

① Silicon has a strong tendency to form polymers like silicones. The chain length of silicon polymer can be controlled by adding

- (a) MeSiCl_3 (b) Me_2SiCl_2 (c) Me_3SiCl (d) Me_4Si

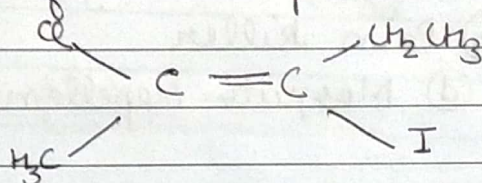
② Boric acid is polymeric due to

- (a) its acidic nature (b) The presence of H-Bond
(c) its Monobasic nature (d) its geometry

③ Which of the following is the most stable carbonium ion

- (a) $^+\text{CH}_3$ (b) R^+CH_2 (c) R_2^+CH (d) R_3^+C

④ IUPAC Name of the compound



- (a) trans-2-chloro-3-iodopentene-2
(b) Cis-2-chloro-3-iodopentene-2
(c) Z-3-methyl-3-ethyl-pentene-1
(d) Cis-3-iodo-4-chloro-3-pentene

⑤ When hybridization state of C atom changes from sp^3 to sp^2 and finally to sp , the angle b/w the hybridized orbital's

- (a) dec. gradually (b) dec. considerably
(c) is not affected (d) inc. progressively

⑥ Heterolysis of $\text{CH}_3\text{CH}_2\text{CH}_3$ results in the formation of

- (a) CH_3 and C_2H_5 (b) $:\text{CH}_3$ and C_2H_5
(c) CH_3 and $:\text{C}_2\text{H}_5$ (d) None

- ⑦ Iodoform test is not given by
 (a) Ethanol (b) Benzophenone (c) Ethanol (d) Acetophenone
- ⑧ Which of the following is the correct order dipole moment of dichlorobenzene?
 (a) $O > m > P$ (b) $O > P > m$ (c) $m > O > P$ (d) $m > P > O$
- ⑨ Huckel's rule states that a monocyclic conjugated compound will be aromatic if it contains
 (a) $(4n+2n)e^-$ (b) $(4n+2n)e^-$ (c) $4ne^-$ (d) None
- ⑩ Lead tetraethyl is used as
 (a) Fire extinguisher (b) Pain killer (c) Petroleum additive (d) Mosquito repellent
- ⑪ Which one of the following form the cathode with respect to iron anode in an electrolyte cell
 (a) Mg (b) Al (c) Cu (d) Zn
- ⑫ The Quantity of electricity needed to deposit 127.08 g of Cu is
 (a) 1 Faraday (b) 4 Coulombs (c) 2 Faraday (d) 4 farady
- ⑬ The rate of constant of a Rx^n is $10.8 \times 10^{-5} \text{ mol dm}^{-3} \text{ s}^{-1}$
 The order of the Rx^n is
 (a) Zero (b) 1 (c) 2 (d) 3

14) The rate of chemical Reaction

- a) Inc. as the Rxⁿ proceeds
- b) dec. as the Rxⁿ proceeds
- c) both A and B
- d) None

15) Among Solids, the highest M.P is exhibited by

- a) Covalent solids
- b) Ionic
- c) Pseudo solids
- d) Molecular solids

26) The energy of a photon is given by $\Delta E/\text{atom} = 3.03 \times 10^{-19} \text{ J atom}^{-1}$ then the wavelength of the photon is

- a) 65.5 nm
- b) 656 nm
- c) 0.656 nm
- d) 6.56 nm

27) The spectrum of He is expected to be similar to that of

- a) H
- b) Na
- c) He⁺
- d) Li⁺

28) The orbital angular momentum for an e⁻ revolving in an orbital is given by $\sqrt{l(l+1)} \frac{h}{2\pi}$. The momentum for s-electron will be given by

- a) $\frac{1}{2} \frac{h}{2\pi}$
- b) Zero
- c) $\frac{h}{2\pi}$
- d) $\sqrt{2} \frac{h}{2\pi}$

29) If the principal Quantum no. of an atom is 3, then the angular Quantum no is

- a) 0
- b) 2
- c) 1
- d) All of these

(30) Among the following groups which represents the iso-electronic species?

- (a) NO^+ , C_2^{2-} , O_2^- , CO
 (b) N_2 , C_2^{2-} , CO , NO
 (c) CO , NO^+ , CN^- , C_2^{2-}
 (d) NO , CN^- , N_2 , O_2^-

(33) The e^- configuration of Ag atom

- (a) $[\text{Kr}] 3d^{10} 4s^1$ (b) $[\text{Xe}] 4f^{14} 5d^{10} 6s^1$
 (c) $[\text{Kr}] 4d^{10} 5s^1$ (d) $[\text{Kr}] 4d^9 4s^1$

(34) Zeeman effect explains splitting of lines in

- (a) Magnetic field (b) electric field
 (c) Both (d) None

(35) Which of the following have max. no of unpaired e^-

- (a) Fe^{3+} (b) Fe^{2+} (c) Co^{2+} (d) Co^{3+}

(36) The de-Broglie wavelength associated with a ball of mass 1 kg having K.E 0.5 J is

- (a) $6.6 \times 10^{-34} \text{ m}$ (b) $12.30 \times 10^{-34} \text{ m}$
 (c) $10.38 \times 10^{-21} \text{ m}$ (d) $6.6 \times 10^{-34} \text{ A}^\circ$

(37) Which of the following e^- configuration have zero spin multiplicity?

- (a) $\uparrow \uparrow \uparrow$ (b) $\uparrow \uparrow \downarrow$ (c) $\uparrow \downarrow \downarrow$ (d) $\downarrow \downarrow \downarrow$

38) If N_0 represent the Avogadro No, then which of the following represent correct value of one atomic mass unit (amu)

- (a) $N_0 \times 10^2 \text{ kg}$ (b) $N_0 \text{ g}$ (c) N_0^{-1}
(d) $1/16$ mass of oxygen-16 atom

39) The element of atomic no. 29 belongs to

- (a) s-Block (b) p-Block (c) d-Block (d) f-block

40) The correct order of ionization energies is

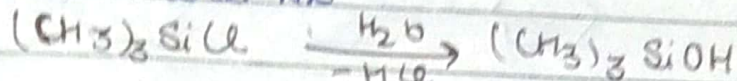
- (a) $\text{Zn} < \text{cd} < \text{Hg}$ (b) $\text{Hg} < \text{cd} < \text{Zn}$
(c) $\text{Cs} < \text{Rb} < \text{Na}$ (d) None

41) Which of the following order is wrong

- (a) $\text{NH}_3 < \text{PH}_3 < \text{AsH}_3$ — Acidic
(b) $\text{Li} < \text{Be} < \text{B} < \text{C}$ — I.E.
(c) $\text{Al}_2\text{O}_3 < \text{MgO} < \text{Na}_2\text{O} < \text{K}_2\text{O}$ — Basic
(d) $\text{Li}^+ < \text{Na}^+ < \text{K}^+ < \text{Ca}^+$ — Ionic radius

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- ① Chain length of silicone can be controlled by adding Me_3SiCl because it block the end of polymer and terminate the $\text{R}_3\text{Si}^\cdot$

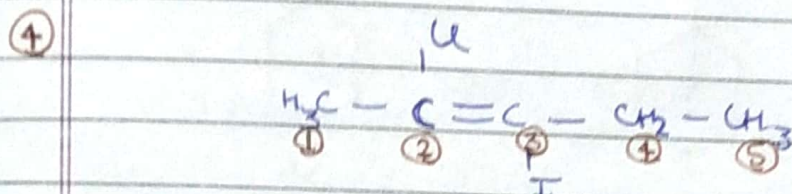


[opt c]

- ② the presence of hydrogen Bond [opt b]

- ③ $3^\circ > 2^\circ > 1^\circ$

Thus $\text{R}_3\text{C}^\cdot$ is most stable [opt d]



trans-2-chloro-3-iodopentene-2

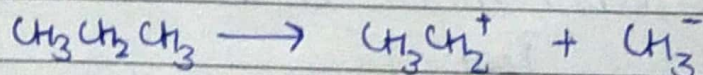
[opt a]

- ⑤
- | sp^3 | sp^2 | sp |
|------------------------------|-------------------|-------------|
| Tetrahedral | Triangular Planar | linear |
| $109^\circ 28'$ | 120° | 180° |
| Bond angle inc progressively | | |

[opt d]

- ⑥ In heterolytic fission we get charged species, one is cation and other is anion

Thus $\text{CH}_3 - \text{CH}_2 - \text{CH}_3$ (Propane) on heterolysis gives

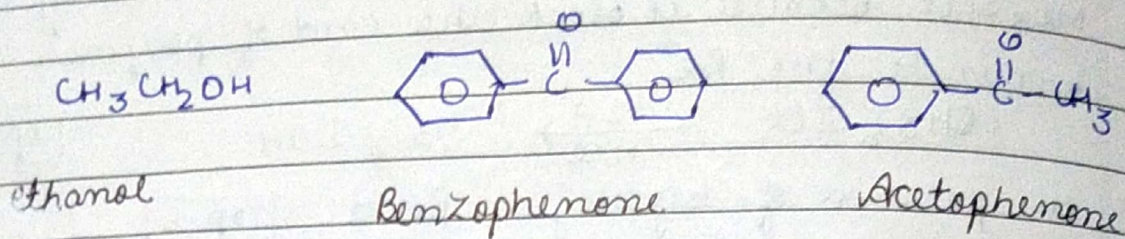


ethyl cation

methyl anion

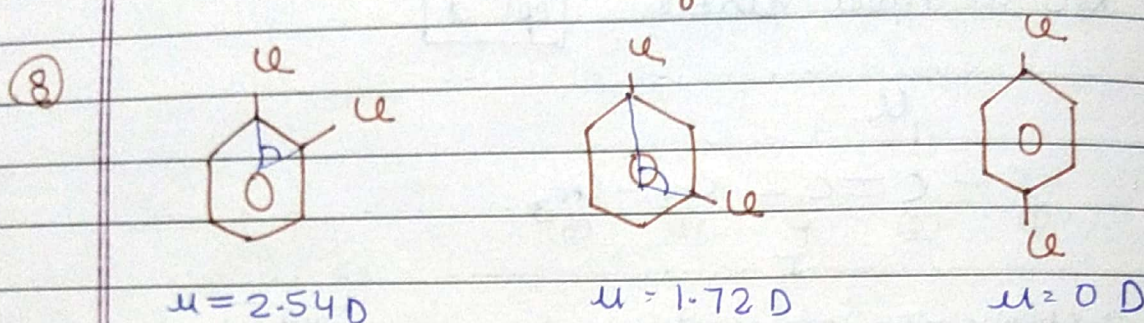
[opt d]

- ⑦ Iodoform test is given by $\text{C}(=\text{O})-\text{CH}_3$ or $\text{CH}(\text{OH})-\text{CH}_3$
 those compounds which have these units



↓
 This will not give
 Iodoform test

opt b



$$\sqrt{x^2 + x^2 + 2x^2 \cos \theta}$$

x is dipole moment of C-Cl Bond

$$o > m > p$$

- ⑨ If it contains $(4n+2) \pi$ no. of e^-

opt d

- ⑩ Tetraethyl lead (organic lead) is used as an anti knocking agent in gasoline means it is used in petroleum industry

opt c

- ⑪ Which one of the following forms the cathode w.r.t iron anode in an electrolyte cell

- (a) Mg (2.37) (b) Al (1.66V) (c) Cu (0.34) (d) Zn (0.76)

The one with highest redⁿ pot is termed as cathode

opt a

- ⑫ Rate of chemical Rx^n depends upon the conc. of the Reactant

As conc of Reactant $\downarrow$ Rate $\downarrow$
Thus as Rx^n proceeds, conc $\downarrow$ thus Rate $\downarrow$

[opt b]

- ⑬ Order of Rx^n can be checked by $\text{mol dm}^{-3} \text{ sec}^{-1}$

$$(\text{conc})^{1-n} \text{ sec}^{-1}$$

$$(\text{mol}^{-1})^{1-n} \text{ s}^{-1}$$

$$(\text{mol dm}^{-3})^{1-n} \text{ sec}^{-1}$$

$$(\text{mol})^{1-n} (\text{dm}^{-3})^{1-n} \text{ sec}^{-1} = \text{mol dm}^{-3} \text{ sec}^{-1}$$

$$1-n = 1$$

$$n = 0$$

Zero order Rx^n

[opt A]

- ⑭ 1 F amount of electricity is required to deposit 1 gm eqt of element. eq wt of Cu is $63.54/2 = 31.77$
Thus 4 F required to deposit 127.08 g of Copper

- ⑮ ~~ionic solids~~ / ~~Boz~~ it has.

Covalent solids

eg diamond (MP = 355°C)

This is because of giant 3-d network

[opt a]

26) $\Delta E/\text{atom} = 3.03 \times 10^{-19} \text{ J/atom}$

$E = \frac{hc}{\lambda}$

$\lambda = \frac{hc}{E} = \frac{6.626 \times 10^{-34} \times 3 \times 10^8}{3.03 \times 10^{-19}} = 656 \text{ nm}$ opt b

27) Spectrum of species which is isoelectronic with He will show same spectra i.e. Li^+ opt d

28) Orbital angular momentum $\sqrt{l(l+1)} \frac{h}{2\pi}$

for s electron $l = 0$

Therefore orbital angular momentum = 0

opt b

29) Angular Quantum no. (l) tells us the no. of subshells present in main shell (n) if n is principle Quantum no. then angular Quantum no. will be from $l = 0$ to $n-1$

for $n = 3$ l will be 0, 1, 2

all of these opt d

30) Isoelectronic species (same no. of e^-)

$\text{CO} = 14$

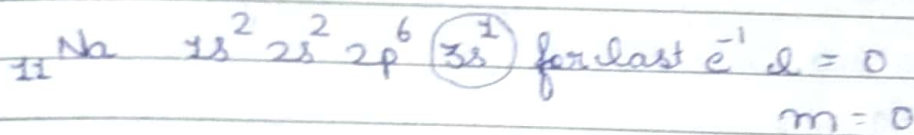
$\text{CN}^- = 14$

$\text{NO}^+ = 14$

$\text{C}_2^{2-} = 14$

opt c

- 31) Which of the following element outermost orbital last electron has magnetic Quantum no $m = 0$
- (a) Na (b) O (c) Li (d) N



opt a

- 32) In H atom, energy of first excited state is -3.4 eV . Find out K.E. of the same orbit of H atom.

K.E. = - Total energy

P.E. = 2 T.E

K.E. = - (-3.4 eV)

= 3.4 eV

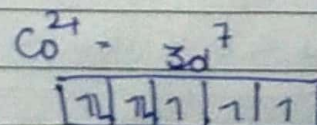
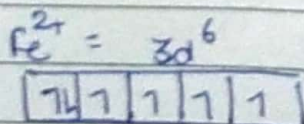
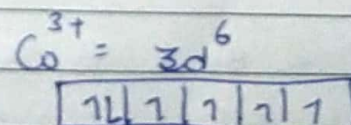
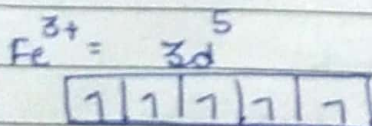
- 33) E.C. of Ag atom
 $[\text{Kr}] 4d^{10} 5s^1$

opt c

- 34) Splitting of spectrum lines in magnetic field is Zeeman effect
 electric field is Stark effect

opt a

- 35) Fe = 26 ($3d^6 4s^2$) Co = 27 ($3d^7 4s^2$)



Thus opt a

36

$$K.E = \frac{1}{2}mv^2$$

$$\lambda = \frac{h}{mv}$$

$$0.5 J = \frac{1}{2}(1)v^2$$

$$\lambda = \frac{6.6 \times 10^{-34} \text{ J s}}{1 \text{ kg} \times 1 \text{ m s}^{-1}}$$

$$v^2 = 1.0$$

$$v = 1 \text{ m/s}$$

$$= 6.6 \times 10^{-34} \text{ m}$$

opt a

37

$$\text{Spin multiplicity} = 2S + 1 = 0$$

$$S = -\frac{1}{2}$$

Now opt c satisfy this as $\frac{1}{2} - \frac{1}{2} - \frac{1}{2} = -\frac{1}{2}$

38

$$\frac{1}{\text{No}} g$$

$$1 \text{ mole of Ag atom} = 108 \text{ g} = 6.022 \times 10^{23} \text{ atoms}$$

$$\text{mass of } 6.022 \times 10^{23} \text{ atoms} = 108 \text{ g}$$

$$1 \text{ atom mass} = \frac{108}{6.022 \times 10^{23}}$$

opt c

39

atomic no - 29 i.e Cu belongs to D-block

40

Ionisation energy dec. as we move down the gp
Correct order is $\text{Cs} < \text{Rb} < \text{Na}$

opt d

41

Which of the following order is wrong?

$$\text{Li} < \text{Be} < \text{B} < \text{C} = \text{I.E}$$

I.E tells how easily an e^- can loose.

$$\text{Li} < \text{B} < \text{Be} < \text{C} < \text{N} < \text{O} < \text{F}$$

Correct order

opt b

42) ~~e^- affinity~~ Highest e^- affinity is shown by

- (a) O^{+2} (b) F^- (c) Cl_2 (d) F_2

e^- affinity will be maximum for atom whose tendency for gaining e^- will be more

→ O need one e^- to complete its octet while others have already achieved their octet configuration

opt a

43) Radius of Ga is less than Al because of

- a Lanthanide Contraction
b Greater Screening effect
c Inert pair effect
d None of these

Ga has one more shell than Al, Ga has 3d electrons, which has poor screening effect so the effective nuclear charge on Ga is higher than Al

opt d

44) The electronegativity of the following element in the order

- (a) C, N, Si, P (b) N, Si, C, P
(c) Si, P, C, N (d) P, Si, N, C

C (2.5)

N (3.0)

Si (1.8)

P (2.1)

$Si < P < C < N$

opt c

$$N^{3-} > O^{2-} > F^{-} > Na^{+} > Mg^{2+} > Al^{3+}$$

by N is

- (a) sp^2 (b) sp^3 (c) sp (d) dsp^2

$$e.p = b.p + l.p$$

No of bonds (or bonds) (-ve charge or lone pair)

$$\begin{aligned} e.p &= 2 = sp \\ 3 &= sp^2 \\ 4 &= sp^3 \end{aligned}$$

In this N attached to 2 C and 1 H and have 1 lone pair

So it is sp^3 hybridised

opt b

47) Number of Bonds in SO_3 are

- (a) 2σ and 2π
- (b) 2σ and 1π
- (c) 2σ , 2π and one lone pair
- (d) None of these

SO_3 - trigonal planar
i.e. it has 3 σ & 3 π bonds
opt d

48) Which of the following compounds has the smallest bond angle in its molecule

- (a) SO_2 119° (b) OH_2 104.5° (c) H_2S 90° (d) NH_3 107°

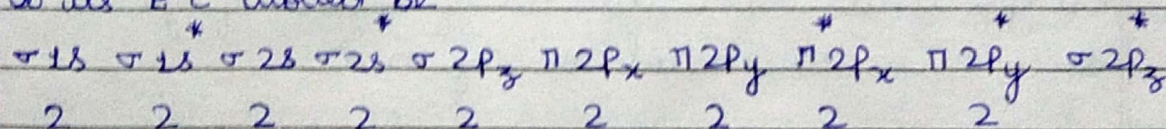
$$\text{L.P} - \text{L.P} > \text{L.P} - \text{B.P} > \text{B.P} - \text{B.P}$$

49) Hybridisation & Basis 42 solve & उत्तर

50) The no. of anti bonding e^- pair O_2^{2-} molecular ion on the basis of molecular orbital theory

$$\text{O}_2^{2-} = 18e^-$$

So its E.C would be



Anti bonding e^- pair are 4

opt c

- (51) Use of hot air balloons in sports and meteorological operation is an application of
- (a) Boyle's law (b) Charles's law
(c) Kelvin's law (d) Ideal gas equation

Acc. to Charles's law gases expand on heating and hot air is less dense than cool air, This causes hot air balloon to rise by displacing the cooler air of atm [opt b]

- (52) If volume of a gas in a vessel is reduced to half, how many moles of gas remained in the vessel

- (a) just double (b) just half (c) same
(d) More than double

While the volume of gas is reduced to half any mole of gas is not escaped. Thus moles of gas are same. [opt c]

⇒ But if we inc the vol. of gas more than the vol. of container, then some gas molecules will escape and then the no. of moles of gas will be less than the initial no. of moles

- (53) The volume occupied by 7 gm of N_2 at $27^\circ C$ and 750.9 mm Hg pressure is

$$PV = nRT$$

$$1 \text{ atm} \approx 750.9 \approx 760 \text{ mmHg}$$

$$1 \times V = \frac{7}{28} \times 0.0821 \times 300$$

$$V = 6.14 \text{ litre}$$

- (a) 8.24 litre
(b) 6.14 litre
(c) 6.24 litre
(d) 5.24 litre

[opt b]

- 56) For the rxn $C(s) + O_2(g) \rightarrow CO_2(g)$
- (a) $\Delta H > \Delta E$ (b) $\Delta H < \Delta E$ (c) $\Delta H = \Delta E$
 (d) None

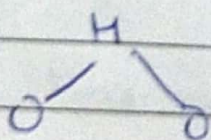
Combustion rxn means heat energy is given out

For open system the energy is known as enthalpy & is always greater than or equal to internal energy

here $\Delta H > \Delta E$

opt a

- 57) The Bond energy of an O-H Bond is $109 \text{ kcal mol}^{-1}$, when a mole of water is formed
- (a) 218 kcal is formed (b) 109 kcal is released
 (c) 218 kcal is observed (d) 109 kcal is observed



The energy formed will be

$2 \times 109 \text{ kcal mol}^{-1}$

218 kcal is formed

opt a

- 58) Which of the following statement is true?
- (a) ΔG may be lesser or greater or equal to ΔH
 (b) ΔG is always proportional to ΔH
 (c) Both a & b (d) None

59) Mechanical work is specially imp. in system that contain

- (a) Solid - liquid (b) liquid - liquid
(c) solid - solid (d) gases

- Mech. work is also called as Pressure-volume work
- Mech. work is imp in systems that undergo appreciable change in vol.
- Since solids are incompressible, hence mech. work is insignificant in Solids
- however gases & liq (to some extent) undergo appreciable change in vol. hence mech. work become imp for gases & liq.

→ Mech. work is imp. mainly for gas as they undergo appreciable Change in volume

opt d

60) The heat of Combustion of a substance is

- (a) always +ve (b) always -ve
(c) unpredictable (d) None

energy is released during combustion thus its is always -ve

opt b

61) The variation of heat of Rxⁿ with Temp is given by

- (a) Van't Hoff eqⁿ
(b) Nernst eqⁿ
(c) Clausius - Clapeyron eqⁿ
(d) Kirchhoff's eqⁿ

Kirchoff's eqⁿ → In general enthalpy of any substance inc. with temp.

opt d

- 62) Which of the following is a closed system?
- (a) Jet engine (b) Tea placed in a steel kettle
(c) Pressure cooker (d) Rocket engine during propulsion

Opt b

Only energy transfer not matter
Thus tea placed in a steel kettle is correct

- 63) The intensive property among these quantities is
- (a) Mass (b) Volume (c) Mass/Vol (d) Enthalpy
- extensive extensive extensive extensive

In. property → Those which depend upon nature
Extensive property → _____ amount

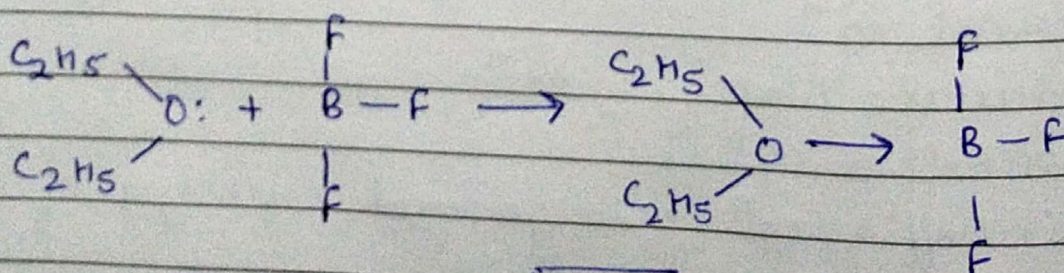
$\frac{\text{Extensive}}{\text{Extensive}} = \text{Intensive}$

$\frac{\text{Mass}}{\text{Vol}} = \text{density} = \text{Intensive}$

Opt c

- 64) $\text{C}_2\text{H}_5-\ddot{\text{O}}-\text{C}_2\text{H}_5$ is
- (a) Lewis acid (b) Arrhenius acid (c) Lewis Base
(d) None

The lone pair of Oxygen gets donated thus it act as Lewis Base



Opt c

65) In which of the following the forward Rx^n is favoured by use of high pressure

- (a) $H_2 + I_2 \rightarrow 2HI$ (b) $N_2 + O_2 \rightarrow 2NO$
 (c) $2NH_3 \rightarrow N_2 + 3H_2$ (d) $2SO_2 + O_2 \rightarrow 2SO_3$

If $n_p = n_r$ (Pressure has no effect)

$n_p > n_r$ (inc in pressure favours Backward Rx^n)

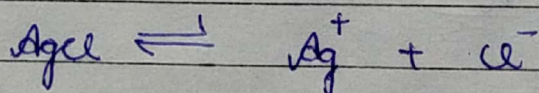
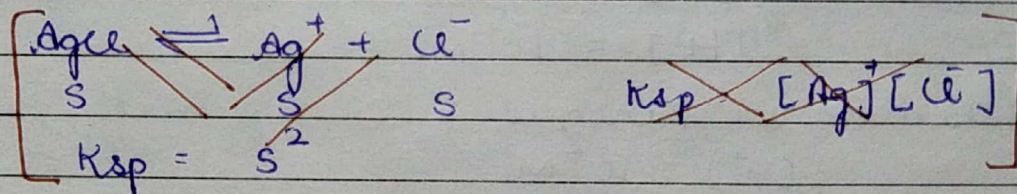
$n_r > n_p$ (inc in pressure favours forward Rx^n)

In op (d) $n_r > n_p$ thus it is correct

opt d

66) The solubility product of AgCl is 4.0×10^{-10} at 298 K. The solubility of AgCl in 0.04 M $CaCl_2$ will be

- (a) $2.0 \times 10^{-5} M$ (b) $1.0 \times 10^{-4} M$ (c) $2.2 \times 10^{-4} M$ (d) $5.0 \times 10^{-9} M$



$$\begin{aligned}
 K_{sp} &= [\text{Ag}^+][\text{Cl}^-] \\
 4 \times 10^{-10} &= [\text{Ag}^+][\text{Cl}^-] \\
 4 \times 10^{-10} &= [\text{Ag}^+] 0.08
 \end{aligned}$$

$$\begin{aligned}
 [\text{Ag}^+] &= \frac{4 \times 10^{-10}}{0.08} \\
 &= 5.0 \times 10^{-9} M
 \end{aligned}$$

Now $CaCl_2 \rightleftharpoons Ca^{2+} + 2Cl^-$
 Thus conc of Cl^- ions is $2 \times 0.04 = 0.08 M$

opt d

67) Which solution will be strongly acidic?

- (a) When $\text{pH} = 0$ (b) when $\text{pOH} = 4.5$
(c) when $\text{pOH} = 14$ (d) Both a and c

In (c) $\text{pOH} = 14$
means $\text{pH} = 0$

$$\left[\begin{array}{l} \text{pH} + \text{pOH} = 14 \\ \text{pH} + 14 = 14 \\ \text{pH} = 0 \end{array} \right]$$

Thus (a) and (c) are equally acidic opt d

68) The pH of a solution is 5.0. To this solution sufficient acid is added to decrease the pH to 2.0. The increase in hydrogen ion conc. is

- (a) 100 times (b) 10 times (c) 1000 times (d) 2.5 times

$$\text{pH} = -\log[\text{H}^+] = 5$$
$$[\text{H}^+] = 10^{-5} \text{ M}$$

When pH is decreased to 2

$$[\text{H}^+] = 10^{-2} \text{ M}$$

Change in $[\text{H}^+]$ is $\frac{10^{-2}}{10^{-5}} = 10^3 = 1000$

means opt c

69) Which of the following Rxn will take place

70) A transition metal ion having metal in its highest oxidation state behaves as

- (a) oxidising agent (b) Reducing agent
 (c) dehydrating agent (d) Bleaching agent

If atom is in its highest O.S it will gain e^- and goes to lower O.S

Thus Reduction of T. Metal takes place and it will oxidise to others

opt a

71) If a salt bridge is removed from two half cells the voltage

- (a) equal to Zero (b) does not change
 (c) Inc. gradually (d) Inc. Rapidly

The e^- flow from anode to cathode through salt bridge. Salt bridge permits the flow of current by completing the circuit.

No current will flow & voltage will drop to Zero if salt bridge is removed

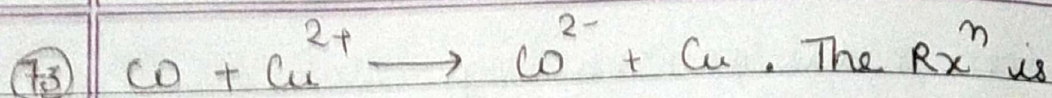
opt a

72) The compound that can work both as oxidising and reducing agent is

- (a) $KMnO_4$ (b) H_2O_2 (c) $NaCl_2$ (d) $K_2Cr_2O_7$

an compound which is present in its middle O.S can inc as well as dec. its O.S. Thus H_2O_2 can inc as
 $(O.S = -1)$

well as dec its O.S. Thus act both as oxidising and reducing agent



- (a) oxidation Rxⁿ (b) Reduction Rxⁿ
(c) Redox Rxⁿ (d) None

This is Redox Rxⁿ

opt c

74) Oxidation No. of Sulphur in S₈ is

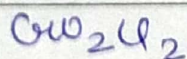
- (a) -8 (b) 8 (c) -2 (d) zero

In S₈, sulphur exist in elemental form so it has zero oxidation state

opt d

75) Among the following identify the species with an atoms in +6 Oxidation state

- (a) MnO_4^- (b) $\text{Cr}(\text{CN})_6^{2-}$ (c) NiF_6^{2-} (d) CrO_2Cl_2



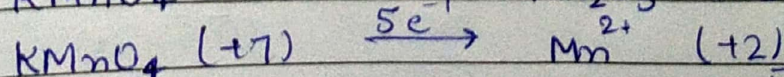
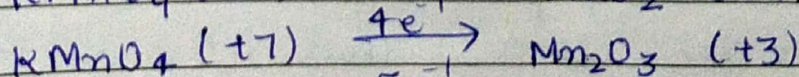
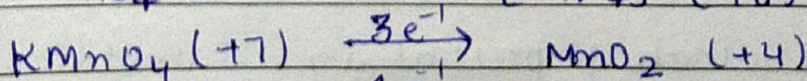
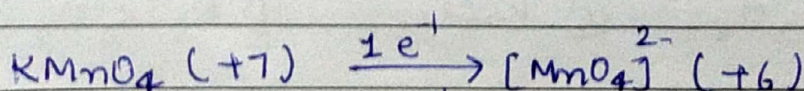
$$x - 4 - 2 = 0$$

$$x = 6$$

opt d

76) When KMnO_4 acts as an oxidising agent and ultimately forms $[\text{MnO}_4]^{2-}$, MnO_2 , Mn_2O_3 , Mn^{2+} , then the no. of electrons transferred in each case

- (a) 4, 3, 1, 5 (b) 1, 5, 3, 7
(c) 1, 3, 4, 5 (d) 3, 5, 7, 1



opt c

77) The charge on Co in $[\text{Co}(\text{CN})_6]^{3-}$ is

- (a) +6 (b) -3 (c) +3 (d) -6

Charge on CN^- is -1

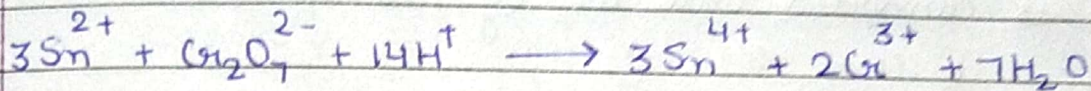
$$x - 6 = -3$$

$$x = +3$$

opt c

78) Number of moles of $\text{K}_2\text{Cr}_2\text{O}_7$ reduced by one mole of Sn^{2+} ions is

- (a) 1/3 (b) 3 (c) 1/6 (d) 6



here 1 mole of $\text{Cr}_2\text{O}_7^{2-}$ oxidised 3 moles of Sn^{2+}
Thus 1 mole of Sn^{2+} will reduce $\frac{1}{3}$ moles of $\text{Cr}_2\text{O}_7^{2-}$

opt a

79) In which of the following compounds the oxidation no. of Carbon is not Zero?

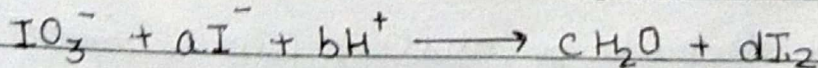
- (a) HCHO (b) CH_3COOH (c) $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ (d) CH_3CHO

Oxidation no. of C in CH_3CHO is -1

In other it is Zero

opt d

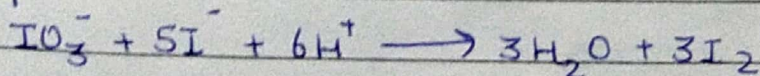
80) In the balanced chemical eqⁿ



a, b, c and d respectively correspond to

- (a) 5, 6, 3, 3 (b) 5, 3, 6, 3
(c) 3, 5, 3, 6 (d) 5, 6, 5, 5

eqⁿ is



$$a = 5 \quad b = 6 \quad c = 3 \quad d = 3$$

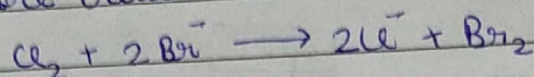
opt a

81) Arrange the following in the order of their decreasing electrode pot: Mg, K, Ba, Ca
Through electrochemical series opt d

- ☐ a) K, Ba, Ca, Mg ☐ b) Ba, Ca, K, Mg
☐ c) Ca, Mg, K, Ba ☐ d) Mg, Ca, Ba, K

82) Br^- is converted into Br_2 by using
☐ a) Cl_2 ☐ b) conc HCl ☐ c) HBr ☐ d) H_2S

Br^- is converted into Br_2 by using Cl_2 as Chlorine is more reactive than Bromine



opt a

83) Oxidation No. of N in N_3H (hydrazoic acid) is
☐ a) $-\frac{1}{3}$ ☐ b) +3 ☐ c) 0 ☐ d) -3

$$3x + 1 = 0$$

$$x = -\frac{1}{3}$$

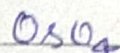
opt a

84) The standard electrode potential of four elements A, B, C and D are -3.05, 1.66, -0.40 and 0.80 volt. The highest chemical activity will be shown by

- ☐ a) A ☐ b) B ☐ c) C ☐ d) D

Lower the Reduction pot. better will be reactivity or chemical activity
 Thus A has highest chemical activity

- 85) The oxidation state of Os in OsO_4 is
- (a) +7 (b) -8 (c) +4 (d) +8

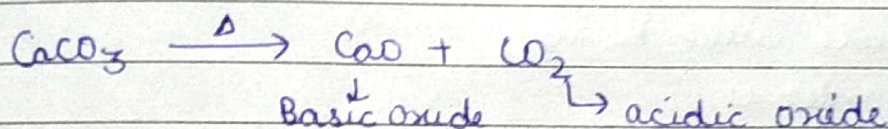


$$x - 8 = 0$$

$$x = +8$$

opt d

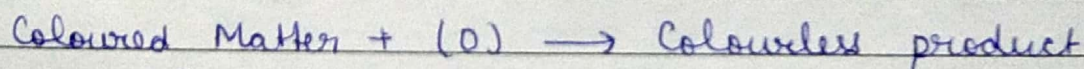
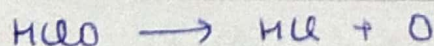
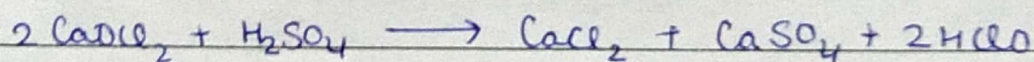
- 86) Which of the following on thermal decomposition yields a Basic as well as acidic oxide
- (a) NaNO_3 (b) KNO_3 (c) CaCO_3 (d) NH_4NO_3



opt c

- 87) The following action of Bleaching powder is due to the formation of
- (a) O_2 (b) OCl^- (c) Cl_2 (d) Cl^-

On account of the formation of nascent oxygen, it shows oxidising and bleaching properties

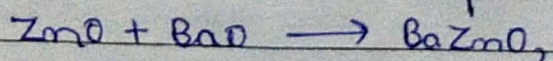


opt b

- 88) Philosopher's wool on heating with BaO at 1100°C produce

- (a) $\text{Ba} + \text{ZnCl}_2$ (b) BaClO_2 (c) BaZnO_2 (d) $\text{BaO}_2 + \text{Zn}$

ZnO is called Philosopher



opt c

This Rxn is possible only at Temp. around 1100°C

- 89) Choose the compound which does not possess a peroxide group
- (a) Na_2O_2 (b) CuO_2 (c) Fe_2O_3 (d) BaO_2

In Fe_2O_3 it has Fe^{3+} and O^{2-} ions. Thus it does not have peroxide linkage. opt c

- 90) Which of the following is least soluble in water?
- (a) BaF_2 (b) MgF_2 (c) CaF_2 (d) SrF_2

Least soluble will be MgF_2
Solubility order is

- 91) Fusion Mixture is

- (a) $\text{Na}_2\text{CO}_3 + \text{K}_2\text{CO}_3$ (b) $\text{Na}_2\text{CO}_3 + \text{BaCO}_3$
(c) $\text{NaHCO}_3 + \text{Na}_2\text{CO}_3$ (d) None

an equimolar mix of anhydrous potassium and sodium carbonate

opt a

- 92) Lithophone is

- (a) $\text{ZnSO}_4 + \text{PbS}$ (b) $\text{BaSO}_4 + \text{ZnS}$ (c) PbO_2
(d) ZnSO_4

It is a mix of Barium sulphate and Zinc sulfide

opt b

- 93) Alkaline earth metals are denser than alkali metals, because metallic bonding in alkaline earth metal is

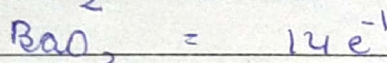
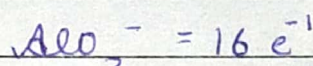
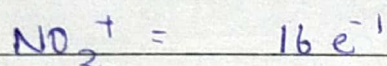
- (a) Stronger (b) weaker (c) Volta Volatile (d) None

Metallic Bonding in alkaline earth metals is stronger than alkali metals due to presence of $2e^-$ in valence shell as compared to $1e^-$ in alkali metals

opt a

(94) Among KO_2 , AlO_2^- , BaO_2 and NO_2^+ unpaired e^- is present in

- (a) NO_2^+ and BaO_2 (b) KO_2 and AlO_2^-
 (c) KO_2 only (d) BaO_2 only



among this KO_2 has unpaired e^- Thus opt c

(95) Which one of the following has exceptionally high melting pt.?

- (a) MgO (b) $NaCl$ (c) KCl (d) $NaOH$

Melting pt $\propto$ lattice energy $\propto$ charge on ions
 MgO has 2 units of charge

Thus opt a

(96) Carborundum is

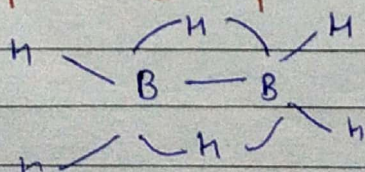
- (a) $Al_2(SO_4)_3$ (b) $Al_2O_3 \cdot 2H_2O$ (c) $AlCl_3$ (d) Sic

Silicon Carbide

opt d

(97) The type of hybridization of Borane in Diborane is

- (a) sp (b) sp^2 (c) sp^3 (d) sp^3d^2



here 2 B atoms and 4 H atoms lie on the same plane

Borane atom is sp^3 hybridized

98) The element which is exclusively applied as Semiconductor

- (a) Au (b) Ge (c) Pt (d) Si

Germanium, The pure element was mainly doped with As, Ge and used as transistors

opt b

99) Chromyl chloride is prepared after Boiling a mix of ~~NaCl~~ and $K_2Cr_2O_7$ in the presence of

- (a) Conc HCl (b) Conc H_2SO_4 (c) dil HNO_3
(d) Dilute H_2SO_4

opt b

100) Glass reacts with HF to produce

- (a) SiF_4 (b) H_2SiF_6 (c) H_2SiO_3 (d) Na_3AlF_6

