CHEMISTRY

BOOKS - VGS PUBLICATION-BRILLIANT

MOST IMPORTANT QUESTIONS

Solid State Short Answer Type Questions

1. Derive Bragg's equation .

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2. Describe the two main types of semiconductors and contrast their conduction mechanism .

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3. Which of the following has both Schottky and Frenkel defects.

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4. Classify each of the following as either a p-type or a n -type semiconductor .

1. Ge doped with In 2 . Si doped with B .

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5. Classify each of the following as either a p-type or a n -type semiconductor .

1. Ge doped with In 2 . Si doped with B .

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6. In terms of band theory , what is the difference between a conductor and a semi-conductor ?

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Solutions Very Short Answer Type Questions

1. Define osmotic pressure.

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2. Define mole fraction.

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3. Define molality, molarity.

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4. State Raoult's law.

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5. State Henry's law.

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6. What are isotonic solutions ?

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7. What is Ebullioscopic constant ?

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8. What is Van't Hoffs factor 'i' and how is it related to $'\alpha'$ in the case of a binary electrolyte (1 : 1) ?

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9. What is relative lowering of vapour pressure ?

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10. Calculate the mole fraction of H_2SO_4 in a solution containing $98\ \%\ H_2SO_4$ by mass.

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Solutions Short Answer Type Questions

1. Define mole fraction.

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2. Calculate the molarity of a solution containing 10g of NaOH in 500 ml of solution.

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3. The vapour pressure of pure Benzene at a certain temperature is 0.850 bar. A non-volatile non-electrolyte solid weighing 0.5 g.when added to 39.0 g of benzene (molar mass 78 g $'mol^{-1}$) vapour pressure is 0.845 bar. What is the molar mass of the solid substance ?

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4. What is relative lowering of vapour pressure ? How is it useful to determine the molar mass of a solute ?

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5. A solution of glucose in water is labelled as $10\,\%$ w/w. What would be the molarity of the solution ?

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6. Calculate the mass of a non-volatile solute (molar mass $40\mathrm{g\,mol^{-1}}$) which should be dissolved in 114g Octane to reduce its vapour pressure to $80\,\%$.

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7. Vapour pressure of of water at 293K is 17.535 mm Hg. Calculate the vapour pressure of the solution at 293K

when 25g of glucose is dissolved in 450g of water ?

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8. If the osmotic pressure of glucose solution is 1.52 bar at 300 K. What would be its concentration if R = 0.083L bar $\mathrm{mol}^{-1}\mathrm{K}^{-1}$?

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9. An aqueous solution of 2% non volatile solute exerts a pressure of 1.004 bar at the normal boiling point of the solvent. What is the molecular mass of the solute ?

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10. Calculate the mole fraction of ethylene glycol $(C_2H_6O_2)$ in a solution containing $20\,\%$ of $C_2H_6O_2$ by mass.

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11. Calculate molality of 2.5 of ethanoic acid (CH_3COOH) in 75g of benzene.

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12. Calculate the molarity of a solution containing 5g of NaOH in 500 mL solution.

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Electrochemistry Chemical Kinetics Electrochemistry Very Short Answer Type Questions

1. What is Nernst equation ? Write the equation for an electrode with electrode reaction $M^{n+}(aq) + \neq^{-} \Leftrightarrow M(s)$.

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2. How is Gibbs energy (G) related to the cell emf (E) mathematically ?

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3. State Kohlrausch's law of independent magration of ions.

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4. State and explain Faraday's laws of electrolysis .

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5. State Faraday's seconed law of electroystis.

Watch Video Solution

6. Give the products obtained at the platinum electrodes (cathode and anode) when aqueous solution of K_2SO_4 is electrolysed.

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7. What is a primary battery ? Give one example.

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8. What is metallie corrosion ? Give one example.

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Electrochemistry Chemical Kinetics Electrochemistry Short Answer Type Questions

1. What are galvanic cells ? Explain the woriking of a galvanic cell with a neat sketch taking Denicell cell as example.

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2. State and explain Kohlrausch's law of indendent migration of ions.

Watch Video Solution

3. State and explain Faraday's laws of electrolysis .

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4. What are primary and secondary batteries ? Give one example for each.

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5. Give the applications of Kohlracsch's law of independent migration of ions.

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6. Give a detailed account of the Collision theory of reaction rates of biomolecular reaction.

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7. What is "molecularity" of a reaction ? How is it different from the 'order' of a reaction? Name one bimolecular and one trimolecular gaseous reactions.

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8. Define order of a reaction. Illustrate your answer with an example.

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9. Define molecularity of a reaction, Illustrate with an example.

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10. What are pseudo first order reactions ? Give one example.

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11. Derive an integrated rate equatin for a first order reaction.

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12. What is Arrhenius equation ? Derive an equation which describes the effect of rise of temperature (T) on the rate constant (k) of a reaction.

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13. Discuss the effect of catalyst on the kinetics of a chemical reaction with a suitable diagram.

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14. Explain the terms with suitable exapmples.

Average rate of a reaction

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15. Explain the terms with suitable exapmples.

Slow and fast reactions

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16. Explain the terms with suitable exapmples.

Order of a reaction

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17. Explain the terms with suitable exapmples.

Molecularity of a reaction

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18. Explain the terms with suitable exapmples.

Activation energy of reaction.

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Chemical Kinetics Very Short Answer Type Questions

1. What is rate law ? Illustrate with an example.

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2. Define order of a reaction. Illustrate your answer with an example.

Watch Video Solution

3. Define molecularity of a reaction, Illustrate with an example.

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4. Give two examples for zero order reaction.

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5. Give the units of rate constants for Zero, first order and second order reactions.

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6. Give two examples for gaseous first order reactions.

Watch Video Solution

7. What are pseudo first order reactions ? Give one example.

Watch Video Solution

8. By how many times the rate constant inhcreases for a rise of reaction temperature by $10^{\circ} C$?

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9. What is the effect of temperature on the rate constant ?

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Surface Chemistry Short Answer Type Questions

1. Give the order of coagulating power of Cl, SO_4^{2-}, PO_4^{3-} in the coagulation of positive sols.

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2. Amongst Na^+, Ba^{2+}, Al^{3+}, which coagulates negative sol readily and why ?

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3. What is an emulsion ? Give two examples.

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4. How emulsions are classified ? Give one example for each type of emulsion.

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5. State Hardy-Schulze rule .

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6. What are different types of adsorption ? Give any four differences between characteristics of these different types.

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7. How can the constants k and n of the Freundlich adsorption equation be calculated ?

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8. What is catalysis ? How is catalysis classified ? Give two examples for each type of catalysis.

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9. Name any six enzyme catalysed reaction.

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10. Explain Tyndall effect and Brownian movement.

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11. What are lyophilic and lyophobic sols ? Give one example for each type.

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12. Describe Bredig's arc method of preparation of colloids with a neat diagram.

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13. Define Gold Number.

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14. Explain Zone refining.

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15. How is alumina separated from silica in the bauxite ore associated with silica? Give equations?

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16. Give examples to differentiate roasting and calcination.

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17. Explain the purification of sulphide ore by Froth Floatation Method.

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18. Outline the principles of refining of metals by the following methods.

zone refining

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19. Outline the principles of refining of metals by the following methods.

Electrolytic refining

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20. Outline the principles of refining of metals by the following methods.

Poling

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21. Outline the principles of refining of metals by the following methods.

(a)Zone refining (b) Electrolytic refining (c) poling (d) Vapour phase refining.

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22. Which of the following reagent is used in the extraction of Aluminium form bauxite ?

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23. Explain the extraction of Zinc form Zinc blende.

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24. Write any two ores with formulae of the following metal :

Aluminium

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25. Write any two ores with formulae of the following metal :

Zinc

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26. Write the names and formulae of any two ores of iron

Watch Video Solution

27. Write any two ores with formulae of the following metal :

Copper

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General Principles Of Metallurgy Very Short Answer Type Questions

1. Explain "Poling".

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2. State the role of silica in the metallurgy of copper.

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3. What is the role of cryolite in the metallurgy of aluminium?

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4. Give the composition of the Brass.

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5. Give the composition of the Bronze.

Watch Video Solution

6. Give the composition of the German silver.

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7. Explain the terms gangue and slag.

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8. Write any two ores with formulae of the following metal :

Aluminium

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9. Write any two ores with formulae of the following metal :

Zinc

Watch Video Solution

10. Write any two ores with formulae of the following metal :

Zinc

Watch Video Solution

11. Write any two ores with formulae of the following metal :

Copper

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12. What is matte? Give its Composition.

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13. What is blister copper? Why is it so called?

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14. Explain magnetic separation of impurities from an ore.

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15. What is flux ? Give an example.

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P Block Elements Very Short Answer Type Questions

1. Nitrogen exists as diatomic molecule and phosphorus as P_4 - Why ?

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2. Nitrogen molecule is highly stable - Why ?

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3. Write the difference between the properties of white phosphorus and red phosphorus.

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4. PH_3 is a weaker base than NH_3 - Explain.

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5. What happens when white phosphorus is heated with conc. NaOH solution in an inert atmosphere of CO_2 ?

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6. Hydrogen bond is

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7. Ammonia is a good complexing agent - Explain with an example.

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8. A mixture of Ca_3P_2 and CaC_2 is used in making Holme's signal - Explain.

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9. Which chemical compound is formed in the brown ring test of nitrate ions ?

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10. NO is paramagnetic in gaseous state but diamagnetic in liquid and solid states - Why ?

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11. Write the oxidation states of phosphorus in solid PCl_5.

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12. H_3PO_3 is diprotic while H_3PO_2 is monoprotic - Why ?

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13. Bond angle in PH_4^+ is higher than that in PH_3. Why ?

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14. Why is H_2O a liquid while H_2S is a gas ?

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15. What is tailing of mercury?

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16. Write the reactions of F_2 and Cl_2 with water.

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17. Explain the reactions of Cl_2 with NaOH.

Watch Video Solution

18. What happens when Cl_2 reacts with dry slaked lime ?

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19. Chlorine acts as an oxidizing agent - explain with two examples.

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20. How is chlorine manufactured by Deacon's method ?

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21. Explain the structure of ClF_3.

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22. Give the oxidation states of halogens in the following :

Cl_2O

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23. Give the oxidation states of halogens in the following :

ClO_2^-

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24. Give the oxidation states of halogens in the following :

$KBrO_3$

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25. Give the oxidation states of halogens in the following :

$NaClO_4$

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26. Iodine is more soluble in KI than in water - Explain.

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27. List out the uses of Neon.

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28. Write the uses of ozone.

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29. In modern diving apparatus, a mixture of He and O_2 is used - Why ?

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30. Scandium is a transition element. But Zinc is not. Why ?

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31. Why Zn^{2+} is diamagnetic whereas Mn^{2+} is paramagnetic ?

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32. Write 'spin only' formula to calculate the magnetic moment of transition metal ions.

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33. Calculate the 'spin only' magnetic moment of Fe_{aq}^{2+} ion.

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34. Aqueous Cu^{2+} ions are blue in colour, where as Aqueous Zn^{2+} ions are colourless. Why ?

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35. Give two reactions in which transition metals or their compounds acts as catalysts.

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36. What is an alloy ? Give example.

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37. What is lanthanoid contraction ? What are the consequences of lanthanoid contraction?

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38. What is Misch metal ? Given its composition and use.

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39. What is a ligand ?

Watch Video Solution

40. What is an ambidentatc ligand ? Give example.

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41. $CuSO_4.5H_2O$ is blue in colour where as anhydrous $CuSO_4$ is colourless. Why?

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P Block Elements Long Answer Type Questions

1. How is ammonia manufactured by Haber's process ? Explain the reactions of ammonia with

$\mathrm{AgCl}_{(s)}$

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2. How is ozone prepared from oxygen ? Explain its reaction with.

C_2H_4

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3. How is ozone prepared from oxygen ? Explain its reaction with

KI

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4. How is ozone prepared from oxygen ? Explain its reaction with

Hg

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5. How is ozone prepared from oxygen ? Explain its reaction with

PbS.

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6. How is ozone prepared from oxygen ? Explain its reaction with

Hg

Watch Video Solution

7. How is ozone prepared from oxygen ? Explain its reaction with.

C_2H_2

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8. How is chlorine obtained in the laboratory ? How does it react with the following ?

cold dil. NaOH

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9. How is chlorine prepared in the laboratory ? How does it react with the following ?

hot, conc. NaOH

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10. How is chlorine prepared by electrolytic method ? Explain its reaction with NH_3 under different conditions.

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11. Which substance is produced by the action of chlorine on dry slaked lime ?

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12. How can you prepare Cl_2 from HCl and HCl from Cl_2 ? Write the reactions.

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13. How are XeF_2 and XeF_4 prepared ? Give their structures.

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14. Explain the structures of

XeF_6

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15. How is chlorine obtained in the laboratory ? How does it react with the following ?

cold dil. NaOH

Watch Video Solution

16. How is chlorine obtained in the laboratory ? How does it react with the following ?

excess NH_3

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17. Write the equation for reaction of ozone with benzene.what will form?

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18. Write the equations for reactions of chlorine with the following.

$Na_2S_2O_3$

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19. How is chlorine prepared in the laboratory ? How does it react with the following ?

H_2S

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20. How is $XeOF_4$ prepared ? Describe its molecular shape.

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21. Explain in detail the manufacture of sulphuric acid by contact process.

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22. Explain the structure of XeO_3.

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23. How is nitric acid manufactured by Ostwald's process ?

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24. How is nitric acid manufactured by Ostwald's process ? How does it react with the following ?

Zn

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25. How is nitric acid manufactured by Ostwald's process ? How does it react with the following ?

S_8

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26. How is nitric acid manufactured by Ostwald's process ? How does it react with the following ?

P_4

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D And F Block Elements Coordination Compounds Short Answer Type Questions

1. Write the nitration reaction of aniline?

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2. What is lanthanoid contraction ? What are the consequences of lanthanoid contraction?

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3. Using IUPAC norms write the formulas for the Tetrahydroxozincate (II)

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4. Using IUPAC norms write the formulas for the Hexaamminecobalt (III) sulphate

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5. Using IUPAC norms write the formulas for the Potassium tetrachloropalladate (II)

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6. Write the formulas for the follow co-ordination compounds

Potassium trioxalatoaluminate (III)

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7. Using IUPAC norms write the systematic names of the $\left[Co(NH_3)_6\right]Cl_3$

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8. Using IUPAC norms write the systematic names of the $\left[Pt(NH_3)_2Cl(NH_2CH_3)\right]Cl$

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9. Using IUPAC norms write the systematic names of the $\left[Ti(H_2O)_6\right]^{3+}$

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10. Using IUPAC norms, write the systematic names of the $\left[NiCl_4\right]^{-2}$

Watch Video Solution

11. Using IUPAC norms, write the systematic names of the $\left[Fe(CN)_6\right]^{-4}$

Watch Video Solution

12. Using IUPAC norms, write the systematic names of the $[NiCl_4]^{-2}$

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13. What do you understand about geometrical isomerism? Explain the geometrical isomers of 2 - butene .

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14. Calculate the magnetic moment of a divalent ion in aqueous solution if its atomic number is 25

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15. Write the characteristic properties of transition elements.

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16. What is meant by chelate effect ? Give example.

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17. Explain different types of co-factors.

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Polymers Very Short Answer Type Questions

1. What is Ziegler-Natta catalyst ?

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2. What are the repeating monomeric units of Nylon 6 and Nylon 6,6 ?

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3. What is PDI (Poly Dispersity Index) ?

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4. What is vulcanization of rubber ?

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5. What is biodegradable polymer ? Give one example of a biodegradable polyesster ?

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6. What is PHBV ? How is it useful to man ?

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7. What are anomers ?

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8. What do you mean by essential amino acids ? Give two examples for non essential amino acids ?

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9. What is zwitter ion ? Give an example.

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10. Why are vitamin A and vitamin C essential to us ? Give their important sources.

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Polymers Short Answer Type Questions

1. Write the name and structure of the monomers used for getting the following polymer

Polyvinyl chloride

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2. Write the name and structure of the monomers used for getting the following polymer

Teflon

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3. Write the name and structure of the monomers used for getting the following polymer

Bakelite

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4. Write the name and structure of the monomers used for getting the following polymer

Polystyrene

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5. The monomers of Buna -S rubber are

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6. Write the structure of the following polymer.

Buna-N

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7. Which of the following organic compounds polymerizes to form the polyster Dacron ?

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8. Write the name and structure of the monomers of the following polymer.

Neoprene

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9. what are the different types of molecular masses of polymers.

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10. write the differences between natural polymer and synthetic polymer?

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11. Which organs produce protien hormones?

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12. Explain the classification of polymers based on the mode of polymerization and natural of molecular forces.

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Biomolecules Short Answer Type Questions

1. What are Hormones ? Give one example for each.

i) Steroid Hormones

ii) Polypeptide Hormones

iii) Amino Acid derivatives.

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2. What are hormones? how many types of hormones are there?

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3. What are Hormones ? Give one example for each.

i) Steroid Hormones

ii) Polypeptide Hormones

iii) Amino Acid derivatives.

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4. Give the sources of the following vitamin and name the diseases caused by their deficiency (a) A (b) D (c) E and (d) K

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5. Give the sources of the following vitamin and name the diseases caused by their deficiency (a) A (b) D (c) E and (d) K

Watch Video Solution

6. Give the sources of the following vitamin and name the diseases caused by their deficiency (a) A (b) D (c) E and (d) K

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7. Give the sources of the following vitamin and name the diseases caused by their deficiency (a) A (b) D (c) E and (d) K

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8. Explain the denaturation of proteins.

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9. Write notes on vitamins.

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Chemistry In Everyday Life Very Short Answer Type Questions

1. What are antacids?Give example.

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2. What are antihistamines?Give example.

Watch Video Solution

3. What are tranquillizers?Give example.

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4. What are analgesics ? How are they classified ?

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5. What are antibiotics. Give examples.

Watch Video Solution

6. What are antiseptics ? Give examples.

Watch Video Solution

7. What are food preservatives ? Give examples.

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8. What is tincture of iodine?What is its use?

Watch Video Solution

9. What are artificail sweerening agents?Give example.

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10. What is the difference between a soap and a syntheic detergent?

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Chemistry In Everyday Life Short Answer Type Questions

1. What are analgesics ? How are they classified ?

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2. Write notes on antispeptics and sisinfectants.

Watch Video Solution

3. What are broad spectrum and narrow spectrum antibiotics?Give one example for each .

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4. What are food preservatives ? Give examples.

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5. What are antimicrobials?

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Organic Chemistry Very Short Answer Type Questions

1. What is the stereochemical result of S_N^1 and S_N^2 reactions ?

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2. What are Enantiomers ?

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3. What is Tollens reagent. explain its reaction with acetaldehyde?

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4. Which of the following compounds cannot be used as solvent in Friedel-Crafts reaction ?

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5. Which product of the following reactions falis to give carbyl amine test?

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6. Arrange the following in the decreasing order of basic strength

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Organic Chemistry Short Answer Type Questions

1. Explain Wurtz - Fitting reaction

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2. Explain Wurtz - Fitting reaction

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3. Explain Fittig reaction .

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4. Explain Wurtz reaction with one example.

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5. Explain the Grignard reagents preparation and application with suitable example.

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6. Define Racemic mixture

Watch Video Solution

7. Define Retention of configuration

Watch Video Solution

8. Define Enantiomers .

Watch Video Solution

9. Explain SN^1 reaction

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10. Give the equations for the preparation of phenol from Cumene.

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11. Explain the acidic nature of phenols and compare with that of alcohols.

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12. Write the equations for the preparation of phenol using benzene, conc. H_2SO_4 and NaOH.

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13. With a suitable example write equations for the Kolbe's reaction.

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14. With a suitable example write equations for the Reimer-Tiemann reaction.

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15. With a suitable example write equations for the Williamson's ether synthesis

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16. Write the reaction showing α-halogenation of carboxylic acid and give its name .

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17. Write the mechanism of esterification .

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18. What is Tollens reagent ? Explain its reaction with Aldehydes.

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19. Write the equations of any aldehyde with Fehlings reagent.

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20. Discuss aldol condensation.

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21. Describe the Cross aldol condensation .

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22. Describe the Decarboxylation.

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23. How do you distinguish the Propanal and propanone pairs of compound .

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24. How do you distinguish acetophenone and benzophenone ?

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25. How do you distinguish the Phenol and benzoic acid pairs of compound .

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26. How do you distinguish the Pentan-2-one and pentan-3-one pairs of compound .

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27. Describe the Acetylation .

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28. Describe the Cannizaro reaction

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29. Why aniline does not undergo Friedel - Crafts reaction ?

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30. Arrange the following bases in decreasing order of pK_b values.

$C_2H_5NH_2, C_6H_5NHCH_3, (C_2H_5)_2NH$ and $C_6H_5NH_2$

.

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31. Identify C in the following reaction :

$$C_2H_2 \xrightarrow{\text{Chromic acid}} A \xrightarrow{NH_3} B \xrightarrow[-H_2O]{\Delta} C$$

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32. Benzoic acid to benzaldehyde

Watch Video Solution

33. Complete the following conversions : Aniline to Benzene

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34. Compare the basicity of the following in gaseous and in a queous state and arrange them in increasing order of basicity.

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35. How do you prepare Ethyl cyanide and Ethyl isocyanide from a common alkylhalide ?

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36. Write the equations showing the conversion of aniline diazoniumchloride to

a) chlorobenzene, b) Iodobenzene and c) Bromobenzene

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37. Write the equations showing the conversion of aniline diazoniumchloride to

a) chlorobenzene, b) Iodobenzene and c) Bromobenzene

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38. Write the equations showing the conversion of aniline diazoniumchloride to

a) chlorobenzene, b) Iodobenzene and c) Bromobenzene

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39. Complete the following conversions :

Aniline to tribromoaniline

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40. Complete the following conversions : Aniline to Cyanobenzene

Watch Video Solution

41. Complete the following conversions : Aniline to Benzene

Watch Video Solution

42. Complete the following conversions : Aniline to Phenol

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43. Explain why the dipole moment of chlorobenzene is lower than that of cyclohexychloride .

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44. How do you convert aniline to parabromo aniline.

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45. Write the chemical reaction of aniline with benzoyl chloride and write the name of the product obtained.

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46. Explain the following name reactions :

Sandmeyer reaction

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47. Explain the following name reactions :

Gatterman reaction

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48. Write the isomers of the compound having molecular formula C_4H_9Br .

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Organic Chemistry Long Answer Type Questions

1. Explain Wurtz - Fitting reaction

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2. (A) : Aniline does not undergo Friedal-Crafts reaction

(R): $-NH_2$ group of aniline reacts with $AICI_3$,

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3. Williamson synthesis is an example of

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4. Write the equations involved in the following reactions:

(i) Reimer - Tiemann reaction (ii) Kolbe's reaction

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5. Name reactions :

Carbylamine reaction.

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6. Diazotisation means the conversion of

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7. Describe the Cannizaro reaction

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8. Aldol condensation product of the aldehyde Hexan-1,6-dial

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9. What is Sand Meyer reaction?

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10. Explain the acidic nature of phenols and compare with that of alcohols.

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11. With a suitable example write equations for the Kolbe's reaction.

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