Cu is more easily reduced than Ag
- B. Ag is more easily reduced than Cu
- C. Nitrate ion acts as an oxidizing agent
- D. Nitrate ion acts as a reducing agent

Answer: B



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42. The metal constituent of chlorophyll is

A. Iron

B. Potassium

C. Manganese

D. Magnesium

Answer: D



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43. During explosion of gunpowder , which of the following gases are evolved in the proportion of

1:3?

A. Oxygen : Nitrogen

B. Nitrogen : Oxygen

C. Nitrogen: Carbon dioxide

D. Carbon dioxide : Nitrogen

Answer: C



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44. A glass of water does not turn into ice as it reaches $0^{\circ}C$. It is because

A. water does not solidify at $0^{\circ} C$

B. a certain amount of heat must be supplied to the glass of water so as to solidify

C. a certain amount of heat must be taken out from the glass of water so as to solidify

D. water solidifies at 0 K only

Answer: C



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45. Which one among the following is the major constituent of soda lime glass ?

- A. Sodium oxide
- B. Calcium oxide
- C. Calcium carbonate
- D. Silica

Answer: D



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46. Which one among the following does not have an allotrope ?

A. Oxygen

B. Sulphur

C. Nitrogen

D. Carbon

Answer: C



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47. Deionised water is produced by

- A. Calgon process
- B. Ion-exchange resin process
- C. Clark's process
- D. Permutit process

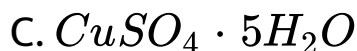
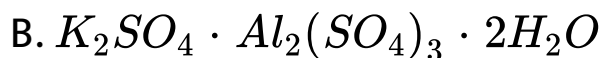
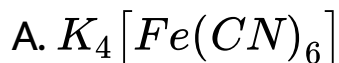
Answer: B



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48. Which one among the following is a double salt

?



Answer: B



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49. The acid in gastric juice is

A. acetic acid

B. nitric acid

C. hydrochloric acid

D. sulphuric acid

Answer: C



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50. Statement I : The blue colour of copper sulphate crystal disappears when it is heated strongly.

Statement II : Due to heated , water of crystallization of crystal is lost .

A. Both the statements individually true and

Statement II is the correct explanation of Statement I.

B. Both the statements are individually true but

Statement II is not correct explanation of Statement I.

C. Statement I is true but Statement II is false .

D. Statement I is false but Statement II is true .

Answer: A



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51. Statement I : At high temperature , hydrogen can reduce PbO to elemental lead.

Statement II : Hydrogen has great affinity to oxygen.

- A. Both the statements individually true and Statement II is the correct explanation of Statement I.
- B. Both the statements are individually true but Statement II is not correct explanation of Statement I.
- C. Statement I is true but Statement II is false .
- D. Statement I is false but Statement II is true .

Answer: B



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52. Statement I : Water is a high boiling point liquid.

Statement II : Hydrogen bonding in water is responsible for high boiling point of water .

A. Both the statements individually true and

Statement II is the correct explanation of Statement I.

B. Both the statements are individually true but

Statement II is not correct explanation of Statement I.

C. Statement I is true but Statement II is false .

D. Statement I is false but Statement II is true .

Answer: A



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53. Statement I : Hard water does not give lather with soap .

Statement II : Calcium and magnesium salts present in hard water form precipitate with soap .

A. Both the statements individually true and

Statement II is the correct explanation of

Statement I.

B. Both the statements are individually true but

Statement II is not correct explanation of

Statement I.

C. Statement I is true but Statement II is false .

D. Statement I is false but Statement II is true .

Answer: A



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54. Oxygen on reaction with non-metals forms oxides, which are

- A. basic oxides
- B. acidic oxides
- C. amphoteric oxides
- D. neutral oxides

Answer: B



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55. A gas is evolved when a piece of zinc metal placed in dilute sulphuric acid (H_2SO_4) . What is the gas ?

- A. Hydrogen
- B. Oxygen
- C. Water vapour
- D. Sulphur dioxide

Answer: A



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56. Metalloids are

- A. alloys of alkali metals with other metals.
- B. colloids of metals
- C. element having some properties of both metals and non-metals .
- D. metals heavier than lead.

Answer: C



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57. Two reactants in a flask at room temperature are producing bubbles of a gas that turn limewater milky. The reactants could be

- A. Zinc and hydrochloric acid
- B. Magnesium carbonate and hydrochloric acid
- C. Magnesium nitrate and hydrochloric acid
- D. Magnesium sulphate and hydrochloric acid .

Answer: B



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58. The number of aluminium ions present in 54g of aluminium (atomic weight 27) is

A. 2

B. 18

C. 1.1×10^{24}

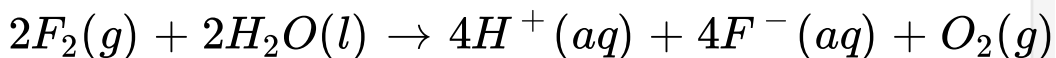
D. 1.2×10^{24}

Answer: D



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59. Which of the following is correct regarding the reaction of fluorine with water ?



- A. Fluorine is oxidized to F^-
- B. Water is oxidized to O_2
- C. Water is reduced to H^+
- D. Oxidation state of fluorine does not change

Answer: B



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60. The very high heat of vaporization of water is mainly a result of

A. van der Waals forces

B. covalent bonds

C. interionic attraction

D. hydrogen bonding

Answer: D



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61. Statement I : Colour of nitrogen dioxide changes to colourless at low temperature

Statement II : At low temperature Nitrogen tetroxide (N_2O_4) is formed which is colourless.

A. Both the statements individually true and

Statement II is the correct explanation of Statement I.

B. Both the statements are individually true but

Statement II is not correct explanation of Statement I.

C. Statement I is true but Statement II is false .

D. Statement I is false but Statement II is true .

Answer: A



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62. Statement I : Oxygen gas is easily produced at a faster rate by heating mixture of potassium chlorate and manganese dioxide than heating potassium chlorate alone .

Statement II : Manganese dioxide acts as a negative catalyst .

- A. Both the statements individually true and Statement II is the correct explanation of Statement I.
- B. Both the statements are individually true but Statement II is not correct explanation of Statement I.
- C. Statement I is true but Statement II is false .
- D. Statement I is false but Statement II is true .

Answer: C



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63. If a charged particle ($+q$) is projected with certain velocity parallel to the magnetic field , then it will

- A. trace helical path
- B. trace circular path
- C. continue its motion without any change
- D. come to rest instantly

Answer: D



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64. In the reaction $ZnO + C \rightarrow Zn + CO$ 'C' acts as

- A. an acid
- B. a base
- C. an oxidising agent
- D. a reducing agent

Answer:



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65. The alkali metals have relatively low melting point . Which one of the following alkali metals is expected to have the highest melting point ?

A. Li

B. Na

C. K

D. Rb

Answer: A



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66. Which one of the following oxides dissolves in water ?

A. CuO

B. Al_2O_3

C. Fe_2O_3

D. Na_2O

Answer: B



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67. Matter around us can exist in three different states , namely , solids , liquid and gas . The correct order of their compressibility is

A. Liquid < Gas < Solid

B. Solid < Liquid < Gas

C. Gas < Liquid < Solid

D. Solid < Gas < Liquid

Answer: A



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68. Temporary hardness in water is due to which one of the following of Calcium and Magnesium ?

A. Hydrogencarbonates

B. Carbonates

C. Chlorides

D. Sulphates

Answer: A



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69. Which one of the following elements is least reactive with water

A. Lithium

B. Sodium

C. Potassium

D. Cesium

Answer: B



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70. Which one of the following elements corrodes rapidly ?

A. Aluminium

B. Iron

C. Zinc

D. Silver

Answer: A



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71. The proposition equal volumes of different gases contain equal numbers of molecules at the same temperature and pressure is known as

- A. Avogadro's hypothesis
- B. Gay-Lussac's hypothesis
- C. Planck's hypothesis
- D. Kirchhoff's theory

Answer: A



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72. Zinc is used to protect iron from corrosion because zinc is

- A. more electropositive than iron
- B. cheaper than iron
- C. a bluish white metal
- D. a good conductor of heat and electricity

Answer: A



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73. Which one of the following alkali metals has lowest melting point ?

A. Sodium

B. Potassium

C. Rubidium

D. Caesium

Answer: A



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74. Which one of the following metals is alloyed with sodium to transfer heat in a nuclear reactor ?

A. Potassium

B. Calcium

C. Magnesium

D. Strontium

Answer: C



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75. Which one of the following metals is used in the filaments of photo-electric cells that convert light into electric energy ?

A. Tungsten

B. Copper

C. Rubidium

D. Aluminium

Answer: C



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76. Permanent hardness of water cannot be removed by which one of the following methods ?

A. Treatment with washing soda

B. Calgon's method

C. Boiling

D. Ion exchange method

Answer: C



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77. Which one of the following metals does NOT react with cold water ?

- A. Calcium (Ca)
- B. Potassium (K)
- C. Magnesium (Mg)
- D. Sodium (Na)

Answer: C



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78. Which one of the following could be the melting point of iron ?

A. $25^{\circ} C$

B. $37^{\circ} C$

C. $500^{\circ} C$

D. $1500^{\circ} C$

Answer: C



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79. Dinitrogen and dioxygen are main constituents of air but these do not react with each other to form oxides of nitrogen because a)The reaction is endothermic and requires very high temperature b).The reaction can be initiated only in presence of a catalyst c)Oxides of nitrogen are unstable d) N_2 and O_2 are unreactive

A. the reaction requires initiation by a catalyst

B. oxides of nitrogen are unstable

C. the reaction is endothermic and requires very high temperature

D. the stoichiometry of N_2 and O_2 in air is not ideal for the reaction to take place

Answer: B



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80. On exposure to moist air , copper gains a green coat on its surface due to formation of which one of the following compounds ?

A. Copper carbonate

B. Copper oxide

C. Copper sulphate

D. Copper nitrate

Answer:



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