CHEMISTRY

BOOKS - R SHARMA CHEMISTRY (HINGLISH)

THE P BLOCK ELEMENTS

Follow Up Test 1

1. Elements in which the last electron enters any one of the three p orbitals of their

respective _____ shells are called p-block elements.

A. penultimate

B. antepenultimate

C. outermost

D. foremost

Answer: C

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2. The general valence shell electronic configuration of p-block elements is

A. np^{1-6}

B. ns^2np^{1-6}

C. ns^2np^6

D. ns^2np^2

Answer: B

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3. There are _____ p-block elements in the periodic table.

A. 30

B. 31

C. 33

D. 32

Answer: A

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4. Which of the following is incorrect for p-block elements?

A. Some of the elements exhibit variable valencies.

B. Some of the elements exhibit variable oxidation numbers.

C. Lighter elements exhibit inert pair effect.

D. The highest oxidation number shown by a p-block element is equal to the sum of

ns- and np-electrons in the valence shell.

Answer: C

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5. p-block consists of

A. metals

B. nonmetals

C. metalloids

D. all of these

Answer: D

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6. Oxides formed by p-block elements may be

(i) basic

(ii) acidic

(iii) amphoteric

(iv) neutral

A. $(i), (ii)$

B. $(ii), (iii)$

C. $(ii), (iii), (iv)$

D. $(i), (ii), (iii), (iv)$

Answer: D

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7. Heavier elements of p-block in each group do not form

A. $p_\pi - p_\pi$ multiple bonds

B. $d_\pi - p_\pi$ multiple bonds

C. $d_\pi - d_\pi$ multiple bonds

D. all of these

Answer: A

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Follow Up Test 2

1. Which of the following represents kernite?

A. $Na_2B_4O_7.2H_2O$

B. $Na_2B_4O_7.5H_2O$

C. $Na_2B_4O_7.10H_2O$

D. $Na_2B_4O_7.9H_2O$

Answer: A

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2. Aluminium widely occurs in nature as

A. cryolite

B. bauxite

C. feldspars

D. all of these

Answer: D

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3. After Al, the most abundant group 13 elements is

A. Tl

B. In

C. Ga

D. B

Answer: C

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4. Anhydrous alumina (Al_2O_3) is known as

A. emerald

B. corundum

C. sapphire

D. ruby

Answer: B

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5. Which of the following group 13 elements have pseudo noble gas configuration is their penultimate shell?

A. B and Al

B. Al and Ga

C. Ga and In

D. In and Tl

Answer: C

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6. Which of the following group 13 elements has the smallest atomic radius?

A. Al

B. Ga

C. In

D. Tl

Answer: B

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7. Which of the group 13 elements has the highest ionization enthalpy?

A. Al

B. Ga

C. In

D. Tl

Answer: D

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8. Which of the group 13 elements has the highest ionization enthalpy?

A. Al

B. Ga

C. In

D. Tl

Answer: A

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9. Which of the following elements always forms covalent bonds?

A. Pb

B. Si

C. Al

D. B

Answer: D

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10. Which of the following is correct regarding the values of ionization enthalpies?

A. B has lower ionization enthalpy than Be

.

B. Al has lower ionization enthalpy than Mg.

C. Ga has lower ionization enthalpy than Ca.

D. All of these.

Answer: D

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11. Which of the following is incorrect about group 13 elements?

A. They are less electropositive (or metallic) as compared to s-block elements.

B. On moving down the group, the electropositive character increases.

C. The standard reduction electrode potentials $E^{\circ}\left(M^{3+}/M\right)$ become less

negative from Al to Ga to In and the potential becomes positive for Tl.

D. None of these.

Answer: B

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Follow Up Test 3

1. Which of the following has the highest melting point?

A. Tl

B. In

C. Ga

D. Al

Answer: D

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2. Which of the following has the highest boiling point?

A. B

B. Al

C. Ga

D. In

Answer: A

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3. Which of the following is a useful material for measuring high temperatures?

A. Al

B. Ga

C. In

D. Tl

Answer: B

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4. Which of the following group 13 elements has the highest density?

A. Al

B. Ga

C. In

D. Tl

Answer: D

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Follow Up Test 4

1. The most stable oxidation state of boron is

A. $+3$

B. $+1$

C. -3

D. -1

Answer: A

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2. Which of the following ions do not exist?

$(i) B^{3+}$

$(ii) Al^{3+}$

$(iii) Ga^{3+}$

$(iv) Tl^{3+}$

A. $(i), (ii), (iii), (iv)$

B. $(i), (ii), (iii)$

C. $(ii), (iii)$

D. $(i), (iv)$

Answer: D

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3. Which of the following group 13 elements forms univalent halides which are more stable than the trihalides?

A. Al

B. Ga

C. Tl

D. In

Answer: C

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4. Group 13 elements form complexes much more readily than the s-block elements because of

A. smaller ionic size

B. increased ionic charge

C. higher charge density

D. all of these

Answer: C

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5. The oxidation number of Ga in $GaCl_2$ is

A. $+2$

B. $+3$

C. $+1$

D. both (2) and (3)

Answer: D

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6. Which of the following oxides are amphoteric?

$(i) Tl_2O$

$(ii) Al_2O_3$

$(iii) Ga_2O_3$

$(iv) In_2O_3$

A. $(i), (ii), (iii)$

B. $(ii), (iii), (iv)$

C. $(i), (ii), (iii), (iv)$

D. $(ii), (iii)$

Answer: D

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7. Which of the following Lewis acids exhibits maximum acidic strength?

A. BI_3

B. BBr_3

C. BCl_3

D. BF_3

Answer: A

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8. Which of the following cannot undergo Lewis acid-base reaction with BF_3?

A. F^-

B. NH_3

C. $AlCl_3$

D. $(C_2H_5)_2O$

Answer: C

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9. Which of the following is a liquid?

A. BI_3

B. BF_3

C. BCl_3

D. BBr_3

Answer: D

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10. The compounds TII_3 consists of.....ions.

A. Tl^{3+}

B. I^-

C. I_3

D. both (1) and (2)

Answer: D

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11. Which of the following exist as dimers in the anhydrous state and in nonpolar solvents?

(i) AlF_3 , (ii) $AlCl_3$

(iii) $AlBr_3$, (iv) AlI_3

A. (ii), (iii)

B. (ii), (iii), (iv)

C. (i), (ii), (iii)

D. (i), (ii), (iii), (iv)

Answer: A

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12. Which of the following gases is envolevd when Al is boiled with caustic potash ?

A. H_2

B. O_2

C. Both O_2 and H_2O

D. H_2O vapor

Answer: A

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13. Which of the following reactions of Al is known as the thermite reaction?

A. Reaction with N_2

B. Reaction with O_2

C. Reaction with NH_3

D. Reaction with $NaOH$

Answer: B

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14. The self-protective oxide film on Al can be removed by

A. reacting with Cl_2

B. adding conc. HNO_3

C. amalgamating with Hg

D. boiling with water

Answer: C

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15. Anhydrous $AlCl_3$ produces fumes in the air because of

A. oxidation

B. reduction

C. dimerization

D. hydrolysis

Answer: D

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16. Alzheimer's diseases is caused by the deposition of.....metal.

A. Ga

B. Al

C. In

D. Tl

Answer: B

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17. Which of the following group 13 elements does not show the inert pair effect?

A. Al

B. Ga

C. In

D. Tl

Answer: A

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Follow Up Test 5

1. The chemical name of borax is

A. sodium orthoborate decahydrate

B. sodium metaborate decahydrate

C. sodium tetraborate decahydrate

D. sodium borate decahydrate

Answer: C

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2. The correct formula of borax is

A. $Na_2\left[B_4O_5(OH)_2\right].8H_2O$

B. $Na_2\left[B_4O_6(OH)_6\right].9H_2O$

C. $Na_2\left[B_4O_4(OH)_8\right].7H_2O$

D. $Na_2\left[B_4O_3(OH)_4\right].6H_2O$

Answer: A

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3. Borax is prepared from

A. boric acid

B. colemanite

C. tincal

D. all of these

Answer: D

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4. Aqueous solution of borax is

A. neutral

B. acidic

C. alkaline

D. strongly acidic

Answer: C

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5. When borax is dissolved in water

A. both $B(OH)_3$ and $\left[B(OH)_4\right]^-$

B. only $B(OH)_3$ is formed

C. only $\left[B(OH)_4\right]^-$ is formed

D. None of these.

Answer: A

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6. Which of the following transition metals yields a green colored bead in the borax bead test?

A. Ni

B. Mn

C. Cr

D. Cu

Answer: C

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7. When borax is heated with ethyl alcohol and concentrated sulpheric acid, vapors of triethylborate are produced. When ignited, these vapors burn with a .....flame.

A. blue-edged

B. green-edged

C. red-edged

D. brown-edged

Answer: B

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8. Boric acid (H_3BO_3) prepared from

A. borax

B. boron trihalides

C. colemanite

D. all of these

Answer: D

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9. Orthoboric acid (H_3BO_3) commonly known as boric acid behaves as a

A. strong monobasic acid

B. weak tribasic acid

C. weak dibasic acid

D. very weak monobasic acid

Answer: D

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10. When boric acid is heated at $160^{\circ}C$, the product is

A. boric anhydride

B. metaboric acid

C. tetraboric acid

D. pyroboric acid

Answer: C

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11. Orthoboric acid contains

A. T-shaped BO_3^{3-} units

B. pyramidal BO_3^{3-} units

C. triangular BO_3^{3-} units

D. irregular tetrahedral BO_3^{3-} units

Answer: C

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12. Which of the following reactions is not used to prepare diborane?

A. $BF_3 + NaH \xrightarrow{180^\circ C}$

B. $B_2O_3 + CaF_2 + conc.\ H_2SO_4 \rightarrow$

C. $Na[BH_4] + I_2 \xrightarrow[\text{solution}]{\text{Diglyme}}$

D. $(C_2H_5)_2O.\ BF_3 + LiAlH_4 \rightarrow$

Answer: B

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13. Diborane is instantly hydrolyzed by water to give

A. $H_3BO_3 + H_2$

B. $H_3BO_3 + B_2O_3$

C. $H_3BO_3 + O_2$

D. $H_2O_3 + B_2O_3$

Answer: A

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14. B_2H_6 reacts with Cl_2 to produce

A. $B_2H_4Cl_2$

B. BCl_3

C. B_2H_5Cl

D. B_2Cl_6

Answer: B

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15. Which of the following reactions leads to the formation of borazine?

A. $B_2H_6 + NH_3 \xrightarrow[\text{High temperature}]{\text{Excess} NH_3}$

B. $B_2H_6 + NH_3 \xrightarrow[\text{Low temperature}]{\text{Excess} NH_3}$

C. $B_2H_6 + NH_3 \xrightarrow[\text{High temperature}]{\text{Ratio} 2NH_3 : iB_2H_6}$

D. $B_2H_6 + NH_3 \xrightarrow[\text{Low temperature}]{\text{Ratio} 2NH_3 : iB_2H_6}$

Answer: C

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16. Which of the following is used in the manufacture of heat resistance borosilicate glass?

A. Boron sesquioxide

B. Borax

C. Boric acid

D. All of these

Answer: D

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17. Borax is used for.....resistant glazed coating to earthen-wares.

A. heat

B. scratch

C. stain

D. all of these

Answer: D

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Follow Up Test 6

1. Carbon is an essential constituent of all living matter such as

A. fats

B. carbohydrates

C. proteins

D. all of these

Answer: D

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2. Which of the following compounds of C plays a vital role in the carbon cycle?

A. CO_2

B. CO

C. Carbonate

D. Carbide

Answer: A

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3. Silicon is the_____element by weight in the earth's crust?

A. most abundant

B. second most abundant

C. third most abundant

D. None of these.

Answer: B

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4. Which of the following element was used on the floor in the Hanging Gardens of Babylon (one of the wonders of the ancient world)?

A. Sn

B. Si

C. Pb

D. Ge

Answer: C

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5. The most important ore of tin is

A. pyrolusite

B. wolframite

C. stannite

D. cassiterite

Answer: D

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6. The principal ore of lead is

A. galena

B. anglesite

C. cerussite

D. None of these.

Answer: A

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7. If the atomic number if C is 6, then the atomic number of Sn will be

A. 50

B. 45

C. 35

D. 40

Answer: A

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8. The minimum increase in covalent radius is from

A. C to Si

B. Si to Ge

C. Ge to Sn

D. Sn to Pb

Answer: D

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9. Which of the following group 14 element has the lowest first ionization enthalpy?

A. Si

B. Ge

C. Sn

D. Pb

Answer: C

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10. Which of the following has the lowest melting point?

A. Pb

B. Sn

C. Ge

D. Si

Answer: B

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11. Which of the following has the highest boiling point?

A. Si

B. Ge

C. Sn

D. Pb

Answer: A

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12. Which of the following has the maximum density ?

A. Diamond

B. Silicon

C. Graphite

D. Germanium

Answer: D

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Follow Up Test 7

1. The most common oxidation number exhibited by C is

A. $+4$

B. $+2$

C. 0

D. -4

Answer: A

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2. The most stable divalent compound of carbon is

A. CCl_2

B. CO_2

C. CH_2

D. CO

Answer: D

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3. Oxidation numbers $+2$ and $+4$ are exhibited by

$(i) Si$

$(ii) Ge$

$(iii) Sn$

$(iv) Pb$

A. $(i), (ii), (iii), (iv)$

B. $(ii), (iii), (iv)$

C. $(i), (ii), (iii)$

D. $(iii), (iv)$

Answer: B

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4. On descending group 14,

A. the stability of the $+4$ oxidation state decreases

B. the stability of the $+2$ oxidation state increases

C. the tendency of the inert pair effect decreases

D. both (1) and (2)

Answer: D

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5. Carbon, the first member of group 14, shows an anomalous behavior because of

(i) its exceptinally small atomic and ionic size

(ii) its higher electronegativity

(iii) its higher ionization enthalpy

(iv) the absence of vacant d-orbitals in the valence shell

A. $(i), (ii)$

B. $(ii), (iii)$

C. $(iii), (iv)$

D. $(i), (ii), (iii), (iv)$

Answer: D

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6. Which of the following bonds has the minimum bond enthalpy?

A. $Sn - Sn$

B. $Ge - Ge$

C. $Si - Si$

D. $C - C$

Answer: A

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7. Which of the following elements shows the strongest catenation property?

A. Si

B. C

C. Sn

D. Pb

Answer: B

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8. At room temperature, CO_2 is a gas while SiO_2 is a solid because

A. CO_2 is nonpolar but SiO_2 is polar

B. SiO_2 has higher molecular mass than CO_2

C. CO_2 has covalent bonds but SiO_2 has ionic bonds between the Si and O atoms

D. None of these.

Answer: D

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9. Which of the following is correct regarding the shapes of trisilylamine and trimethylamine?

A. Both are trigonal planar.

B. Both are trigonal pyramidal.

C. They are trigonal planar and pyramidal, respectively.

D. They are trigonal pyramidal and planar, respectively.

Answer: C

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10. Which of the following are amphoteric oxides?

A. CO_2 and SiO_2

B. SiO_2 and GeO_2

C. GeO_2 and SnO_2

D. SnO_2 and PbO_2

Answer: D

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11. Which of the following is a neutral oxide?

A. CO

B. GeO

C. SnO

D. PbO

Answer: A

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12. Plumbosolvancy means the dissolution of lead in

A. alkalies

B. ordinary water

C. acids

D. hot water

Answer: B

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13. Which of the following species decomposes easily?

A. $Pb(CH_3CO_2)_4$

B. $PbCl_4$

C. PbI_4

D. PbI_2

Answer: C

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14. The shape and geometry of $SnCl_4$ is

A. irregular tetrahedral

B. square planar

C. square pyramidal

D. regular tetrahedral

Answer: D

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15. Silicon tetrafluoride reacts with HF to form

A. $H_2[SiF_4]$

B. SiF_6^{2-}

C. SiF_6^{4-}

D. SiF_2

Answer: B

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16. Which of the following is not hydrolyzed under normal conditions?

A. $SiCl_4$

B. $SnCl_4$

C. CCl_4

D. $GeCl_4$

Answer: C

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Follow Up Test 8

1. How many allotropic forms of carbon are there?

A. Six

B. Five

C. Four

D. Three

Answer: A

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2. Blue diamonds contain a trace of

A. N

B. Al

C. S

D. Cr

Answer: B

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3. The carbon atoms in diamond are

A. sp^3 -hybridized and are connected by double bonds

B. sp^2 -hybridized and are connected by single bonds

C. sp^3 -hybridized and are connected by single bonds

D. sp^2 -hybridized and are connected by double bonds

Answer: C

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4. Which of the following is the hardest naturally occuring substance?

A. C_{60} fullerene

B. Graphite

C. C_{70} fullerene

D. Diamond

Answer: D

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5. Diamond is a/an____substance.

A. translucent

B. transparent

C. opaque

D. none of these

Answer: B

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6. In diamond, the $C-C$ bond lengths are _____ pm.

A. 140

B. 134

C. 154

D. 125

Answer: C

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7. Graphite consists of layers of C atoms. Within the layers, covalent bonds hold the C atoms in six-membered rings. The $C-C$ bond length in graphite is.....pm.

A. 141

B. 132

C. 120

D. 154

Answer: A

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8. In the diamond form of carbon, there is a network of single, tetrahedrally arragned covalent bonds. The structure of graphite is

quite different from that of diamond. Graphitie is composed of many two-dimensional sheets of carbon atoms. The distance between the layers is_____pm.

A. 214

B. 335

C. 405

D. 186

Answer: B

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9. In graphite, each C atom is

A. sp^2-hybridized and the π bond order of each $C-C$ bond is $3/2$

B. sp^3-hybridized and the π bond order of each $C-C$ bond is 1

C. sp^2-hybridized and the π bond order of each $C-C$ bond is $1/3$

D. sp-hybridized and the π bond order of each $C-C$ bond is $1/2$

Answer: C

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10. Which of the following is not correct about graphite?

A. Graphite cleaves easily between the layers.

B. The density if graphite is higher than that if diamond.

C. Graphite is an excellent lubricant.

D. In graphite, the conduction of electricity can occur in a sheet, but not from one sheet to another.

Answer: B

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11. A lead pencil contains___mixture.

A. lead-clay

B. charcoal-clay

C. graphite-clay

D. carbon back-clay

Answer: C

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12. Graphite can be converted into synthetic diamond under

A. very high pressure and at high temperature

B. very high pressure and at low temperature

C. low pressure and at high temperature

D. low pressure and at low temperature

Answer: A

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13. With respect to graphite and diamond, which of the statements given below are correct?

(i) Graphite is harder than diamond.

(ii) Graphite has higher electrical conductivity than diamond.

(iii) Graphite has higher thermal conductivity than diamond.

Graphite has higher $C - C$ bond order than diamond.

A. (i), (ii), (iii), (iv)

B. (ii), (ii)

C. (ii), (iv)

D. (ii), (iii), (iv)

Answer: C

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14. Fullerenes constitute a family of crystalline allotropes of carbon consisting of spherical or ellipsoidal molecules of composition C_{2n} when n is $> =$ ____.

A. 20

B. 30

C. 40

D. 15

Answer: B

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15. Which of the fullerenes is called Buckminsterfullerene ?

A. C_{70}

B. C_{350}

C. C_{60}

D. C_{120}

Answer: C

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16. Which of the following dissolves in organic solvents to form colored solutions ?

A. Diamond

B. Graphite

C. Charcoal

D. C_{60}

Answer: D

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17. Which of the following is used as black pigment in back ink and as filler in automobile typres ?

A. Coke

B. Carbon black

C. Charcoal

D. Graphite

Answer: B

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Follow Up Test 9

1. Carbon monoxide is always present in

A. automobile exhausts

B. volcanic gases

C. gases coming out of furnaces

D. all of these

Answer: D

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2. Pure CO gas is prepared in the laboratory by warming_____ with concentrated sulphuric acid.

A. formic acid

B. oxalic acid

C. acetic acid

D. both (1) and (2)

Answer: A

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3. CO is commercially produced by passing steam over red hot

A. charcoal

B. coke

C. graphite

D. diamond

Answer: B

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4. Producer gas is a mixture of

A. $CO + H_2$

B. $CO_2 + H_2$

C. $CO + N_2$

D. $CO_2 + N_2$

Answer: C

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5. Coal gas contains

(i) CO , (ii) H_2

(iii) CH_4 , (iv) CO_2

A. (i), (iii)

B. (i), (iv)

C. (i), (ii), (iii)

D. (i), (ii), (iii), (iv)

Answer: D

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6. In carbon monoxide molecule,

A. C is sp^2-hybridized but O is sp^3-hybridized

B. C is sp-hybridized but O is sp^2-hybridized

C. Both C and O are sp^2-hybridized

D. Both C and O are sp-hybridized

Answer: D

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7. Which of the following is not correct for carbon monoxide ?

A. It is a colorless gas.

B. It is an odorless gas.

C. It is highly soluble in water.

D. It is a neutral oxide.

Answer: C

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8. Carbon monoxide on heating with $NaOH$ at $200^{\circ}C$ under $6-10atm$ pressure yields.

A. sodium formate

B. sodium acetate

C. sodium oxalate

D. sodium carbonate

Answer: A

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9. Inhalation of carbon monoxide may cause death because

A. it produces poisonous HCN inside the body

B. it damages proteins of the body by cleaving peptide bonds

C. it combines with the iron in hemoglobin and blocks the intake of oxygen by blood.

D. it burns the lungs inside

Answer: C

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10. Which of the following oxides cannot be reduced with carbon monoxide?

A. Fe_3O_3

B. Al_2O_3

C. CuO

D. NiO

Answer: B

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11. Carbon monoxide can be estimated by reaction with

A. ammoniacal solution of cuprous chloride

B. (2) ammoniacal solution of silver nitrate

C. $PdCl_2$

D. I_2O_5

Answer: D

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12. Which of the following formula does not represent a metal carbonyl correctly?

A. $Mn_2(CO)_{10}$

B. (2) $Fe_2(CO)_9$

C. $Cr_2(CO)_6$

D. $Co_2(CO)_8$

Answer: C

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13. Which of the following transition metals is purified by the Mond process?

A. Ni

B. Cr

C. V

D. CO

Answer: A

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14. Which of the following reactions is not described correctly?

A. $CO(g) + S(s) \rightarrow COS(g)$

B. $Fe + 9CO \xrightarrow[\text{under pressure}]{200^\circ C} Fe(CO)_9$

C. $CO(g) + Cl_2(g) \rightarrow COCl_2(g)$

D. $2CO(g) + O_2(g) \rightarrow 2CO_2(g)$

Answer: B

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15. Carbon dioxide is prepared by burning____in excess of air of oxygen.

A. carbon

B. fossil fuels

C. organic compounds

D. all of these

Answer: D

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16. In the laboratory, carbon dioxide is prepared by the action of dilute acids on

A. carbides

B. cyanides

C. carbonates

D. isocyanides

Answer: C

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17. Commercially, CO_2 is produced as a byproduct during the manufacture of

(i) quicklime

(ii) etyhyl alcohol

(iii) hydrogen

(iv) ammonia

A. (i), (ii), (iii), (iv)

B. (i), (ii) , (iii)

C. (ii), (iii), (iv)

D. (i), (ii)

Answer: B

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18. In CO_2 molecule,

A. C is sp-hybridized while $O's$ are sp^2-hybridized

B. C is sp^2-hybridized whike $O's$ are sp-hybridized

C. both $C's$ and $O's$ are sp-hybridized

D. both $C's$ and $O's$ are sp^2-hybridized

Answer: A

Watch Video Solution

19. CO_2 is a linear, monomeric covalent compound. Its real structure is a resonance hybrid of _____resonance structures.

A. two

B. four

C. three

D. it does not exhibit resonance

Answer: C

 Watch Video Solution

20. Which of the following is incorrect regarding carbon dioxide?

A. It is a dense, colorless, and odoless gas.

B. It is not poisonous, unlike CO.

C. It is neither combustible nor a supporter of combustion.

D. It is slightly soluble in water and its solubility in water decreases with increase in pressure.

Answer: D

Watch Video Solution

21. Which of the following metals continue to burn in the atmosphere of CO_2 ?

(i) Na

(ii) K

(iii) Mg

(iv) Ca

A. (i), (ii)

B. (iii), (iv)

C. (i), (ii), (iii), (iv)

D. (ii), (iii), (iv)

Answer: C

 Watch Video Solution

22. In aqueous solution, almost all the carbon dioxide is present as

A. $CO_2(aq)$

B. H_2CO_3

C. HCO_3^-

D. CO_3^{2-}

Answer: A

Watch Video Solution

23. Which of the following systems helps to maintain the pH of blood?

A. $CO_2(aq.)/H_2CO_3(aq.)$

B. $H_2CO_3(aq.)/HCO_3^-(aq.)$

C. $HCO_3^-(aq.)/CO_3^{2-}(aq.)$

D. $H_2CO_3(aq.)/CO_3^{2-}(aq.)$

Answer: B

Watch Video Solution

24. Carbon dioxide is a/an____oxide.

A. neutral

B. basic

C. acidic

D. amphoteric

Answer: C

Watch Video Solution

25. Carbon dioxide gas is detected by its action on

A. lime water

B. baryta water

C. both (1) and (2)

D. blue litmus

Answer: C

Watch Video Solution

26. Greenhouse effect is a term used to describe

A. global cooling caused by the excess amount of CO_2 in the atmosphere

B. the warming effect produced by the greenness of the plants

C. the cooling effect produced by the gree-colored houses

D. global warming produced by the excess amount of CO_2 in the atmosphere

Answer: D

Watch Video Solution

27. Carbon dioxide unusual because it has no liquid phase at normal atmospheric pressure. Instead, the solid sublimes directly to the gas phase. To obtain the liquid phase at room

temperature, a pressuer of _____MP a must be applied.

A. 4.7

B. 6.7

C. 5.7

D. 3.7

Answer: B

Watch Video Solution

28. CO_2 gas can be liquefied under pressure between

A. $-57^\circ C$ and $+31^\circ C$

B. $-47^\circ C$ and $21^\circ C$

C. $-67^\circ C$ and $+41^\circ C$

D. $-37^\circ C$ and $11^\circ C$

Answer: A

Watch Video Solution

29. Solid CO_2 is proved as white snow by

A. expanding the gas at high temperature

B. cooling the gas below Boyel's temperature

C. expanding (adiabatically) the compressed gas from the cylinder

D. cooling the gas below its inversion temperature

Answer: C

Watch Video Solution

30. Which of the following is the main uses of CO_2 ?

A. As fire-extinguisher

B. To manufacture urea

C. To carbonate urea

D. As a refrigerant

Answer: D

Watch Video Solution

Follow Up Test 10

1. In which of the following form does silicon exist as silica, SiO_2 ?

A. Cristobalite

B. Tridymite

C. Quartz

D. All of these

Answer: D

Watch Video Solution

2. Silicon dioxide is insoluble in water ad in all acids except____acid.

A. hydrochloric

B. hydrofluoric

C. hydrobromic

D. hydroiodic

Answer: B

Watch Video Solution

Watch Video Solution

3. Silicon dioxide is mainly used as an optical material because

A. it is hard and strong

B. it is transparent to visible and ultraviolet light

C. it has a very low coefficient of expansion

D. all of these

Answer: D

Watch Video Solution

4. Which of the following form SiO_2 is used in modern radio and television broadcasting and mobile radio communications?

A. Quartz

B. Silica gel

C. Kieselghur

D. None of these

Answer: A

Watch Video Solution

5. Silica is a non-volatile acidic oxide and forms complex nixture of silicates only when fused with

A. alkalis

B. alkali carbonates

C. both of these

D. none of these

Answer: C

Watch Video Solution

6. Silicones are a group of organosilicon polymers containing_____linkages.

A. $Si - Si - O$

B. $Si - O - Si$

C. $O - Si - O$

D. $Si - C - Si$

Answer: B

Watch Video Solution

7. Me_2SiCl_2 on hydrolysis will produce

A. $Me_2Si(OH)_2$

B. Me_2SiO

C. $-O-\left(\begin{array}{c} Me \\ | \\ Si-O \\ | \\ ME \end{array}\right)_n-\begin{array}{c} | \\ Si \\ | \end{array}-$

D. $Me_2SiCl(OH)$

Answer: C

Watch Video Solution

8. Silicones are fairly expensive but have many desirable properties such as

(i) strongly water repellent

(ii) good electricity insulators

(iii) non-stick properties

(iv) anti-foaming properties

A. (i), (ii)

B. (ii), (iii)

C. (i), (ii), (iii), (iv)

D. (i), (ii), (iii)

Answer: C

Watch Video Solution

Question Bank

1. Which of the following oxide of C is involved in the process of photosynthesis ?

A. CO_2

B. CO

C. C_5O_6

D. C_3O_2

Answer: A

Watch Video Solution

2. Which of the following oxides of carbon is known as dry ice?

A. Solid CO

B. Solid C_3O_2

C. Solid CO_2

D. Solid C_5O_2

Answer: C

Watch Video Solution

3. Cassiterite is also known as

A. tin stone

B. stannite

C. tin pyrite

D. black tin

Answer: A

Watch Video Solution

4. Which of the folllowing statements is incorrect regarding diamond?

A. Each C atom is tetrahedrally surrounding by four other C atoms, each at a distance of $154pm$

B. The tetrahedra are linked together into a three-dimensional giant molecule.

C. The unit cell has a body-centered cubic structure.

D. Strong covalent bonds extend in all directions.

Answer: C

Watch Video Solution

5. Formic acid $(HCOOH)$ on heating with concentrated H_2SO_4 gives

A. $CO + CO_2 + H_2O$

B. $CO_2 + H_2O$

C. $CO + H_2O$

D. $CO + H_2$

Answer: C

Watch Video Solution

6. Water gas is an equimolar mixture of

A. CO and CH_4

B. CO_2 and H_2

C. CO and H_2

D. CO and N_2

Answer: C

Watch Video Solution

7. Water gas is an blowing steam through

A. red or white hot coke

B. red hot iron

C. red hot copper

D. red hot cobalt

Answer: A

Watch Video Solution

8. Producer gas is made by blowing___through red hot coke

A. N_2

B. air

C. O_2

D. steam

Answer: B

Watch Video Solution

9. Which of the following is an industrial fuel?

A. Water gas

B. Producer gas

C. Coal gas

D. All of these

Answer: D

 Watch Video Solution

10. Aluminium chloride exists as a dimer, Al_2Cl_6 in solid state as well as in solution of non-polar solvents such as benzene. When dissolved in water, it gives :

A. $Al_2O_3 + 6HCl$

B. $Al^3 + 3Cl^-$

C. $\left[Al(H_2O)_6\right]^{3+}$

D. $\left[Al(OH)_6\right]^{3-} + 3HCl$

Answer: C

Watch Video Solution

11. The states of hybridisation of boron and oxygen atoms in boric acid (H_3BO_3) are respecitivelty :

A. sp^2 and sp^2

B. sp^3 and sp^3

C. sp^3 and sp^2

D. sp^2 and sp^3

Answer: D

Watch Video Solution

12. Graphite is soft solid lubricant extreamly to melt. The reason for this anomalous behaviour is that graphite:

A. is a non-crystalline substance

B. has molecules of variable molecular mass like polymers

C. has carbon atoms arranged in large plates of rings of strongly bound carbon atoms with weak interplate bonds

D. is an allotrope of diamond

Answer: C

Watch Video Solution

13. A metal, M from chaloride in its $+2$ and $+4$ oxidation states . Which of the following statement about thes chalorides is correct ?

A. MCl_2 is more soluble in anhydrous ethanol than MCl_4

B. MCl_2 is more volatile than MCl_4.

C. MCl_2 is more easily hydrolyzed than MCl_4.

D. MCl_2 is more ionic than MCl_4.

Answer: D

 Watch Video Solution

14. Which of the following is correct regarding diamond?

(i) Diamond is covalent, yet it has high melting point.

(ii) It used for cutting glass, making borers for rock drilling, and for making abrasives.

(iii) It is used for making precious gems and jewellery.

(iv) It is used for making fies for drawing this wires from metals.

A. (i), (ii)

B. (i), (ii), (iii)

C. (i), (ii), (iii), (iv)

D. (i), (iii), (iv)

Answer: C

Watch Video Solution

15. The interlayer distance in graphite is

A. the same as the covalent radius of carbon

B. more than twice the covalent radius of carbon

C. many times larger than the covalent radius of carbon

D. very short, and the layers are tightly packed

Answer: B

Watch Video Solution

16. Which of the following has the highest bond enthalphy?

A. $Si - Si$

B. $Si - O$

C. $Si - C$

D. $Si - H$

Answer: B

 Watch Video Solution

17. Heating an aqueous solution of aluminium chloride to dryness will give

A. $AlCl_3$

B. Al_2Cl_6

C. Al_2O_3

D. $Al(OH)Cl_2$

Answer: C

Watch Video Solution

18. Which is correct for the structure of diborane ?

A. four $2C-2e^-$ bonds and four $3C-2e^-$ bonds

B. two $2C-2e^-$ bonds and two $3C-2e^-$ bonds

C. two $2C - 2e^-$ bonds and four $3C - 2e^-$ bonds

D. four $2C - 2e^-$ bonds and two $3C - 2e^-$ bonds

Answer: D

Watch Video Solution

19. The bond dissociation energy of $-F$ in BF_3 is $646kJmol^{-1}$ whereas that of $C - F$ in CF_4 is $515kJmol^{-1}$. The correct reason for

higher $B-F$ bond dissociation energy as compared to that of $C-F$ is

A. lower degree of $p_\pi - p_\pi$ interaction between B and F in BF_3 than that between C and F in CF_4

B. significant $p_\pi - p_\pi$ interaction between B and F and BF_3 whereas there is no possibility of such interaction between C and F in CF_4

C. stronger σ bond between B and F in BF_3 as compared to that between C and F in CF_4

D. smaller size of B atom as compared to that of C atom

Answer: B

Watch Video Solution

20. Among the following substituted silanes, the one which will give rise to cross linkes silicons polymer on hydrolysis is

A. R_2SiCl_2

B. R_4Si

C. $RSiCl_3$

D. R_3SiCl

Answer: C

Watch Video Solution

21. Which of the following is water-soluble and strongly basic?

A. $Al(OH)_3$

B. $Ga(OH)_3$

C. $In(OH)_3$

D. $TIOH$

Answer: D

Watch Video Solution

22. Carbon monoxide cab be prepared in the laboratory by the action of conc. H_2SO_4 on

A. $NaCN$

B. $Fe(CN)_2$

C. $K_3\left[Fe(CN)_6\right]$

D. $K_4\left[Fe(CN)_6\right]$

Answer: D

Watch Video Solution

23. Which of the following is incorrect regarding carbon monoxide?

A. The carbon-oxygen bond in CO is very short $(113pm)$, about the length that would be expected for a triple bond.

B. The triple bond between C and O in CO is the strongest bond known with a bond enthalpy of $1070kJmol^{-1}$.

C. The dipole moment of CO is very high.

D. According to molecular orbital theory, the bond order of CO molecule is 3.

Answer: C

Watch Video Solution

24. Carbon dioxide behaves as a supercritical fluid (SCF)

A. below the critical pressure and temperature

B. below the critical pressure but above the critical temperature

C. above the critical pressure and temperature

D. above the critical pressure but below the critical temperature

Answer: C

Watch Video Solution

25. Which of the following statements is incorrect?

A. Hydrolysis of Me_2SiCl_2 gives Me_2SiO.

B. Hydrolysis of $MeSiCl_3$ gives a cross-linked polymer.

C. Hydrolysis of Me_2SiCl_2 gives a chain polymer.

D. Hydrolysis of Me_3SiCl gives a disiloxane.

Answer: A

Watch Video Solution

26. For making good quality mirrors, the plates of flint glass are used. These are obtained by floating molten glass over a liquid metal which does not solidify before glass. The metal used can be

A. Sn

B. Mg

C. Hg

D. Na

Answer: A

Watch Video Solution

Archives

1. The basic structural unit of silicates is

A. SiO_4^{4-}

B. Si_3^{2-}

C. SiO_4^{2-}

D. SiO_4^-

Answer: A

Watch Video Solution

2. Which of these is not a monomer for a high-molecular mass silicone polymer?

A. Me_2SiCl_2

B. Me_3SiCl

C. $PhSiCl_3$

D. $MeSiCl_3$

Answer: B

Watch Video Solution

3. Which of the following structure is smaller to graphite?

A. B

B. B_4C

C. B_2H_6

D. BN

Answer: D

Watch Video Solution

4. The stability of $+1$ oxidation state increases in the sequence :

A. $Ga < In < Al < Tl$

B. $Al < Ga < In < Tl$

C. $Tl < In < Ga < Al$

D. $In < Tl < Ga < Al$

Answer: B

Watch Video Solution

5. The straight-chain polymer is formed by the

A. hydrolysis of CH_3SiCl_3 followed by cendensation polymerization

B. hydrolysis of (CH_(3))_(4) Si addition polymerization

C. hydrolysis of $(CH_3)_2SiCl_2$ followed by condensation polymerization

D. hydrolysis of $(CH_3)_3SiCl$ followed by condensation polymerization

Answer: C

Watch Video Solution

6. Which of the following oxidation states are the most characteristics for lead and tin, respectively?

A. $+2, +2$

B. $+4, +2$

C. $+2, +4$

D. $+4, +4$

Answer: C

Watch Video Solution

7. Which of the following anions is present in the chain structure of silicates?

A. SiO_4^{4-}

B. $Si_2O_7^{6-}$

C. $\left[Si_2O_5^{2-}\right]_n$

D. $\left[SiO_3^{2-}\right]_n$

Answer: D

Watch Video Solution

8. Amorphous form of silica is

A. tridymite

B. Cristobalite

C. fumed silica

D. asbestos

Answer: C

 Watch Video Solution

9. Al_2O_3 can be converted to anhydrous $AlCl_3$ by heating

A. $Al_2O_3$with gas Cl_2 gas

B. Al_2O_3 with HCl gas

C. Al_2O_3 with $NaCl$ in solid gas

D. a mixture of Al_2O_3 and C in dry Cl_2 gas

Answer: D

Watch Video Solution

10. Borax is uded as a cleaning agent because on dissolving in water, it gives

A. alkaline solution

B. acidic solution

C. bleaching solution

D. amphoteric solution

Answer: A

Watch Video Solution

11. In diborane, the two $H-B-H$ angles are nearly

A. $60^{\circ}, 120^{\circ}$

B. $95^{\circ}, 120^{\circ}$

C. $95^{\circ}, 150^{\circ}$

D. $120^{\circ}, 180^{\circ}$

Answer: B

Watch Video Solution

12. The pair of amphoteric hydroxides is

A. $Al(OH)_3, LiOH$

B. $Be(OH)_2, Mg(OH)_2$

C. $Al(OH)_3, Be(OH)_2$

D. $Ni(OH)_2, Zn(OH)_2$

Answer: C

 Watch Video Solution

13. X reacts withy $NaOH$ (aqueous solution) to form Y and H_2. The aqueous solution of Y is heated to $323 - 333K$ and on passing CO_2 into it, Na_2CO_3 and Z were formed. When Z is heated to $1200^\circ C$, Al_2O_3 is formed. X, Y, and Z, respectively, are

A. Al, $AlCl_3$, $NaAlO_2$

B. Zn, Na_2ZnO_2

C. Al, $Al(OH)_3$, $AlCl_3$

D. Al, $NaAlO_2$, $Al(OH)_3$

Answer: D

 Watch Video Solution

14. Which of the following molecule has trigonal planner geometry?

A. BF_3

B. BCl_3

C. BI_3

D. All of these

Answer: D

Watch Video Solution

15. Which of the following is the electron-deficient molecule?

A. C_2H_6

B. SiH_4

C. $SnCl_4$

D. B_2H_6

Answer: D

Watch Video Solution

16. Tungsten carbide is an example of

A. substitutional solid solution

B. passive solid solution

C. sandwich solid solution

D. interstitial solid solution

Answer: D

Watch Video Solution

17. Which of the following is acidic in nature ?

A. $Be(OH)_2$

B. $Mg(OH)_2$

C. $B(OH)_3$

D. $Al(OH)_3$

Answer: C

Watch Video Solution

18. Which of the following imparts green color to the burner flame?

A. $B(OMe)_3$

B. $Na(OMe)$

C. $Al(OMe)$

D. $Sn(OH)_2$

Answer: A

Watch Video Solution

19. The liquified metal expanding on solidification is :

A. Ga

B. Al

C. Zn

D. Cu

Answer: A

Watch Video Solution

20. Which one of the following compounds is not a protoric acid?

A. $B(OH)_3$

B. $PO(OH)_3$

C. $SO(OH)_2$

D. $SO_2(OH)_2$

Answer: A

Watch Video Solution

21. Lead is maximum in

A. pyrex glass

B. soda glass

C. flint glass

D. jena glass

Answer: C

Watch Video Solution

22. Ripening of fruits can be carried out in the presence of

A. Na_2SO_4

B. $NaCl$

C. CaC_2

D. $CaCl_2$

Answer: C

Watch Video Solution

23. Major constituent of biogas is

A. CH_4

B. CO

C. C_2H_6

D. C_4H_{10}

Answer:

Watch Video Solution

24. Quartz is a/an

A. orthosilicate

B. pyrosilicate

C. sheet silicate

D. three-dimensional silicate

Answer: D

Watch Video Solution

25. Butter of tin is

A. $SnCl_2.5H_2O$

B. $SnCl_2.2H_2O$

C. $SnCl_4.4H_2O$

D. $SnCl_4.5H_2O$

Answer: D

Watch Video Solution

26. Biogas and producer gas are made up of more than one gaseous substances. Which of the following is correct?

A. Biogas contains CO_2 but producer gas does not.

B. Producer gas contains CO but not CO_2

C. Both biogas and producer gas have N_2

D. All of the three above

Answer: D

Watch Video Solution

27. The carbon atoms in diamond are

A. sp-hybridized

B. sp^2-hybridized

C. sp^3-hybridized

D. not hybridized

Answer: C

Watch Video Solution

28. A layer of coke is spread over bauxite during the extrection of aluminium. This acts as a/an

A. flux

B. slag to remove impurities

C. reducing agent

D. insulation and does not allow heat to excape

Answer: D

 Watch Video Solution

29. Which of the following is known as pseudo alum?

A. $KMn(SO_4)_2.12H_2O$

B. $KCr(SO_4)_2.12H_2O$

C. $NH_4Fe(SO_4)_2.12H_2O$

D. $FeSO_4.\ Al_2(SO_4)_3.24H_2O$

Answer: D

Watch Video Solution

30. Which among $CH_4, SiH_4, GeH_4,$ and SnH_4 is the most volatile?

A. CH_4

B. SiH_4

C. GeH_4

D. SnH_4

Answer: A

Watch Video Solution

31. Which of the following is most stable?

A. Sn^{2+}

B. Ge^{2+}

C. Si^{2+}

D. Pb^{2+}

Answer: D

Watch Video Solution

32. Which one of the following is used to remove silicon dioxide in Serpeck's process of purification of bauxite?

A. CaO

B. Na_2CO_3

C. Coke

D. Nickel

Answer: C

Watch Video Solution

33. Aluminium reacts with dil. HCl and conc. $NaOH$ solution to liberate_____gases, respectively.

A. H_2 and O_2

B. O_2 and H_2

C. H_2 and H_2

D. O_2 and O_2

Answer: C

Watch Video Solution

34. The electronic configuration of four different elements is given below. Identify the group 14 elements among these.

A. $[He]2s^1$

B. $[Ne]3s^2$

C. $[Ne]3s^23p^2$

D. $[Ne]3s^23p^5$

Answer: C

Watch Video Solution

35. The catenation tendency of C, Si, and Ge is in the order $Ge < Si < C$. The bond energies (in $kJmol^{-1}$) of $C - C -$, $Si - Si$, and $Ge - Ge$ bonds, respectively, are

A. $167, 180, 348$

B. $180, 167, 348$

C. $348, 167, 180$

D. $398, 180, 167$

Answer: D

Watch Video Solution

36. The compound present in greater proportion in water gas is

A. CH_4

B. CO_2

C. CO

D. H_2

Answer: D

Watch Video Solution

37. Two adjacent sheets in graphite are bonded together with

A. van der Waal's forces

B. ionic bonds

C. metallic bonds

D. covalent bonds

Answer: A

Watch Video Solution

38. Which one of the following allotropic forms of carbon is isomorphous with crystalline silicon?

A. Graphite

B. Coal

C. Coke

D. Diamond

Answer: D

Watch Video Solution

39. Marsh gas contains

A. CH_4

B. CO_2

C. C_2H_6

D. N_2

Answer: A

Watch Video Solution

40. Treatment of CS_2 with excess of Cl_2 gives

A. C_2H_5Cl

B. CCl_4

C. $CHCl_3$

D. carbon black

Answer: B

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