CHEMISTRY

FOR IIT JEE ASPIRANTS OF CLASS 12 FOR CHEMISTRY

P BLOCK ELEMENTS

Illustraion

1. Stability of trivalent and mono valent cation of group 13 (Boron family) will be in order :

A. $Ga^{3+} < In^{3+} < TI^{3+}$

B. $Ga^{3+} > In^{3+} > TI^{3+}$

C. $Ga^{+} > In^{+} < TI^{+}$

D. $Ga^{+} < In^{+} < TI^{+}$

Answer: B,D

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2. In diborane

A. 4-Bridged hydrogens and two terminal hydrogens are present

B. 2-Bridged hydrogens and four terminal hydrogens are present

C. 3-Bridged and three terminal hydrogens are present

D. None of the above

Answer: B

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3. Aqueous solution of borax reacts with two mol of acids. This is because of :

A. Formation of 2 mol of $B(OH)_3$ only

B. Formation of 2 mol of $\left[B(OH)_4\right]^-$ only

C. Formation of 1 mol each of $B(OH)_3$ and $\left[B(OH)_4\right]^-$

D. Formation of 2 mol each of $\left[B(OH)_4\right]^-$ and $B(OH)_3$ of which only $\left[B(OH)_4\right]^-$ reacts with acid

Answer: D

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4. $Na_2B_4O_7.10H_2O \xrightarrow{\triangle} NaBO_2 + A + H_2O, A + MnO \xrightarrow{\triangle} B$

A and B are :

A. Na_3BO_3, $Mn_3(BO_3)_2$

B. $Na_2(BO_2)_2$, $Mn(BO_2)_2$

C. B_2O_3, $Mn(BO_2)_2$

D. None is correct

Answer: C

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5. Generally the atomic and ionic radii increase with increase in atomic number down the group. But the atomic size of aluminium and gallium is almost the same. This is because

A. The nuclear charge of Ga is higher than that of Al

B. Gallium contains intervening d-electrons which do not not screen the valence electrons effectively

C. the ionization energies of Ga and Al are comparable

D. All of the above.

Answer: B

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6. Which of the following statements is incorrect about aluminium ?

A. It liberates H_2 from acids

B. It liberates H_2 from bases

C. It liberates H_2 from both sides acids and bases

D. It liberates H_2 from acids but not from bases

Answer: D

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7. Which element-element bond has the highest bond dissociation energy ?

A. $C - C$

B. $Si - Si$

C. $Ge - Ge$

D. $Sn - Sn$

Answer: A

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8. In graphite, electrons are

A. Localised on every third C-atom

B. Present in anti-bonding orbital

C. Localised on each C-atom

D. Spread out between the structure.

Answer: D

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9. In silicon dioxide

A. Each silicon atom is surrounded by four oxygen atoms and each oxygen atom is bonded to two silicon atoms

B. Each silicon atom is surrounded by two oxygen atoms and each oxygen atom is bonded to two silicon atoms

C. Silicon atom is bounded to two oxygen atoms

D. There are double bonds between silicon and oxygen atoms

Answer: A

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10. which of the following statements is not true -

A. $SnCl_2$ is ionic solid

B. $SnCl_4$ is reducing in nature

C. $SnCl_2$ is reducing in nature

D. $SnCl_4$ is covalent liquid

Answer: B

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11. PbF_4, $PbCl_4$ exist but $PbBr_4$ and Pbl_4 do not exist because of -

A. Large size of Br^- and I^-

B. Strong oxidising character of Pb^{4+}

C. Strong reducing character of I and Br

D. low electronegativity og Br^- and I^-

Answer: C

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Solved Example

1. Choose the correct order of extent of polymerization is

A. $SiO_4^{4-} > PO_4^{3-} > ClO_4^- > SO_4^{2-}$

B. $PO_4^{3-} > ClO_4^- > SO_4^{2-} > SiO_4^{4-}$

C. (C) $SiO_4^{4-} > SO_4^{2-} > ClO_4^- > PO_4^{3-}$

D. $SiO_4^{4-} > PO_4^{3-} > SO_4^{2-} > ClO_4^-$

Answer: D

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2. Group 13 elements exhibit

A. only $+3$ oxidation state

B. Only $+1$ oxidation state

C. Both $+1$ and $+3$ oxidation states

D. $+1, \ +2$ and $+3$ oxidation states

Answer: C

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3. Boron compound behaves as Lewis acids because of their

A. Acidic nature

B. Covalent nature

C. Electron deficient character

D. Ionization property

Answer: C

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4. Moissan boron is

A. Amorphous boron of ultra purity

B. Crystalline boron of ultra purity

C. Amorphous boron of low purity

D. Crystalline boron of low purity

Answer: C

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5. Both boron and aluminium show difference in properties from the remaining members of group 13. This because

A. Both B and Al have smaller size as compared to others members of the family.

B. Both B and Al have high value of ionization energy

C. Both B and Al have only the valence eletrons $(ns2np1)$ outside the noble gas core while the reamaining elements have filled d

and $f-$ or $bitals$ in between the noble gases and the valance electrons

D. None of the above.

Answer: C

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6. Aluminothermy used for on the spot welding of large iron structures is based upon the fact that

A. As compared to iron, aluminium has greater affinity for oxygen .

B. As compared to aluminium, iron gas greater affinity for oxygen

C. Reaction between aluminium and oxygen is endothermic

D. Reaction between iron and oxygen is endothermic

Answer: A

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7. Aluminium chloride exists as a

A. Monomer

B. Dimer

C. Trimer

D. Polymer

Answer: B

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8. Which property is not exhibited by carbon in its compounds ?

A. Forming bonds to other carbon atoms

B. Forming multiple bonds

C. Exhibiting allotropic forms

D. Forming compounds with coordination number beyond four.

Answer: D

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9. A solid element (symbol Y) conducts electricity and forms two chlorides YCln (a colourless volatile liquid) and $YC\ln-2$ (a colourless solid). To which one of the following groups of the periodic table does Y belong ?

A. 13

B. 14

C. 15

D. 16

Answer: B

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Exercise

1. Which one of the following elements has the higest melting point

A. Al

B. B

C. Ga

D. Tl

Answer: B

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2. In the reaction $B_2O_3 + C + CL_2 \rightarrow A + CO$. The A is

A. BCl_3

B. BCl_2

C. B_2Cl_2

D. $\mathbb{C}l_2$

Answer: A

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3. Borax is converted into B by steps

Borax $I\ H_3BO_3\Delta B_2O(3) \rightarrow II \rightarrow B$

I and II reagents are :

A. Acid,Al

B. Acid,C

C. Acid,Fe

D. Acid,Mg

Answer: D

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4. Borax is used as buffer since :

A. Its aqueous solutions contains equal amount of weak acid and salt

B. It is easily available

C. It is aqueous solution contains equal amount of strong acid and its salt

D. Staments that borax is a buffer, is wrong

Answer: A

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5. Which of the following reactions forms the basis of goldschmidt aluminothermite process ?

A. $2Al + N_2 \rightarrow 2AlN$

B. $2Al + 3Cl_3 \rightarrow 2AlCl_3$

C. $2Al + 6HCL \rightarrow 2AlCl_3 + 3H_2$

D. $2Al + Fe_2O_3 \rightarrow Al_2O_3 + 2Fe$

Answer: D

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6. Aluminium becomes passive in

A. Conc. HNO_3

B. H_2CrO_4

C. $HClO_4$

D. All

Answer: D

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7. Conidier following statements :

I : In diamond, each carbon atom is linked tetrahedrally to four other carbon atoms by sp_3 bonds.

II : Graphite has planer hexagonal layers of carbon atoms held together by weak vander Walls forces

III : Silicon exists only in diamond structure due to its tendency to form $p_p - p_p$ bonds to itself.

In this :

A. Only I and II are correct

B. Only I is correct

C. Only II and III are correct

D. All are correct statements

Answer: D

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8. Select correct statement :

A. Oxides of carbon family (MO_2) are all network solids with octahedral coordination

B. Silicon dioxide (silica) is a network solid with teta hederal coordination and is a giant molecule

C. GeO_2, SnO_2 and PbO_2 are all network solids with octrahedral coordination

D. None appears correct

Answer: B::C

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Exercise 1

1. Which is/are true statement(s) about silicones ?

A. They are repeating units (SiO_4) in silicates

B. They are synthetic polymers containing repeated R_2SiO_2 units

C. They are formed by hydrolysis of R_2SiCl_2 units

D. None is correct

Answer: B::C

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2. Which ten is boiled with alkali solution, the product is -

A. SnO_2

B. $Sn(OH)_2$

C. $Sn(OH)_4$

D. SnO_3^{2-}

Answer: D

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3. Sindoor used by women is an oxide of lead with the formula -

A. PbO

B. PbO_2

C. Pb_3O_4

D. Pb_2O_3

Answer: C

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4. Which is not true about borax ?

A. It is a useful primary standard for titrating against acids

B. One mole of borax reacts with four moles of HCI

C. Aqueous solution of borax can be used as a buffer

D. It is made up of two triangular BO_3 units and two tetrahederal BO_4 units

Answer: B

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5. An inorganic compound (A) made of two most occuring elements into the earth crust, having a polymeric tera-hederal network structure. With carbon, compound (A) produces a poisonous gas (B) which is the most stable diatomic molecule. Compounds (A) and (B) will be

A. SiO_2, CO_2

B. SiO_2, CO

C. SiC, CO

D. SiO_2, N_2

Answer: B

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6. When $KHSO_4$ is added into a concentrated solution of H_2SO_4 the acidity of the solution.

A. Increases

B. Decreases

C. remaines

D. can't be predicted

Answer: B

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7. Which of the following molucules can show Lewis acidity.

(I) CO_2, (II) Br_2, (III) $SnCl_2$ (IV) HF, (V)NMe_3

A. III,IV

B. I,II,III

C. I,III,IV

D. II,III,IV

Answer: B

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8. When conc. H_2SO_4 was teated with $K_4\left[Fe(CN)_6\right]$, CO gas was evolved. By mistake, somebody used dilute H_2SO_4 instead of conc. H_2SO_4 then the gas evolved was

A. CO

B. HCN

C. N_2

D. CO_2

Answer: B

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9. Dangling valency is not exhibited by which of the following allotrope of carbon ?

A. Graphite

B. Diamond

C. C_{60}

D. All of these

Answer: B

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10. $RCI \xrightarrow[Si]{cu-powder} R_2SiCL_2 \xrightarrow{H_2O} R_2Si(OH)_2 \xrightarrow{condensation} A$

Compound (A) is

A. a linear silicone

B. a chlorosilane

C. a linear silane

D. a network silane

Answer: A

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11. The coordination number of $AlCl_3$ in their solid, solid liquid and gaseous state is respectively :

A. 6,6,4

B. 6,4,4

C. 6,6,6

D. 4,4,4

Answer: B

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12. In which of the following hybridisation state of the central atom would be changed if transformed from monomeric to dimeric or polymeric species.

$BeCl_2(g) \rightarrow BeCl_2(s), AlCl_3(g) \rightarrow Al_2Cl_6(l)$

$BeH_2(g) \rightarrow BeH_2(s), ICl_3(g) \rightarrow I_2Cl_6$

A. sp^2 to sp^3

B. sp to sp^3

C. sp^3d to sp^3d^2

D. All of the above

Answer: D

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13. Select the pair of molecules in which bond angle of both molecules are not same :

A. BCl_3, BF_3

B. $SiCl_4$, CCl_4

C. PCl_5, PBr_5

D. NF_3, PF_3

Answer: D

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14. Choose the correct sequence for the geometry of the given molecules

Borazon, Borazole,$B_3O_6^{3-}$, trimer of FCN.

['P' stands for planer and 'NP' standes for non-planer]

A. NP,NP,P,P

B. P,P,NP,NP

C. NP,NP,P,NP

D. NP,P,P,P

Answer: D

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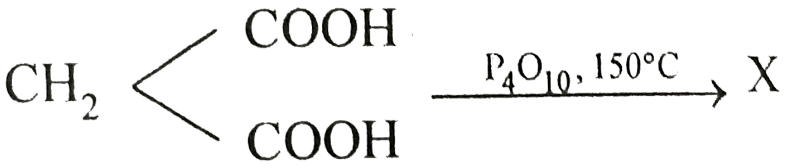
15.



Compound (X) is

A. malonic acid

B. carbon suboxide

C. tartaric acid

D. acetic acid

Answer: B

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16. The correct sequence of polarity of the following molecule

(1) Benzene (2)Inorganic Benzene (3) PCl_3F_2 (4)PCl_2F_3

A.

1	2	3	4
P	NP	NP	P

B.
1	2	3	4
NP	NP	NP	P

C.
1	2	3	4
NP	P	NP	P

D.
1	2	3	4
NP	P	P	NP

Answer: B

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17. Which one of the following statements is not true regarding diborane?

A. It has two bidging hydrogens and four terminal hydrogen

B. When methylated, the product is $Me_4B_2H_2$.

C. The bridging hydrogens are in aplane perpendicular to the rest.

D. All the $B-H$ bond distances are equal.

Answer: D

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18. In which of the following silicates, only two corners per tetrahedron are shared ?

I. Pyrosilicate

II. Cyclic silicate

III Double chain silicate

IV Single chain silicate

V 3D Silicate

A. (i),(ii)and(v)

B. (iv) and (vi) only

C. (i) and (vi) only

D. (ii) and (vi) only

Answer: D

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19. Lead pipes are not suitable for drinking water because :

A. A layer of lead dioxid is deposited over pipes

B. Lead forms basic lead carbonate

C. Lead reactes with water containing air to form $Pb(OH)_2$

D. Lead reactes with air to form litherage

Answer: C

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20. Suppose you have to determine the percentage of carbon dioxide in a sample of a gas avilable in a container. Which is the best absorbed material for the carbon dioxide :

A. Heated copper oxide

B. Cold, solid calcium chlroide

C. Cold, solid calcium hydroxide

D. Heated charcoal

Answer: C

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21. (a) $Al \xrightarrow{N_2} A$, $(b) Al \xrightarrow{C} B$,Product A and B on hydrolysis yields rerspectively.

A. Ammonia and acetylene

B. Ammonia and methane

C. Nitric oxide and acetylene

D. None

Answer: B

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22. Which gas is responsible for greenhouse effect :

A. CO_2

B. SO_2

C. CO

D. SO_3

Answer: A

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23. Bucky ball or buck minister fullerene is :

A. An allotrope of carbon

B. It is refered as $C-60$

C. It has sp^2-hybridised nature and resembles with soccer ball

D. All of these

Answer: D

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24. When CO is heated with NaOH under pressure, we get :

A. Sodium benzoate

B. Sodium acetate

C. Sodium formate

D. Sodim oxalate

Answer: C

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25. Artifical gem used for cutting glass is

A. Graphite

B. Diamond

C. SiC

D. $CaCN_2$

Answer: C

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26. Which of the following properties describes the diagonal relationship between both boron and silicon ?

A. BCl_3 is not hydrolised while $SiCl_4$ can be hydrolised

B. Both form oxides,B_2O_3 is amphoteric, SiO_2 is acidic

C. Both metals dissolvesin cold and dilute nitric acid

D. Borides and sillicides are hydrolysed by water

Answer: D

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27. The silicate anion in the mineral kinoite is a chain of three SiO_4 tetrahedra, that share corners with adjacent tetrahedra. The charge pof silicate anion is

A. -4

B. -8

C. -6

D. -2

Answer: B

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Exercise 2

1. $H_2C_2O_4 \xrightarrow{\triangle} \text{gas}(A) + \text{gas}(B) + \text{liquid}(C)$. Gas(A) burns with a blue flame and is oxidised to gas(B).

$\text{Gas}(A) + Cl_2 \rightarrow D \rightarrow \xrightarrow{NH_3, \triangle} E$

A,B,C and E are

A. $CO_2, CO, H_2O, HCONH_2$

B. $CO, CO_2, COCl_2, HCONH_2$

C. $CO, CO_2, H_2O, NH_2CONH_2$

D. $CO, CO_2, H_2O, COCl_2$

Answer: C

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2. Aluminium vessels should not be washed with materials containing washing soda because -

A. Washing soda is expensive

B. Washing soda is easily decomposed

C. Washing soda react with aluminium to form soluble aluminate

D. Washing soda reacts with aluminium to form insoluble aluminium oxide

Answer: C

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3. Borax is converted into amorphous Boron by following steps

$$\text{Borax} \xrightarrow{X} H_3BO_3 \xrightarrow{\triangle} B_2O_3 \xrightarrow[\triangle]{Y} B$$

X and Y are respectively

A. HCL,Mg

B. HCL,C

C. $\triangle$, Al

D. HCl,Al

Answer: A

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4. Read the following write-ups and answer the questions at the end of it.

Silicons are synthetic polymers containing repeated R_2SiO unit. Since, the imperical formula of a ketone (R_2CO), the name silicone has been given to this materials. silicons can be made into oils, rubberly elastamors and resins. They find a variety of applications because of their chemical inertness,water repelling nature, heat-resistence and good electrical insulating property.

Commercial silicone polymers are usally methyl derivatives and to lesser a extent phenyl derivatives and are synthesised by the hydrolysis of

R_2SiCl_2 [R =methyl (Me) or phenyl (ϕ)]

$$Me_2SiCl_2 \xrightarrow{H_2O} O - \underset{\underset{Me}{|}}{\overset{\overset{Me}{|}}{Si}} - O - \underset{\underset{Me}{|}}{\overset{\overset{Me}{|}}{Si}} - O - \underset{\underset{Me}{|}}{\overset{\overset{Me}{|}}{Si}} - O -$$

If we mix Me_3SiCl with Me_2SiCl_2, we get silicones of the type

A. $Me - \underset{\underset{Me}{|}}{\overset{\overset{Me}{|}}{Si}} - O - \underset{\underset{Me}{|}}{\overset{\overset{Me}{|}}{Si}} - O - \underset{\underset{Me}{|}}{\overset{\overset{Me}{|}}{Si}} - O - \underset{\underset{Me}{|}}{\overset{\overset{Me}{|}}{Si}} - Me$

(B)

B.

C. both of the above

D. none of the above

Answer: A

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5. Read the following write-ups and answer the questions at the end of it.

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the imperical formula of a ketone (R_2CO), the name silicone has been given to this materials. silicons can be made into oils, rubberly elastamors and resins. They find a variety of applications because of their chemical inertness,water repelling nature, heat-resistence and good electrical insulating property.

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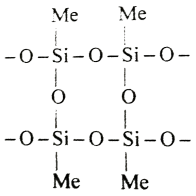
$$Me_2SiCl_2 \xrightarrow{H_2O} O - \overset{\overset{Me}{|}}{\underset{\underset{Me}{|}}{Si}} - O - \overset{\overset{Me}{|}}{\underset{\underset{Me}{|}}{Si}} - O - \overset{\overset{Me}{|}}{\underset{\underset{Me}{|}}{Si}} - O -$$

If we start with $MeSiCl_3$ as the starting material, silicons formed is :

A. $Me - \overset{\overset{Me}{|}}{\underset{\underset{Me}{|}}{Si}} - O - \overset{\overset{Me}{|}}{\underset{\underset{Me}{|}}{Si}} - O - \overset{\overset{Me}{|}}{\underset{\underset{Me}{|}}{Si}} - O - \overset{\overset{Me}{|}}{\underset{\underset{Me}{|}}{Si}} - Me$

(B)



B.

C. Noth of the above

D. None of the above

Answer: B

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6. (i) $P + C(\text{carbon}) + Cl_2 \rightarrow Q + COuaarr$

(ii) $Q + H_2O \rightarrow R + HCl$

(iii) $BN + H_2O \rightarrow R + NH_3 \uparrow$

(iv) $Q + LiAlH_4 \rightarrow S + LiCl + AlCl_3$

(v) $S + H_2 \rightarrow R + H_2 \uparrow$

(vi) $S + NaH \rightarrow T$

(P,Q,R,S annd T do not represent their chemical symbols)

Q. Compound T is used as a/an:

A. I,IV

B. I,III,IV

C. I,II,III

D. I,II,III,IV

Answer: C

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(ii) $Q + H_2O \rightarrow R + HCl$

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(iv) $Q + LiAlH_4 \rightarrow S + LiCl + AlCl_3$

(v) $S + H_2 \rightarrow R + H_2 \uparrow$

(vi) $S + NaH \rightarrow T$

(P,Q,R,S annd T do not represent their chemical symbols)

Q. Compound T is used as a/an:

A. Oxidising agent

B. Complexing agent

C. Bleaching agent

D. Reducing agent

Answer: D

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8. (i) $P + C(\text{carbon}) + Cl_2 \rightarrow Q + COuaarr$

(ii) $Q + H_2O \rightarrow R + HCl$

(iii) $BN + H_2O \rightarrow R + NH_3 \uparrow$

(iv) $Q + LiAlH_4 \rightarrow S + LiCl + AlCl_3$

(v) $S + H_2 \rightarrow R + H_2 \uparrow$

(vi) $S + NaH \rightarrow T$

(P,Q,R,S annd T do not represent their chemical symbols)

Q. Compound S is:

(I) an odd e^- compound

(II) $\left(2c - 3e^-\right)$ compound

(III) a electron deficient compound

(IV) a sp^2 hybridized compound

Choose the correct code:

A. III

B. I,III

C. II,III,IV

D. I,II,IV

Answer: A

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9. Statement-I: $NaBO_3 / OH^-$ can be used for oxidation of Cr^{3+} to Cr^{6+}

Statement-II: In alkaline medium $NaBO_3$ produces H_2O_2

A. If both statement -I & Statement-II are true & the Statement-II is correct explaination of the statement-I.

B. If both Statement-I & Statement-II are true but Statement-II is not a correct explainatin of Statement-I.

C. If Statement-I is True but the Statement-II is False

D. If the Statement-I is False but the Statement-II is True

Answer: A

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10. Statement-I: Borax bead test is applicable only to coloured salt.

Statement-II: In borax bead test, voloured salts are decmosed to give coloured metal meta borates.

A. If both statement -I & Statement-II are true & the Statement-II is correct explaination of the statement-I.

B. If both Statement-I & Statement-II are true but Statement-II is not a correct explainatin of Statement-I.

C. If Statement-I is True but the Statement-II is False

D. If the Statement-I is False but the Statement-II is True

Answer: A

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11. Statement-I: Aluminium and zinc metal evolve H_2 gas from NaOH solution

Statement-II: Several non-metals such as P,S,Cl, etc. yield a hydride instead of H_2 gas from NaOH

A. If both statement -I & Statement-II are true & the Statement-II is correct explaination of the statement-I.

B. If both Statement-I & Statement-II are true but Statement-II is not a correct explainatin of Statement-I.

C. If Statement-I is True but the Statement-II is False

D. If the Statement-I is False but the Statement-II is True

Answer: B

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12. Statement-I : Silicons are very inert polymers

Statement-II: Both $Si-O\text{and}Si-C$ bond energies are very high

A. If both statement -I & Statement-II are true & the Statement-II is correct explaination of the statement-I.

B. If both Statement-I & Statement-II are true but Statement-II is not a correct explainatin of Statement-I.

C. If Statement-I is True but the Statement-II is False

D. If the Statement-I is False but the Statement-II is True

Answer: A

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13. Statement-I : $PCl_5 \text{and} PbCl_4$ are thermally unstable.

Statement-II : They produce same gas on thermal decomposition

A. If both statement -I & Statement-II are true & the Statement-II is correct explaination of the statement-I.

B. If both Statement-I & Statement-II are true but Statement-II is not a correct explainatin of Statement-I.

C. If Statement-I is True but the Statement-II is False

D. If the Statement-I is False but the Statement-II is True

Answer: B

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14. Statement-I : Carbon reduction for Al_2O_3, is very difficult.

Statement-II : Al forms carbide the Al_4C_3 which produces propyne when reactes with H_2O.

A. If both statement -I & Statement-II are true & the Statement-II is correct explaination of the statement-I.

B. If both Statement-I & Statement-II are true but Statement-II is not a correct explainatin of Statement-I.

C. If Statement-I is True but the Statement-II is False

D. If the Statement-I is False but the Statement-II is True

Answer: C

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15. Statement-I : Alums are isomorphous crystalline double salts, which are soluble in water.

Statement-II : The aq. Solutions of alums have acidic character due to hydrolysis.

A. If both statement -I & Statement-II are true & the Statement-II is correct explaination of the statement-I.

B. If both Statement-I & Statement-II are true but Statement-II is not a correct explainatin of Statement-I.

C. If Statement-I is True but the Statement-II is False

D. If the Statement-I is False but the Statement-II is True

Answer: B

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16. $C(OH)_4$ is unstable because a carbon atom cannot hold more than one $-OH$ groups but $Si(OH)_4$ is a stable compound because

A. $C-O$ bond energy is low

B. $C - O$ bond energy is high

C. $Si - O$ bond energy is low

D. $Si - O$ bond energy is high

Answer: A::D

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17. Aqueous solution of boric acid is treated with Salicylic acid. Which of the following statements is/are incorrect for the product formed in the above reaction

A. No product will be formed because both are acid

B. Product is $4-$ coordinated complex and optically resolveable.

C. Product is $4-$ coordinated complex and optically non resolveable

D. There are two ring only which are five membered

Answer: A,C,D

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18. $Na_2CO_3 \xrightarrow[excess]{SO_2} \text{solution}(A) \xrightarrow{NaIO_3 solution} (B)(\text{final product}).$

Which of the following statements is/are correct regarding 'B'.

A. It has no electrical conductivity in solid state but conducts electricity in liquid state.

B. I it highly soluble in water

C. It produces blue solution with starch.

D. It produces the same oxidation state on reaction with excess Cl_2 water as that o 2^{nd} reagent used above.

Answer: A,C,D

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Exercise 3

1. Which of the following statement is/are correct regarding graphite?

A. Graphite is thermodynamically more stable than diamond.

B. d_{C-C} among the layers and within the layers are not same.

C. Graphite is more effective than diamond.

D. Graphite conducts electricity due to its bond polarity.

Answer: A,B,C

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2.

	Column-I(Reactions)		Column-II(Product)
(A)	Borax	$\xrightarrow{\Delta}$	(p) BN
(B)	$B_2H_6 + H_2O$	$\xrightarrow{\Delta}$	(q) B_2H_6
(C)	$B_2H_6NH_3$(Excess)	$\xrightarrow{\Delta}$	(r) H_3BO_3
(D)	$BCl_3 + LiAlH_4$	$\xrightarrow{\Delta}$	(s) $NaBO_2 + B_2O_3$

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3.

	Column-I		Column-II
(A)	$BBr_3 + H_2 \rightarrow B$	(p)	Borax bead test
(B)	$Na_2B_4O_7.10H_2O + CuSO_4 \rightarrow Cu(BO_2)_2$	(q)	Reduction
(c)	$AlCl_3 + H_2 \rightarrow HCL$	(r)	White fumes
(D)	$Cr_2O_3 + Al \rightarrow Cr$	(s)	hydrolysis

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4. What is the nature aqueous solution of alums ?

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5. how are alums prepared?

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6. What are pseudo alums ?

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7. How can you prove that $AlOH_3$ is amphoteric in nature ?

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8. What is the nature of $AlCl_3$ in aqueous state ?

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9. Which allotropic of carbon is thermodynamically more stable ?

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10. What is tin disease, tin pest or tin plague ?

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11. What is tin cry ?

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12. What is the colour of C_{60} in toluene ?

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13. What happens when calcium cynamide is hydrolysed ?

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14. What happens when $K_4Fe(CN)_6$ is heated strongly ?

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15. What are the nature of CO_2, SiO_2, GeO_2, SnO_2, PbO_2 ?

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16. What happens when SiO_2 is reacted with following ?

(a) KOH, (b) $CaCO_2$, (c) KNO_3, (d) HF

(e) Coke

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17. What is silica garden ?

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18. SiF_6^{2-} exist but not CF_6^{2-} explain why ?

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19. Find the maximum number of atoms are lying in the same plane for B_2H_6.

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20. Which of the following substances is having higher lattice energy than NaBr

$CaCl_2, Nal, CsBr, LiF, MgO, Al_2O_3, TiO_2$

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