CHEMISTRY

BOOKS - OSWAAL PUBLICATION

Sample Paper 1

Exercise

1. State Law of definite proportions.

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2. Mention the type of intermolecular attractions that exists between non-polarl molecules.

3. H^- is a Lewis base. Give reason.

4. Nitrogen has higher ionization enthalpy than that of oxygen.Give reason.

5. What is the oxidation state of Mn in MnO_4^- ?

6. Which alkali metal is the strongest reducing agent in solution

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7. Mention one use of Chromatography.

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8. Draw the staggered conformation of ehtane.

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9. Express 0.002567 in scientific notation.

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10. If the mass of one molecule of water is 18 amu, what is the mass of one mole of water molecules?

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11. State Charles' law.

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12. Give the electronic configuration of H_2 molecule.What is its bond order?

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13. Differentiate between the reactions of Li and Na on burning them in oxygen.Give equations.

14. What is the repeating unit in 'organo silicon polymer?Name the starting (raw) material used in the manufacture of organo silicon polymer.
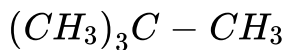
15. Write the IUPAC names of the following hydrocarbons:

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$(CH_3)_3C - CH_3$

17. Give two tests to distinguish between alkanes and alkenes.

18. How is Ozone layer formed in the stratosphere? Name a chief chemical that causes its depletion.

19. Arrange the following in the decreasing order of their ionic radius:N^{3-}, Mg^{2+}, Na^+, O^{2-}

20. State modern periodic for the linear combination of atomic orbitals.

21. Draw the shapes of BMO and ABMO formed by the combination of 1s and 1s atomic orbitals.

22. What are sigma and pi bonds?

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23. σ bond is stronger compare to p bond.
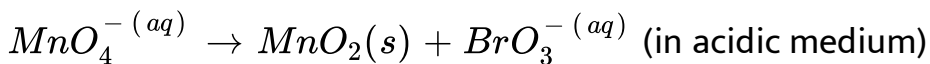
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24. Define dipole moment of a polar bond.

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25. Show that BeF_2 molecule has zero dipole moment.

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26. Balance the redox reaction using oxidatin numver method:

$MnO_4^{-\,(aq)} \rightarrow MnO_2(s) + BrO_3^{-\,(aq)}$ (in acidic medium)

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27. Explain with equations the production of dihydrogen increased by coal gasification and water gas shift reaction.

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28. Compared the 2nd Ionisation enthalpies and Hydration enthalpies of Alkali and Alkaline earth metals/ions.

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29. What is the chemical formula of plaster of paris?

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30. Between boron and aluminium,boron cannot have covalency

more than 4 but Al can have.Give reason

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31. Explain the reaction of diborane when it is exposed to air?

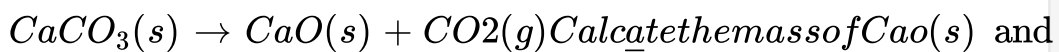▶ **Watch Video Solution**

32. Define limiting reagent.

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33. Define molarity and molality.

34. $CaCO_3$ decomposes to give CO_2 gas according to the equation.

$CaCO_3(s) \rightarrow CaO(s) + CO2(g) Calcate the mass of Cao(s)$ and

CO2(g) produced on complete decompositon of 5.0g of $CaCO_3$

Given molar masses of $CaO = 56g, CO_2 = 44g$

35. The atomic number and atomic mass of iron are 26 and 56 respectively.Find the number of protons and neutrons in its

atom.

36. Calculate the wave number of the spectral line of shortest wavelength appearing in the Balmer series of H-spectrum. $\left(R = 1.09 \times 10^7 m^{-1}\right)$

37. For the element with atomic number 24:Write the electronic configuration.

38. For the element with atomic number 24: Write the value of n and l for its electron in the valence shell.

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39. For the element with atomic number 24: How many unpaired electorns are present in it?

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40. State Pauli's exclusion principle. Give the possible values of l for $n = 2$

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41. Write three postulates of Kinetic theory of gases.

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42. Two gases A and B have critical temperatures as 250 and 125 K respectively. Which one of these can be liquefied easily and why?

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43. What is an intensive property? Give an example.

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44. 2 mole of an ideal gas undergoes a reversible and isothermal expansion from volume of 2.5L to 10L at $27 \circ$ C. Calculate the work done by the gas in this expansion.(Given R=8.314j/k/ mol)

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45. State Hess's law of constant heat summation.

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46. Write Gibbs equation. Usding ΔG, how do you decide whether a reaction at a given temperature is spontaneous or non-spontaneous?
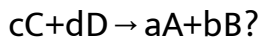
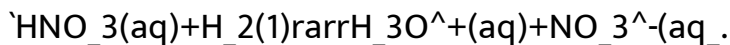▶ **Watch Video Solution**

47. Define chemical equilibrium.

48. Write the expression for equilibrium constant , Kc for the reaction.

`aA +bB $\rightarrow$ cC+dD.If the equilibrium constant for this reaction is 50,What is the equilibrium constant for it's reverse reaction.

cC+dD$\rightarrow$aA+bB?

49. Define add and base by Bronsted-Lowry concept.Identify a conjugate acid-base pair in the following:

`HNO_3(aq)+H_2(1)rarrH_3O^+(aq)+NO_3^-(aq_.

50. What happens to the pH to water when NH_4CL solid

dissolved in the and why?

51. For the compound $CH \equiv C - CH = CH - CH_3$

(i) Write the bond line formula for the compound.

(ii) Identify the number of Sigma and Pi-bonds.

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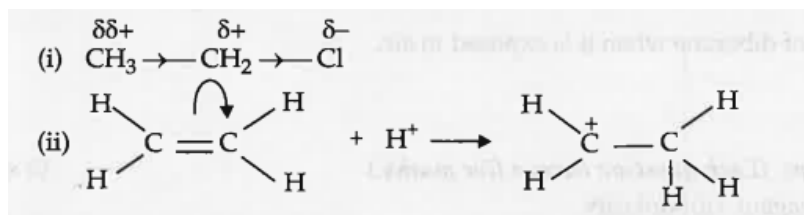(ii) Identify the number of Sigma and Pi-bonds.

53. Identify the type of electron displacement effect in the following:

(i) $\overset{\delta\delta+}{CH_3} \rightarrow \overset{\delta+}{CH_2} \rightarrow \overset{\delta-}{Cl}$

(ii) $\underset{H}{\overset{H}{>}} C = C \underset{H}{\overset{H}{<}} + H^+ \longrightarrow \underset{H}{\overset{H}{>}} \overset{+}{C} - C \underset{H}{\overset{H}{<}}$

54. Give the principle and the formula involved in the estimation of sulphur by carius method.

55. How to prepare benzene from ethyne?

56. Explain the mechanism of nitration of benzene .