



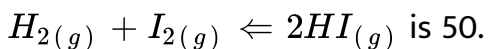
CHEMISTRY

BOOKS - MTG CHEMISTRY (ENGLISH)

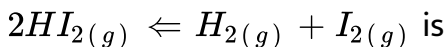
PRACTICE PAPER 1

Mcqs

1. The equilibrium constant at 717 K for the reaction:



The equilibrium constant for the reaction:



A. 0.5

B. 2×10^{-2}

C. 4.0

D. 1×10^{-1}

Answer: B



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2. Which of the following statements is not correct?

- A. the shape of an atomic orbital depends on the azimuthal quantum number.
- B. the orientation of an atomic orbital depends on the magnetic quantum number.
- C. The energy of an electron in an atomic orbital of multi-electron atom depends on principal quantum number.

D. The number of degenerate atomic orbitals of one type depends on the values of azimuthal and magnetic quantum numbers.

Answer: C

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3. Which one of the following pairs do not impart colour to the flame?

A. $BeCl_2$ and $SrCl_2$

B. $BeCl_2$ and $MgCl_2$

C. $CaCl_2$ and $BaCl_2$

D. $BaCl_2$ and $SrCl_2$

Answer: B

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4. Which is not correct?

A. GeO is acidic

B. GeCl_2 is more stable than GeCl_4

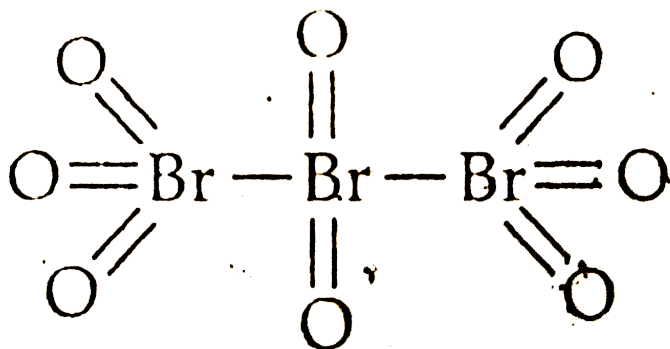
C. GeO_2 is acidic.

D. GeCl_4 in HCl forms $[\text{GeCl}_6]^{2-}$ ion.

Answer: B

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5. Oxidation number of bromine in sequence in Br_3O_8 is



A. +8, +6, +8

B. +6, +4, +6

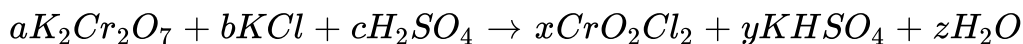
C. 0,0,0

D. +8, +4, +8

Answer: B

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6.



The above equation balances when

A. $a=2, b=4, c=6$ and $x=2, y=6, z=3$

B. $a=4, b=2, c=6$ and $x=6, y=2, z=3$

C. $a=6, b=4, c=2$ and $x=6, y=3, z=2$

D. $a=1, b=4, c=6$ and $x=2, y=6, z=3$

Answer: D

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7. Which of the following is correct for SF_4 ?

A. It has a see-saw shape

B. It has two lone pairs of electrons

C. It has a square planar geometry

D. It has five bonding pairs.

Answer: A

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8. The strongest bond is present in

A. Br_2

B. I_2

C. Cl_2

D. F_2

Answer: C

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9. Carbon and oxygen form two compounds. Carbon content in one of them is 42.9% and in the others is 27.3%. The given data is in agreement with

- A. law of conservation of mass
- B. law of multiple proportions
- C. law of reciprocal proportions
- D. law of definite proportions

Answer: B

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10. For the reaction at $25^{\circ}C$, $X_2O_{4(l)} \rightarrow 2XO_{2(g)}$, $\Delta H = 2.1kcal$ and $\Delta S = 20 \text{ cal } K^{-1}$. The reaction would be

- A. spontaneous
- B. non-spontaneous
- C. at equilibrium
- D. unpredictable

Answer: A

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11. Which of the following statements is incorrect?

- A. H_2O_2 is a pale blue viscous liquid
- B. H_2O_2 can act as an oxidising as well as a reducing agent
- C. In H_2O_2 , the two hydroxyl groups lie on the same plane.
- D. H_2O_2 has an 'open-book' structure

Answer: C



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12. Which of the following statements is correct?

- A. E_{cell}° and $\Delta_r G$ of cell reaction both are extensive properties
- B. E_{cell}° and $\Delta_r G$ of cell reaction both are intensive properties
- C. E_{cell}° is an intensive property while $\Delta_r G$ of cell reaction is an extensive property.
- D. E_{cell}° is an extensive property while $\Delta_r G$ of cell reaction is an intensive property.

Answer: C



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13. Which of the following is wrong?

- A. Cathode rays have constant e/m ratio.
- B. e/m ratio of anode rays is not constant.
- C. e/m ratio of protons is not constant
- D. e/m ratio of β -particles is constant.

Answer: C

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14. The central C-atom of a carbanion possesses

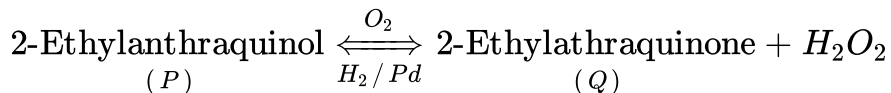
- A. sextet of electrons
- B. octet of electrons
- C. duplet of electrons
- D. none of these

Answer: B



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15. Industrially, H_2O_2 is obtained by the following cyclic process:



Which one of the following properties is wrong about the mixture of organic solvents in which the reaction is carried out?

- A. It must resist oxidation
- B. it must be miscible with water.
- C. It must dissolve both (P) and (Q)
- D. It is generally a mixture of ester and hydrocarbon.

Answer: B



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16. The amount of water produced by the combustion of 16 g of methane is

A. 16 g

B. 36 g

C. 18 g

D. 32 g

Answer: B



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17. Match the column I with column II and mark the appropriate choice.

Column I		Column II	
(A)	Troposphere	(i)	Prevents UV rays coming to earth
(B)	Stratosphere	(ii)	Ionization of gases
(C)	Mesosphere	(iii)	Maintenance of heat balance
(D)	Thermosphere	(iv)	Non-propagation of sound waves

A. $A \rightarrow ii, B \rightarrow iv, C \rightarrow iii, D \rightarrow i$

B. $A \rightarrow iv, B \rightarrow iii, C \rightarrow i, D \rightarrow iii$

C. $A \rightarrow iii, B \rightarrow i, C \rightarrow iv, D \rightarrow ii$

D. $A \rightarrow i, B \rightarrow iii, C \rightarrow ii, D \rightarrow iv$

Answer: C



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18. The order of heat of fusion of T_2 , D_2 and H_2 is

A. $T_2 > D_2 > H_2$

B. $H_2 > T_2 > D_2$

C. $D_2 > T_2 > H_2$

D. $D_2 = T_2 > H_2$

Answer: A

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19. The photochemical smog is essentially caused by presence by

A. O_2 and O_3

B. Oxides of nitrogen and hydrocarbons

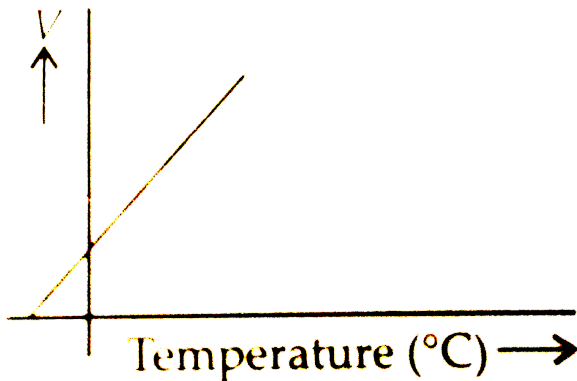
C. Oxides of sulphur and nitrogen

D. O_2 and N_2 .

Answer: B

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20. The following graph illustrates

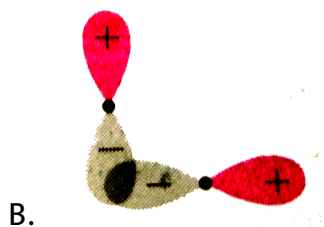
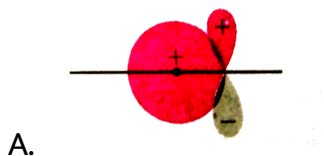


- A. Dalton's law
- B. Charles' law
- C. Boyle's law
- D. Gay-Lussac's law

Answer: B

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21. Which of the following orbital overlapping is not possible according to VBT?



D. All of these

Answer: D

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22. The reaction, $RC \equiv CR \xrightarrow[\text{Lindlar's catalyst}]{H_2}$ Gives the main product as

- A. cis-alkene
- B. trans-alkene
- C. alkane
- D. none of these

Answer: A

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23. Which statement is false?

- A. Elements of VB group are transition elements.
- B. elements of VA group are all metalloids
- C. elements of IA and IIA groups are metals
- D. element of IVA group are neither strongly electronegative nor strongly electropositive.

Answer: B

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24. Match the column I with column II and mark the appropriate choice

Column I		Column II	
(A)	Boron fibres	(i)	Heat resistant glasses
(B)	Borax	(ii)	Bullet proof vest
(C)	Aluminium	(iii)	Filler in automobile tyre
(D)	Carbon black	(iv)	Transport industry

A. $A \rightarrow i, B \rightarrow ii, C \rightarrow iii, D \rightarrow iv$

B. $A \rightarrow ii, B \rightarrow i, C \rightarrow iv, D \rightarrow iii$

C. $A \rightarrow ii, B \rightarrow iii, C \rightarrow i, D \rightarrow iv$

D. $A \rightarrow iii, B \rightarrow ii, C \rightarrow i, D \rightarrow iv$

Answer: B

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25. All reactions involving chemical decomposition are

A. reversible

B. reversible and endothermic

C. exothermic

D. may be reversible or irreversible and endothermic or exothermic

Answer: D

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26. In the following question, a statement of assertion is followed by a statement of reason. Mark the correct choice.

Assertion: Simple distillation can help in separating a mixture of propan-1-ol (boiling point $97^{\circ}C$) and propanone (boiling point $56^{\circ}C$))

Reason: Liquids with a difference of more than $20^{\circ}C$ in their boiling points can be separated by simple distillation.

- A. both assertion and reason are true and reason is the correct explanation of assertion
- B. both assertion and reason are true but reason is not the correct explanation of assertion
- C. Assertion is true but reason is false.
- D. both assertion and reason are false.

Answer: A



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27. Which of the following is correct?

- A. van der waals radius of chlorine is bigger than nitrogen.
- B. covalent radius of nitrogen is bigger than chlorine
- C. van der waals radius of chlorine is smaller than nitrogen
- D. All are correct

Answer: A

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28. In covalent bond

- A. transfer of electrons takes place
- B. sharing of electrons takes place

C. electrons are shared by only one atom

D. none of these

Answer: B

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29. The compressibility of a gas is less than unity at STP. Therefore,

A. $V_m > 22.4L$

B. $V_m < 22.4L$

C. $V_m = 22.4L$

D. $V_m = 44.8L$

Answer: B

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30. Element $M + N_2 \xrightarrow{\Delta} \xrightarrow{H_2O} NH_3$ element M belonging to group 13 can be

- A. B or Al
- B. Ga or Al
- C. B or Ga
- D. In or Tl

Answer: A

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31. Select the correct statement. In the gas equation, $PV = nRT$

- A. n is the number of molecules of a gas
- B. n moles of the gas have a volume V
- C. V denotes volume of one mole of the gas

D. P is the pressure of the gas when only one mole of gas is present.

Answer: B

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32. The solubility product of aluminium sulphate is given by the expression

A. $4s^3$

B. $6912s^7$

C. s^2

D. $108s^3$

Answer: D

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33. The IUPAC name of the compound, $\begin{array}{c} C H_2 \\ | \\ OH \end{array} - \begin{array}{c} C H \\ | \\ NH_2 \end{array} - COOH$ is

- A. 2-amino-3-hydroxypropanoic acid
- B. 1-hydroxy-2-aminopropan-3-oic acid
- C. 1-amino-2-hydroxypropanoic acid
- D. 3-hydroxy-2-aminopropanoic acid.

Answer: A

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34. Calculate the uncertainty in the momentum of an electron if it is confined to a linear region of length 1×10^{-10} metre

- A. $5.37 \times 10^{-27} \text{ kg } ms^{-1}$
- B. $5.27 \times 10^{-27} \text{ g } ms^{-1}$

C. $5.37 \times 10^{-25} \text{ g ms}^{-1}$

D. $5.27 \times 10^{-25} \text{ kg ms}^{-1}$

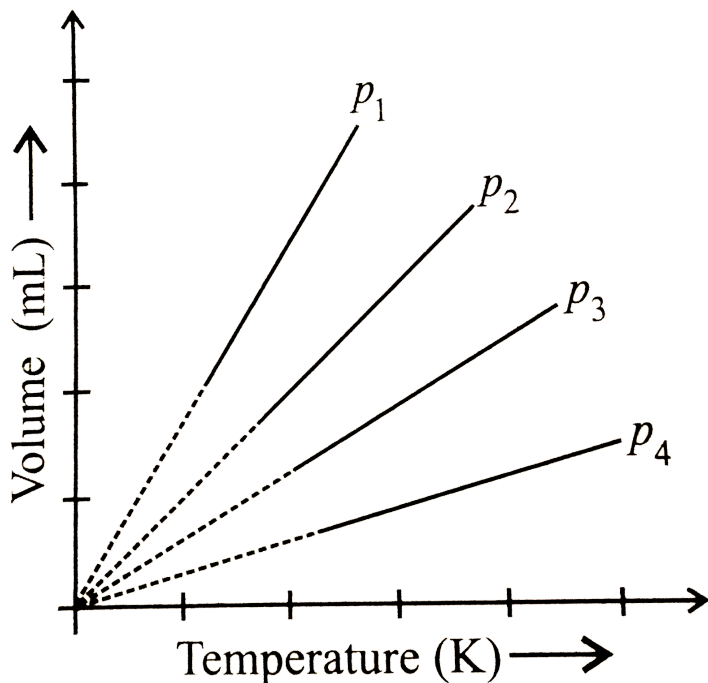
Answer: D



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35. A plot of volume (V) versus temperature (T) for a gas at constant pressure is a straight line passing through the origin. The plots at different values of pressure are shown in figure. Which of

the following order of pressure is correct for this gas?



A. $p_1 > p_2 > p_3 > p_4$

B. $p_1 = p_2 = p_3 = p_4$

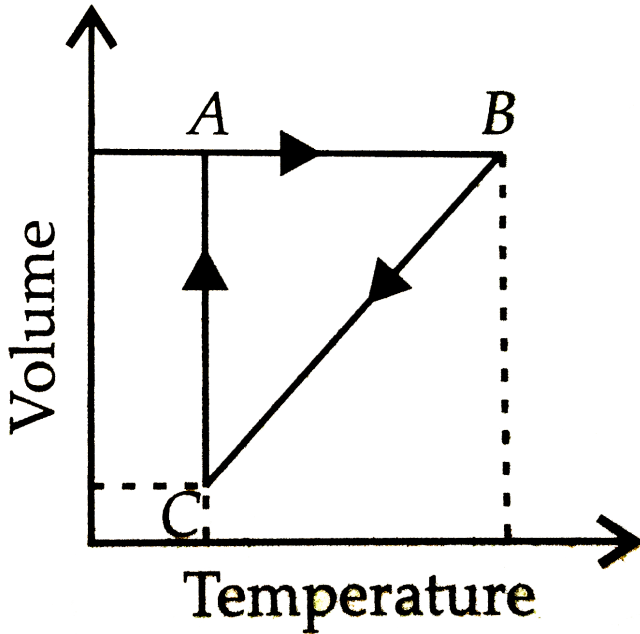
C. $p_1 < p_2 < p_3 < p_4$

D. $p_1 < p_2 = p_3 < p_4$

Answer: C

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36. Five moles of a gas is put through a series of changes as shown graphically in a cyclic process.



The process $A \rightarrow B$, $B \rightarrow C$ and $C \rightarrow A$ respectively are

- A. isochoric, isobaric, isothermal
- B. isobaric, isochoric, isothermal
- C. isothermal, isobaric, isochoric
- D. isochoric, isothermal, isobaric

Answer: A

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37. The second ionization enthalpy is

- A. smaller than the first ionization enthalpy
- B. salmost equal to the first ionizationn enthalpy
- C. smallerr than the third ionization enthalpy
- D. equal to the second electron gain enthalpy.

Answer: C

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38. IUPAC name of 4-iso-propyl-m-xylene is

- A. 1-iso-propyl-2,4-dimethylbenzene
- B. 4-iso-propyl-m-xylene
- C. 4-iso-propyl-2,3-dimethylbenzene
- D. 4-iso-propyl-3,5-dimethylbenzene.

Answer: A

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39. The positive value of ΔS indicates that

- A. the system becomes less disordered
- B. the system becomes more disordered
- C. the system is in equilibrium position
- D. the system tends to reach at at equilibrium position.

Answer: B



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40. Capillary action of the liquid can be explained on the basis of its

- A. resistance to flow
- B. surface tension
- C. heat of vaporisation
- D. refractive index

Answer: B



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41. Smoke is an example of

- A. gas dispersed in liquid
- B. gas dispersed in solid

C. solid dispersed in gas

D. solid dispersed in solid

Answer: C



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42. The first emission line in the atomic spectrum of hydrogen in the Balmer series appears at`

A. $9R / 400cm^{-1}$

B. $7R / 144cm^{-1}$

C. $3R / 4cm^{-1}$

D. $5R / 36cm^{-1}$

Answer: D



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43. The ratio of specific charge of a proton and an α -particle is

A. 2:1

B. 1:2

C. 1:4

D. 1:1

Answer: B



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44. Photochemical smog is ___ in character while classical smog is ___ in character.

A. oxidising, reducing

B. reducing, oxidising

C. oxidising, oxidising

D. reducing, reducing

Answer: A



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45. Which of the following is sparingly soluble in water?

A. $BeSO_4$

B. $MgSO_4$

C. $CaSO_4$

D. $BaSO_4$

Answer: C



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46. Two members of a homologous series have different

- A. general formula
- B. molecular weights
- C. methods of preparation
- D. chemical properties.

Answer: B

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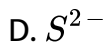
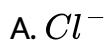
47. Free energy change for a reversible process is

- A. > 0
- B. < 0
- C. equal to zero
- D. unpredictable

Answer: C

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48. Which of the following ions is smallest in size?



Answer: C

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49. The bond angle $H - O - H$ in ice is closest to

A. $120^{\circ} 28'$

B. 60°

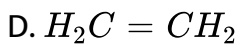
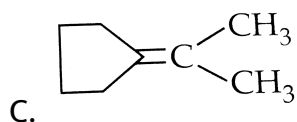
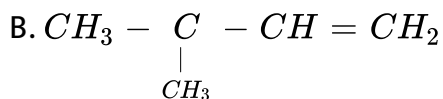
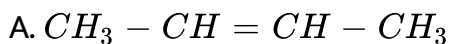
C. 90°

D. 109°

Answer: D

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50. Which of the following alkenes on ozonolysis gives a mixture of ketones only?

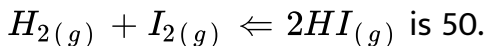


Answer: C

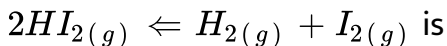
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Practice Paper 1

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The equilibrium constant for the reaction:



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Answer: C

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C. GeO_2 is acidic.

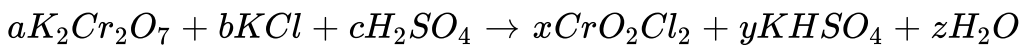
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Answer: B



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5.



The above equation balances when

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B. $a=4, b=2, c=6$ and $x=6, y=2, z=3$

C. $a=6, b=4, c=2$ and $x=6, y=3, z=2$

D. $a=1, b=4, c=6$ and $x=2, y=6, z=3$

Answer: D





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6. Which of the following is correct for SF_4 ?

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- D. H_2O_2 has an 'open-book' structure

Answer: C

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- B. E_{cell}° and $\Delta_r G$ of cell reaction both are intensive properties
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D. E_{cell}° is an extensive property while $\Delta_r G$ of cell reaction is an intensive property.

Answer: C

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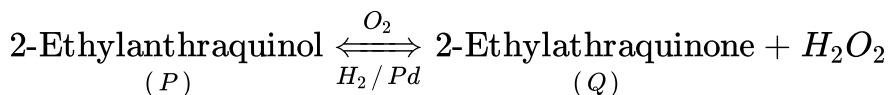
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- C. duplet of electrons
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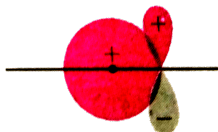
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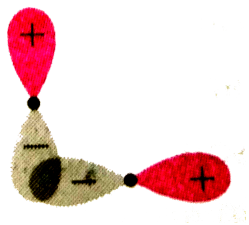
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A.



B.



C.

D. All of these

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Answer: A

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- C. elements of IA and IIA groups are metals
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- B. reversible and endothermic
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D. may be reversible or irreversible and endothermic or exothermic

Answer: D

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22. In the following question, a statement of assertion is followed by a statement of reason. Mark the correct choice.

Assertion: Simple distillation can help in separating a mixture of propan-1-ol (boiling point $97^{\circ}C$) and propanone (boiling point $56^{\circ}C$))

Reason: Liquids with a difference of more than $20^{\circ}C$ in their boiling points can be separated by simple distillation.

A. both assertion and reason are true and reason is the correct explanationn of assertion

- B. both assertion and reason are true but reason is not the correct explanation of assertion
- C. Assertion is true but reason is false.
- D. both assertion and reason are false.

Answer: A



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23. Which of the following is correct?

- A. van der waals radius of chlorine is bigger than nitrogen.
- B. covalent radius of nitrogen is bigger than chlorine
- C. van der waals radius of chlorine is smaller than nitrogen
- D. All are correct

Answer: A



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24. In covalent bond

- A. transfer of electrons takes place
- B. sharing of electrons takes place
- C. electrons are shared by only one atom
- D. none of these

Answer: B



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25. The compressibility of a gas is less than unity at STP. Therefore,

- A. $V_m > 22.4L$
- B. $V_m < 22.4L$

C. $V_m = 22.4L$

D. $V_m = 44.8L$

Answer: B

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26. Element $M + N_2 \xrightarrow{\Delta} \xrightarrow{H_2O} NH_3$ element M belonging to group

13 can be

A. B or Al

B. Ga or Al

C. B or Ga

D. In or Tl

Answer: A

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27. Select the correct statement. In the gas equation, $PV = nRT$

A. n is the number of molecules of a gas

B. n moles of the gas have a volume V

C. V denotes volume of one mole of the gas

D. P is the pressure of the gas when only one mole of gas is present.

Answer: B

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28. The solubility product of aluminium sulphate is given by the expression

A. $4s^3$

B. $6912s^7$

C. s^2

D. $108s^3$

Answer: D

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29. The IUPAC name of the compound, $\underset{\text{OH}}{\text{C}}\text{H}_2 - \underset{\text{NH}_2}{\text{C}}\text{H} - \text{COOH}$ is

- A. 2-amino-3-hydroxypropanoic acid
- B. 1-hydroxy-2-aminopropan-3-oic acid
- C. 1-amino-2-hydroxypropanoic acid
- D. 3-hydroxy-2-aminopropanoic acid.

Answer: A

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30. Calculate the uncertainty in the momentum of an electron if it is confined to a linear region of length 1×10^{-10} metre

A. $5.37 \times 10^{-27} \text{ kg ms}^{-1}$

B. $5.27 \times 10^{-27} \text{ g ms}^{-1}$

C. $5.37 \times 10^{-25} \text{ g ms}^{-1}$

D. $5.27 \times 10^{-25} \text{ kg ms}^{-1}$

Answer: D



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31. The second ionization enthalpy is

A. smaller than the first ionization enthalpy

- B. smallest equal to the first ionization enthalpy
- C. smaller than the third ionization enthalpy
- D. equal to the second electron gain enthalpy.

Answer: C

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32. IUPAC name of 4-iso-propyl-m-xylene is

- A. 1-iso-propyl-2,4-dimethylbenzene
- B. 4-iso-propyl-m-xylene
- C. 4-iso-propyl-2,3-dimethylbenzene
- D. 4-iso-propyl-3,5-dimethylbenzene.

Answer: A

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33. The positive value of ΔS indicates that

- A. the system becomes less disordered
- B. the system becomes more disordered
- C. the system is in equilibrium position
- D. the system tends to reach at equilibrium position.

Answer: B

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34. Capillary action of the liquid can be explained on the basis of its

- A. resistance to flow
- B. surface tension
- C. heat of vaporisation

D. refractive index

Answer: B

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35. Smoke is an example of

A. gas dispersed in liquid

B. gas dispersed in solid

C. solid dispersed in gas

D. solid dispersed in solid

Answer: C

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36. The first emission line in the atomic spectrum of hydrogen in the Balmer series appears at`

A. $9R / 400\text{cm}^{-1}$

B. $7R / 144\text{cm}^{-1}$

C. $3R / 4\text{cm}^{-1}$

D. $5R / 36\text{cm}^{-1}$

Answer: D

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37. The ratio of specific charge of a proton and an α -particle is

A. 2: 1

B. 1: 2

C. 1: 4

D. 1:1

Answer: B

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38. Photochemical smog is ___ in character while classical smog is ___ in character.

A. oxidising, reducing

B. reducing, oxidising

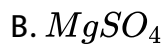
C. oxidising, oxidising

D. reducing, reducing

Answer: A

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39. Which of the following is sparingly soluble in water?



Answer: C

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40. Two members of a homologous series have different

A. general formula

B. molecular weights

C. methods of preparation

D. chemical properties.

Answer: B

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41. Free energy change for a reversible process is

A. > 0

B. < 0

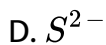
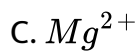
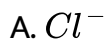
C. equal to zero

D. unpredictable

Answer: C

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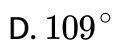
42. Which of the following ions is smallest in size?



Answer: C

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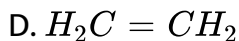
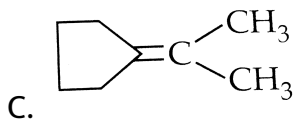
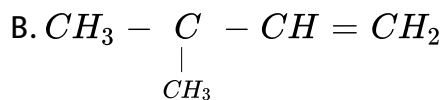
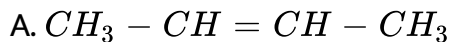
43. The bond angle $H - O - H$ in ice is closest to



Answer: D

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44. Which of the following alkenes on ozonolysis gives a mixture of ketones only?



Answer: C

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