JKBOSE CHEMISTRY DAWN

GUESS PAPER

for 11th Class

(NEW JKBOSE PATTERN BASED)

2021-22 Onwards

CHEMISTRY

Maximum Marks: 70 *Time: 3 Hours*

Very Short Answer Type Questions

(1 mark each)

Q.1. Define Molecular Mass.
Q.2. Calculate the number of moles in 44.8litres of H_2 at S.T.P.
Q.3. Name the type of hybridisation in diamond.
Q.4. Give the formula of Diborane.
Q.5. Name the Hybridisation in Ethyne.

* Define Gram Atomic Mass.
* Calcutta the number of moles in 9 gm of water.
* Draw the structure of graphite.
* Give the formula of Borax.
* Define Atomic Mass.
* What are the number of molecules in 11.2 litres of a gas at S.T.P.?
* Draw the structure of diamond.
* Give two uses of Aluminium.
* Write the formula of the compound Nickel (II)sulphate?
* The following reaction is an example of a

$$4NH_{3(g)} + 5O_{2(g)} \longrightarrow 4NO_{(g)} + 6H_2O_{(g)}$$

(i) Displacement reaction
(ii) Combination reaction
(iii) Redox reaction
(iv) Neutralisation reaction

* Give the values for principal quantum and magnetic quantum number for 19th electron of K (Potassium).
* What shapes are associated with sp^3d and sp^3d^2 hybrid orbitals?
* $2A_{(g)} + B_{(g)} \longrightarrow 4C(g) + He$

What is the effect of adding He a constant volume on above equilibrium?

Choose the most appropriate answer/option given:

* Which pair of atomic numbers represent s-block elements?

(A) 7, 15 (B) 6, 12 (C) 9, 17 (D) 3, 4

Ans. (D) 3, 4

* The first ionization energy of Lithium is:

(A) Greater than Be (B) Less than Be (C) Equal to sodium (D) Equal to fluorine

Ans. (A) Greater than Be

* Which of these is weakest?

(A) Ionic bond (B) Covalent bond (C) Metallic bond (D) Van der Waals forces

Ans. (D) Van der Waals forces

* S.I. unit of entropy is:

(A) cals K^{-1} (B) $JK^{-1}mol^{-1}$ (C) $atmK^{-1}$ (D) $JkgK^{-1}$

Ans. (B) $JK^{-1}mol^{-1}$

* In the equation of state of an ideal gas, PV=nRT, the value of the universal gas constant "R" depends only on:

(A) Nature of the gas (B) Pressure of the gas
(C) The units of measurement (C) None of these

Ans. (C) None of these

* Which of the following has highest rate of reaction with water?

(A) Na (B) Rb (C) Rb (D) K

Ans. (C) Rb

* Homolytic fission of a covalent bond results in the formation of:

(A) Canomium ion (B) Free radicals (C) Carbanions (D) Carbenes

Ans. (B) Free radicals

* Which pair of atomic numbers represents s-block elements?

(A) 7, 15 (B) 6, 12 (C) 9, 17 (D) 3, 4

Ans. (D) 3, 4

* In the long form of periodic table all the non-metals are placed under:

(A) s-block (B) p-block (C) f-block (D) d-block

Ans. (B) p-block

* The species having bond order different from that of CO_2 is:

(A) NO^- (B) NO^+ (C) CN^- (D) N_2

Ans. (A) NO^-

* At equilibrium Gibbs' free energy (DG) is:

(A) > 0 (B) < 0 (C) Zero (D) Depends upon reaction

Ans. (C) Zero

* Oxidation number of Cr in CrO_5 is:

(A) +2 (B) +4 (C) +6 (D) +10

Ans. (C) +6

* –I effect is shown by:

(A) —COOH (B) $—C_2H_5$ (C) $—CHR_2$ (D) $—CH_2R$

Ans. (A) — COOH

* Which of the following will not be oxidised by O_3?

(A) KI (B) $FeSO_4$ (C) $KMnO_4$ (D) K_2MnO_4

Ans. (C) $KMnO_4$

* Which is strongest acid?

(A) CH_3CH_2COOH (B) $CH_3CHClCOOH$
(C) CH_2ClCH_2COOH (C) CH_3CH2CH_2COOH

Ans. (B) $CH_3CHClCOOH$

* The compound with highest boiling point is:

(A) n- hexane (B) n-pentene
(C) 2, 2-dimethyl propane (D) 2-methyl butane

Ans. (B) n-pentene

* Addition of HBr to 3-methyl-1- pentyne follows:

(A) Markownikov's rule (B) Anti-Markownikov's rule
(C) Saytzeff rule (D) None of these

Ans. (A) Markownikov's rule

* Discuss anomalous behaviour of Beryllium.
* Give biological importance of potassium.
* What are silicones, silicates and zeolites?
* Calculate the enthalpy of combusion of glucose from the following data.

$$C(\text{graphite}) + O_2 \longrightarrow CO_2(g);\ \Delta_r H^{\ominus} = -395\text{kJ}$$

$$H_2(g) + \frac{1}{2} O_2(g) \longrightarrow H_2O(l);\ \Delta_r H^{\ominus} = -269.4\text{kJ}$$

$$6C(\text{graphite}) + 6H_2(g) + 3O_2(g) \longrightarrow C_6H_{12}O_6(s);\ \Delta_r H^{\ominus} = -1169.9\text{kJ}$$

* (a) fish do not grow as well in warm water as in cold water? Why
  (b) Why does rain water normally have a pH about 5.6?
  (c) Name two major green house gases.
* 0.2325 g of an organic compound was analysed for nitrogen by Duma's method. 31.7mL of moist nitrogen was collected at 25°C and 755.88mm Hg pressure. calculate the percentage of N in the sample. (Aq. Tension of water at 25°C is 23.8 mm)
* (a) Why cannot sulphuric acid be used to acidify sodium extract for testing S using lead acetate soslution?
  (b) Which of the carbocations is most stable and why?

$$(CH_3)_3\overset{+}{C},\ CH_3CH_2\overset{+}{C}H_2,\ CH_3\overset{+}{C}H_2CH_2CH_3$$

  (c) Why does a liquid vaporize below its boiling point in steam distillation process?
* 3.0.g of H_2 react with 29.0 g of O_2 to from water. Which one is the limiting reagent? Calculate the maximum amount of water that can be formed.

Long Answer Type Questions

(5 marks each)

Q.25. Differentiate between Sigma bond and Pi bond.

Or

Discuss VSEPR theory.

Q.26. State and explain law of Mass Action.

Or

Explain:
(i) pH
(ii) Common Ion effect.

Q.27. Explain the mechanism of addition reactions in Alkenes.

Or

Discuss the effect of functional groups in Mono substituted Benzene.

* State and explain Charles' law. How does it lead to the concept of absolute zero? What are the applications of this law?
* What are ideal and real gases? What are the reasons for the deviation of real gases from ideal behaviour?
* Describe in detail manufacture of sodium carbonate by Solvay process. State the principles involves in this process.

* Name alkali metals. Give their electronic configuration. Discuss the trends in the following properties of group 1 elements (alkali metals):
  (i) Ionisation enthalpy
  (ii) Basic character of hydroxides.
  (ii) Basic Character of hydroxides: Alkali metals form hydroxides of
* Define and explain inductive effect. How does it explain the relative strength of carboxlylic acids and basic nature of amines?
* Explain the following reactions with one example in each case:
  (i) Elimination reaction
  (ii) Addition reaction
* How are alkenes prepared from alcohols? How does propene react with HBr (no perxoides) and H_2O in presence of H_2SO_4? State the rule which is used while writing these reactions.
* Explain with suitable reactions:
  (i) Friedal-Craft reaction
  (ii) Peroxide effect
  (iii) Acidic nature of alkynes
* State and explain:
  (i) Pauli's exclusion principle
  (ii) Hund's rule of maximum spin multiplicity.
* What is meant by dual nature of a particle in motion? Explain also dual nature of light radiations.
* State and explain Le-Chatelier's principle. Which factors can alter the equilibrium state.
* Explain the terms: (i) Solubility product (ii) Common ion effect
* What are reactions intermediates? Discuss the structure and relative stabilities of carbocation, carbanion and free radicals.
* Write IUPAC names of the following compounds:

(i) $(CH_3)_3C-C_2H_5$

(ii) $CH_3-CH=CH-CH=CH_2$

(iii) $HOOC-\underset{\displaystyle CH_3}{\underset{|}{CH}}-\underset{\displaystyle CH_3}{\underset{|}{CH}}-COOH$

(iv) $\begin{matrix} CHO \\ | \\ CHO \end{matrix}$

(v) $CH_3-O-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-CH_3$

* What is conformation? Discuss the conformation of ethane.
* Discuss the mechanism of electrophilic substitution in benzene ring.
* Complete the equations

(i) $CH_2=CHBr \xrightarrow{NaNH_2} A \xrightarrow[873K]{\text{Red hot iron tube}} B$

(ii) $C_6H_6+CH_3COCl \xrightarrow[AlCl_3]{\text{Anhdrous}} A+B$

(iii) $CH_3COOH \xrightarrow{NaOH(aq)} A \xrightarrow[\Delta]{\text{Sodalime}} B$

THANK YOU

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