CHEMISTRY

BOOKS - UNITED BOOK HOUSE

HARE SCHOOL QUESTION PAPER

Exercise

1. In the Rutherford's experiment of alpha particles scattering on thin gold foil, in 1911, it was found that only ion α-particle among, 20,000 was deflected through 180°. This was due to

A. direct encounter with the foil

B. envisage the strong repulsive force of the. very high positive field of the nucleus.

C. encounter with free electrons in the foil

D. direct encounter with the tiny weighty nucleus of extremely high density

Answer:

Watch Video Solution

2. Low polarisation and hence electro valency is favoured by which set of cations:

A. Lantharides cations : ce^{3+}, Eu^{2+}

B. Post transition metal cations: Tl^{+}, Pb^{2+}, Bi^{3+}

C. Transition metal cations : Ti^{3+}, V^{3+}, Cr^{2+}, Mn^{2+}, Cu^{+}

D. S-block cations : Na^{+}, K^{+}, Mg^{++}, Ca^{++}

Answer:

Watch Video Solution

3. Three elements, X and Y and Z are present in the third short period and their oxides are ionic, amphoteic and giant molecule respectively. The correct order of atomic number of X, Y and Z is-

A. X,Y,Z

B. X,Z,Y

C. Z,X,Y

D. Y,Z,X

Answer:

Watch Video Solution

4. Consider the two gaseous equilibrium involving SO_2, SO_3 and O_2 and the corresponding equilibrium constants at 298 K are

$SO_2(g) + \frac{1}{2}O_2(g) \rightleftharpoons SO_3(g), K_1 SO_2(g) \rightleftharpoons 2SO_2(g) + O_2(g), K_2$

The vaules of equilibrium constants are related by

A. $K_2 = K_1$

B. $K_2 = K_1^2$

C. $K_2 = \frac{1}{K_1^2}$

D. $K_2 = \frac{1}{K_1}$

Answer:

Watch Video Solution

5. The solubility of mercurous chloride (Hg_2Cl_2) in water will be given by

A. $S = K_S P$

B. $S = (K_S P)/4$

C. $S = \left(k_{SP/4}\right)^{1/2}$

D. $S = \left(K_{SP/4}\right)^{1/3}$

Answer:

Watch Video Solution

6. An amphoteric oxide dissolves in HCl to form a salt. The salt does not impart any characteristic colour to the flame but fumes in moist air. The oxide is-

A. Bao_2

B. MgO

C. BeO

D. CaO

Answer:

Watch Video Solution

7. Which of the following pairs of compounds cannot exist in aqueous solution -

A. NaH_2PO_4 and Na_2HPO_4

B. Na_2CO_3 and $NaHCO_3$

C. $NaOH$ and NaH_2PO_4

D. $NaHCO_3$ and $NaOH$

Answer:

Watch Video Solution

8. The number of possible double bonds in the compound of formula C_3H_4 is:

A. 1

B. 2

C. 0

D. 3

Answer:

Watch Video Solution

9. Which causes nerve signals in animals?

A. Electrical potential gradient to transfer of K^+ ions,

B. Electrical potential gradient due to transfer of Na^+ ions in $\left(Na^+ - K^+\right)$ pumps,

C. Electrical potential gradient set up due to transfer of Ca^{++} ions

D. No nerve signal exists in animals.

Answer:

Watch Video Solution

10. The correct order in which the O-O bond length increases in the following is-

A. $O_3 > H_2O_2 > O_2$

B. $O_2 > H_2O_2 > O_3$

C. $O_2 > O_3 > H_2O_2$

D. $H_2O_2 > O_3 > O_2$

Answer:

Watch Video Solution

11. Which is not quantised?

A. angular momentum of the electron

B. energy absorbed by the substance

C. energy of both the oiribit and the electron in if

D. the distance an electron traversed during its transition in an atom.

Answer:

Watch Video Solution

12. Which of the following has the strongest H-bond?

A. O— H--S

B. S— H--O

C. F—H--F

D. F—H--O

Answer:

Watch Video Solution

13. What volume of CO_2 will be librated at STP if I.2.g of carbon is burnt in excess of oxygen?

Watch Video Solution

14. Which one of the following, if any, contains the greatest number of oxygen atoms? 1.0 g-atoms, 1.0 g O_2 and $1.0gO_3$

Watch Video Solution

15. The vapour density ratio of two gases is $1:3$. What is their ratio of molecular weights?

Watch Video Solution

16. The general electronic configuration of d-block elements is

Watch Video Solution

17. Arrange the following species in their increasing radius : K^+, Cl^-, Ar, S^{2-}.

Watch Video Solution

18. Which element is in diagonal relationship with lithium in periodic table?

Watch Video Solution

19. 16 g of an ideal gas SO_x occupies 5.6 L STP. Calculate the value of X. [S = 32. O = 16]

Watch Video Solution

20. A peroxidase'enzyme isolated from human red blood cells was found to contain 0.29% selenium. What is the minimum molecular of-enzyme? [At wt. of Se = 78.96]

Watch Video Solution

21. A neutral atom contains 2K, 8L, 9M and 2N electrons. Writing its electronic configuration. Calculate total number of S electrons present in the atoms.

Watch Video Solution

22. A neutral atom contains 2K, 8L, 9M and 2N electrons. Writing its electronic configuration. Calculate total number of d-electrons present in the atoms.

Watch Video Solution

23. From the ground state electronic configuration of Sc (z = 21), write down the- possible values of four quantum numbers of 21 th electron of the element.

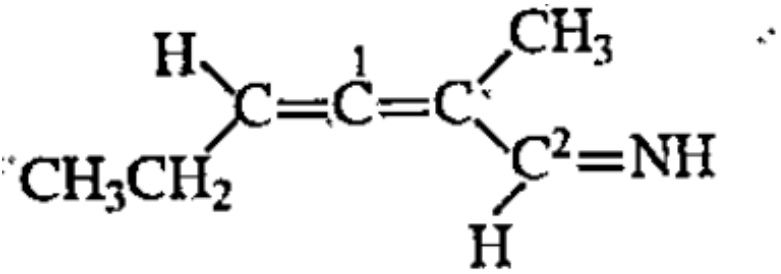
Watch Video Solution

24. What is 'radiationless orbit'? To be radiationaless what is the definite condition has to be satisfied by this orbit?

Watch Video Solution

25. Mention the hybridised state for each carbon atom marked with numerals in the following compound and also mention the rules that

you adopt for each selection

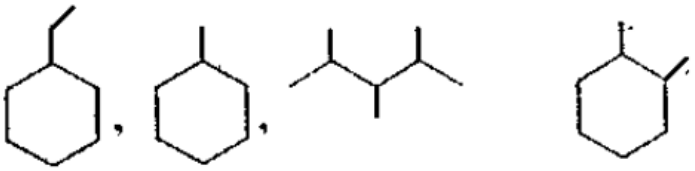


Watch Video Solution

26. Give the structure of neo pentyl chloride with the formula $C_5H_{11}CI$.

Watch Video Solution

27. Select a pair of chain isomers from the following:



Watch Video Solution

28. A macroscopic dust particle of mass 0.01 mg is. moving with a velocity of $100 cm / \sec.$ Calculate its wave length $\left[h = 6.625 \times 10^{-27} erg - \sec.\right]$ will be wave phenomenon like diffraction be observed for the above particle? Justify your answer

Watch Video Solution

29. State the Hund's rule of maximum multiplicity. Wh Fe^{3+} ion is more stable than Fe^{2+} ion?

Watch Video Solution

30. If the outer most electron configurationof an element is $3d^7 4S^2$, then determine the position of the element in the long form of the periodic table.

Watch Video Solution

Watch Video Solution

31. Explain the cause of Lantharide contraction.

Watch Video Solution

32. Arrange the followings in increasing order as directed : C, Be, N, B,O (ionisation potential).

Watch Video Solution

33. Arrange the followings in increasing order as directed : P, F, O, Cs, S (electronegativity).

Watch Video Solution

34. Arrange the followings in increasing order as directed : CI_2O_7, AI_2O_3, P_2O_5, SiO_2, SO_3 (acid strength).

Watch Video Solution

35. Between NH_3 and NF_3, which has higher dipole moment value? Draw the structure -of CIF_3.

Watch Video Solution

36. $PbCl_4$ is less stable than $SnCl_4$ while $PbCl_2$ is more stable than $SnCl_2$. Justify or contradict.

Watch Video Solution

37. Write down three abnormal behavious of lithium.

Watch Video Solution

38. Discuss the principle for the manufacture of sodium carbonate by Solvay process.

Watch Video Solution

39. Explain : Anhydrous magnesium chloride is prepared by heating $MgCl_2.6H_2O$ in a current of dry HCl gas.

Watch Video Solution

40. Arrange the following in order of increasing solubility : $CaSO_4, BeSO_4, MgSO_4, BaSO_4, SrSO_4$.

Watch Video Solution

41. Balance the equation by ion-electron method :

$Zn + NaNO_3 + NaOH \rightarrow Na_2ZnO_2 + NH_3 + H_2O$

Watch Video Solution

42. Balance the equation by oxidation Number method:

$FeS2 + O_2 \rightarrow Fe_2O_3 + SO_2$

Watch Video Solution

43. Establish the relation between K_p and K_C for the reaction. $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$'. What will be the effect of the addition of insert gas on the equilibrium of the above gaseous reaction at constant pressure?.State Le-chatelicr's principle.

Watch Video Solution

44. Calcualte the degree of hydrolysis of a decinormal KCN solution at $25^\circ C$. The dissociation constant of HCN is 7.2×10^{-10} and ionic product of water is 10^{-14}.

Watch Video Solution

45. Calcualte the degree of hydrolysis of a decinormal KCN solution at $25^\circ C$. The dissociation constant of HCN is 7.2×10^{-10} and ionic product of water is 10^{-14}.Find PH value of this solution.

Watch Video Solution

46. What is buffer capacity? When it is maximum? Deduce the value of $pHof10^{-8}$ M HC1 solution with justification.

Watch Video Solution

47. Write down the IUPAC name of the following compounds : $(CH_3)_2CH - NH - C_2H_5$.

Watch Video Solution

48. Write down the IUPAC name of the following compounds: $HC \equiv C - CH = CH - CH_2COOC_2H_5$.

Watch Video Solution

49. Give the structure of the following compounds : allyl vinyl ether.

Watch Video Solution

50. Give the structure of the following compounds :trichloro acetaldehyde.

Watch Video Solution

51. Give all the structural formulae possible for the alkene with formula C_4H_8. Mention the stability order of these alkenes.

Watch Video Solution