



CHEMISTRY

BOOKS - VGS PUBLICATION-BRILLIANT

**FINAL TOUCH (MOST IMPORTANT
QUESTIONS)**

Atomic Structure Long Answer Type Questions

1. What are the postulates of Bohr's model of hydrogen atom?



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2. What are the postulates of Bohr's model of hydrogen atom ? Discuss the importance of this model to explain various series of line spectra in hydrogen atom.



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3. What are quantum numbers? Explain the significance of various types of quantum

numbers.



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Classification Of Elements And Periodicity In Properties Long Answer Type Questions

1. How many following properties varies in a group and in a period ?

- (a) Atomic radius (b) Ionisation enthalpy
- (c) Electronegativity (d) Electron gain enthalpy





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2. What is a periodic property? How the following properties vary in a group and in a period? Explain

(a) IP.



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3. How many following properties varies in a group and in a period ?

(a) Atomic radius

(b) Ionisation enthalpy

(c) Electronegativity

(d) Electron gain

enthalpy



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4. What is a periodic property? How the following properties vary in a group and in a period? Explain

(b) Electron gain enthalpy.



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5. Define IE_1 and IE_2 . Why is $IE_2 > IE_1$ for a given atom? Discuss the factors than effect IE of an element.



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6. How are the elements divided into s, p, d and f – blocks in the Modern periodic table ?



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Chemical Bonding And Molecular Structure Short Answer Type Questions

1. Explain the hybridization involved in PCl_5 molecule.



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2. Explain the hybridisation involved is SF_6 .



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3. What is Hybridization ? Explain the structure of CH_4 on the basis of Hybridization.



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4. What is Hydrogen bond ? How many types ?
Give one example each .



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5. Explain different types of hydrogen bonds with examples.



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6. Define dipole moment. Give the mathematical expression of dipole moment



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7. Define the dipole moment. Why the BF_3 molecule dipole moment is zero?



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8. State Fajan's rules, and give suitable examples.



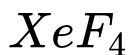
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9. Explain the formation of Coordinate Covalent bond with one example.



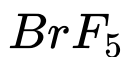
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10. How do you predict the shapes of the following molecules making use of VSEPR theory ?



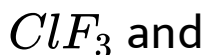
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11. How do you predict the shapes of the following molecules making use of VSEPR theory?



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12. How do you predict the shapes of the following molecules making use of VSEPR theory?



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13. Predict the shapes of the H_2O molecules making use of valence shell electron pair repulsion theory (VSEPR).



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14. Explain the factors favourable for the formation of Ionic Compounds.



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15. What is hybridization? Explain sp , sp^2 and sp^3 hybridizations with one example each .



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16. Define Dipolemoment. Write its applications.



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Chemical Bonding And Molecular Structure Long Answer Type Questions

1. What do you understand by Hybridisation ?

Explain different types of hybridisation involving s and p orbitals.



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2. What is hybridization? Explain sp , sp^2 and sp^3 hybridizations with one example each .



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States Of Matter Gases And Liquids Very Short Answer Type Questions

1. State Graham's law of diffusion.



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2. Which of the gases diffuses faster among N_2 , O_2 and CH_4 ? Why?



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3. How many times methane diffuses faster than sulphur dioxide?



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4. State Dalton's law of partial pressures.



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5. What is Boltzman's constant? Give its value.



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6. Given the ratio of RMS, average and most probable speeds of gas molecules.



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7. What is surface tension?



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8. What is coefficient of viscosity? Give its units.



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9. Calculate kinetic energy of 5 moles of Nitrogen at $27^{\circ}C$.



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10. Calculate kinetic energy (in SI units) of 4g. Of methane at $-73^{\circ}C$.



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11. Calculate the ratio of kinetic energies of 3g of hydrogen and 4g of oxygen at an given temperature.



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States Of Matter Gases And Liquids Short Answer Type Questions

1. Write the postulates of kinetic molecular theory of gases .



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2. Deduce Boyle's law from kinetic gas equation.



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3. Deduce Charle's kaw from kinetic gas equation.



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4. Deduce Graham's law from kinetic gas equation.



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5. Deduce Dalton's from kinetic gas equation.



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6. State and explain Dalton's law of partial pressures.



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7. State and explain Graham's law of Diffusion.



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8. Derive ideal gas equation.



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9. Given the ratio of RMS, average and most probable speeds of gas molecules.



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10. What is surface tension of liquids? Explain the affect of temperature on the surface

tension of liquids.



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11. Define viscosity and coefficient of viscosity.

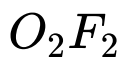
How does the viscosity of liquids varies with temperature.



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Stoichiometry Very Short Answer Type Questions

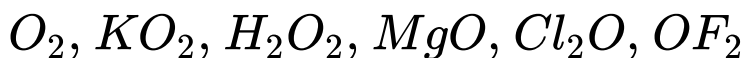
1. Calculate the oxidation no. of oxygen in



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2. Calculate the oxidation number of oxygen in

the following:



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3. How many number of moles of glucose are present in 540 gms of glucose ?



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4. Calculate the weight of 0.1 mole of sodium carbonate.



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5. The empirical formula of a compound is CH_2O . Its molecular weight is 90. Calculate the molecular formula of the compound.



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6. What do you mean by significant figures?



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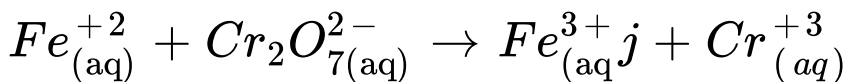
7. What are disproportionate reactions? Give example.



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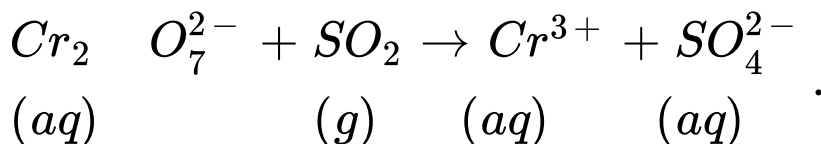
Stoichiometry Short Answer Type Questions

1. Balance the following equation in acid medium by Ion-electron method :



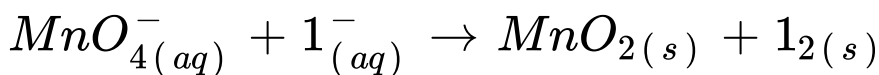
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2. Balance the following Redox reaction by ion-electron method in acidic medium.



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3. Balance the following redox reaction in basic medium by ion-electron method :



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4. A carbon compound contains 12.8% Carbon, 2.1% Hydrogen, 85.1% Bromine. The molecular weight of the compound is 187.9. Calculate the molecular formula.



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5. A compound contains 4.07% hydrogen, 24.27% carbon and 71.65% chlorine. Its molar mass is 98.96 g. What are its empirical and molecular formulas ?



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Thermodynamics Very Short Answer Type Questions

1. Define a system. Give an example.



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2. State the first law of thermodynamics.



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3. What are the ' ΔH ' sign conventions for exothermic and endothermic reactions?



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4. What are intensive and extensive properties?



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5. The equilibrium constant for a reaction is 10.

What will be the value of ΔG ?

$$R = 8.314JK^{-1}mol^{-1}, T = 300K.$$



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6. State the third law of thermodynamics.



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7. State and explain Hess law. Write its important applications



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8. Write the uses of Hess law.



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9. What are open, closed and isolated systems ? Give one example for each.



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Thermodynamics Short Answer Type Questions

1. State and explain the Hess's law of constant heat summation.



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Chemical Equilibrium And Acids Bases Very Short Answer Type Questions

1. What is homogeneous equilibrium? Write two homogeneous reactions.



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2. What is homogeneous equilibrium? Write two homogeneous reactions.



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3. What is heterogenous equilibrium?

Write two heterogeneous reactions.



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4. What is heterogenous equilibrium?

Write two heterogeneous reactions.



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5. Define Basicity of acid and acidity of base.



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6. Under what conditions for a reaction K_p and K_c are numerically equal?



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7. Give two chemical equilibrium reactions for which $K_p = K_c$



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8. What is the effect of pressure on gaseous chemical equilibrium?



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9. What is a Bronsted base? Give one example.



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10. What is Lewis acid? Give one example.



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11. What is meant by ionic product of water?



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12. What is the value of K_w ? What are its units?



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13. What is the effect of temperature on ionic product of water?



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14. What are buffer solutions ? Give examples.



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15. What is conjugate acid-base pair ? Give examples.



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16. The species H_2O , HCO_3^- , HSO_4^- and NH_3 can act both as Bronsted acids and base. Give the corresponding conjugate acid and base for each of them.



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17. Classify the species $AlCl_3$, NY_3 , Mg^{+2} and H_2O into Lewis acids and Lewis bases and

justify your answer?



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18. Define ionic product of water. What is the value at room temperature?



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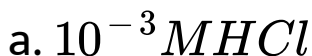
19. Mole of PCl_5 is heated in a closed vessel of 1 litre capacity. At equilibrium 0.4 moles of

chlorine is found. Calculate the equilibrium constant.



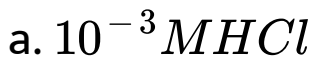
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20. Calculate pH of



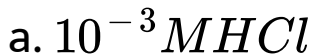
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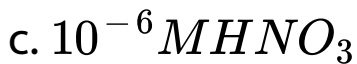
21. Calculate pH of



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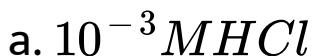
22. Calculate pH of





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23. Calculate pH of



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24. The pH of a solution is 3.6. Calculate H_3O^+ ion concentration.



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25. The pH of a solution is 8.6. Calculate the OH^- ion concentration

$$pH = 8.6$$

$$pOH = 5.4$$

$$-\log[OH^-] = 5.4$$

$$[OH^-] = 10^{-5.4} = 10^{-6} \times 10^{0.6} = 10^{-6} \times \text{antilog } 0.6$$

0.6

$$[OH^-] = 3.98 \times 10^{-6}$$



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26. What is the pH of $10^{-H} MCl$?



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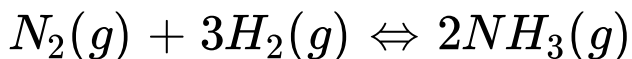
27. 2g of $NaOH$ is dissolved in water to give 1 litre solution. What is the pH of the solution?



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Chemical Equilibrium And Acids Bases Short Answer Type Questions

1. Derive the relation between K_p and K_c for the equilibrium reaction.



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2. Discuss the application of LE Chatellier's principle for the industrial synthesis of Ammonia and sulphur trioxide.



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3. Discuss the application of LE Chatellier's principle for the industrial synthesis of Ammonia and sulphur trioxide.



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4. Explain the concept of Bronsted acids and Bronsted bases. Illustrate the answer with suitable examples.



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5. Explain Lewis acid base theory with suitable example. Classify the following species into Lewis acids and Lewis bases and show how these act as Lewis acid/base.

a. OH^- b. F^- c. H^+ d. BCl_3



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6. Calculate the pH of the following basic solutions

a. $[OH^-] = 0.05M$ b.

$[OH^-] = 2 \times 10^{-4}M$



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7. Calculate the pH of the following basic solutions

a. $[OH^-] = 0.05M$

b.

$$[OH^-] = 2 \times 10^{-4}M$$



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8. Describe the process of salt hydrolysis and discuss the hydrolysis constant.



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9. Jagadeesh: How can we predict the nature of a salt, sodium acetate (CH_3COONa)?

Leela: Explained the doubt of Jagadeesh by asking some questions. Here their conversation is given in incomplete sentence.

Frame the questions and fill in it.

4) Leela :

Jagadeesh : Here, the acid



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10. Write the nature of the following salt solutions.



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11. Write the nature of the following salt solutions.



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Hydrogen And Its Compounds Short Answer Type Questions

1. Write a few lines on the utility of hydrogen as a fuel.



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2. Explain the terms hard water and soft water.

Write a note on the

(i) Ion - exchange method.



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3. Explain the terms hard water and soft water.

Write a note on the

(i) Ion - exchange method.



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4. Explain the terms hard water and soft water.

Write a note on the

(ii) Calgon method for the removal of hardness of water.



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5. Write two oxidizing and two reducing properties of H_2O_2 .



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6. Write in brief on

(i) ionic hydrides



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7. Write in brief on

(ii) interstitial hydrides.



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8. Explain, with suitable examples, the following:

(i) Electron-deficient.



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9. Explain with suitable examples, the following:

electron precise and electron - rich hydrides.



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10. Write four reducing properties of hydrogen peroxide.



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11. Explain the structure of Hydrogen peroxide molecule.



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S Block Elements Very Short Answer Type Questions

1. Lithium salts are mostly hydrated . Why ?



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2. Lithium react with water less vigorously than sodium. Give your reason.



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3. What happens when magnesium metal is burnt in air?



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4. Why is gypsum added to cement?



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5. Why are alkali metals not found in the free state in nature?



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6. Potassium carbonate cannot be prepared by Solvey process. Why?



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7. Describe the important uses of caustic soda.



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8. Mention some uses of sodium carbonate.



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9. Describe the important uses of quick lime.



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10. Write the chemical composition of plaster of Paris. Write its importance



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11. Give an account of the biological importance of Na^+ and K^+ ions.



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12. Which of the alkali metals shows abnormal density ? What is the order of the variation of density among the IA group elements ?



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S Block Elements Short Answer Type Questions

1. What is Plaster of Paris? Write a short note on it.



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2. Explain the significance of sodium , potassium, magnesium and calcium in biological fluids.



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P Block Elements Very Short Answer Type Questions

1. Explain inert pair effect.



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2. Give the formula of borazine . What is its common name ?



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3. Graphite is a good conductor. Explain.



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4. Why is diamond hard ?



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5. What are silicons ? How are they prepared ?

Give one example. What are their uses ?



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6. What synthetic gas.



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7. Why is CO gas poisonous.



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8. Give reasons

Conc. HNO_3 can be transported in aluminium container.



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9. Name any two man-made silicates.



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10. What is allotropy ? Give the crystalline allotropes of carbon.



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11. How does graphite function as a lubricant ?



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12. What is producer gas.



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13. Write the use of ZSM-5.



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14. What is the use of dry ice ?



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15. How is water gas prepared ?



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16. Give the use of CO_2 in photosynthesis.



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17. How is producer gas prepared ?



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18. Producer gas is less efficient fuel than water gas - explain.



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19. SiF_6^{2-} is known while $SiCl_6^{2-}$ is not - explain.



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P Block Elements Short Answer Type Questions

1. Explain the structure of diborane.



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2. Explain borax bead test with a suitable example



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3. How is diborane prepared ? Explain its structure .





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4. How does diborane react with CO ?



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5. Write any two methods of preparation of diborane. How does it react with Ammonia .



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6. Give reasons

Conc. HNO_3 can be transported in aluminium container.



[Watch Video Solution](#)

7. Give reasons

A mixture of dil. NaOH and aluminium pieces in used to open drain.



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8. Give reasons

Aluminium alloys are used to make aircraft body



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9. Explain the differences in properties of diamond and graphite on the basis of their structures.



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10. What do you understand by

Allotropy



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11. What do you understand by

Inert pair effect



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12. What do you understand by

Catenation



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13. Diamond is hard. This is due to



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Environmental Chemistry Very Short Answer Type Questions

1. What is Chemical Oxygen Demand (COD) ?



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2. What is Biochemical Oxygen Demand (BOD)

?



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3. Green house effect is caused by.....and.....gases.



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4. Which oxides cause acid rain ? And what is its pH value?



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5. Name two adverse effects caused by acid rains.



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6. Name the common components of photochemical smog.



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7. What is PAN ? What effect is caused by it ?



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8. What agrochemicals are responsible for water pollution ?



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9. Name three industrial chemicals that pollute water.



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10. What agrochemicals are responsible for water pollution ?



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Organic Chemistry Very Short Answer Type Questions

1. Write the reagents required for conversion of benzene to methyl benzene.



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2. How is nitrobenzene prepared?



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3. Write the conformations of ethane.



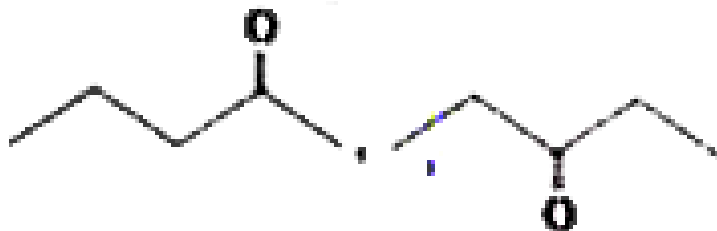
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4. Write the IUPAC names of



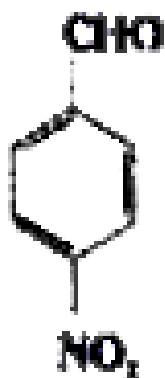
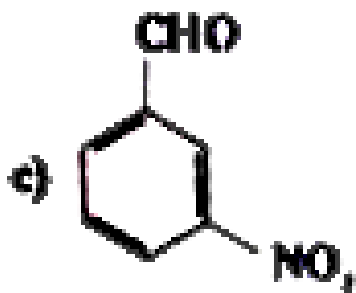
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5. Write the IUPAC names of:



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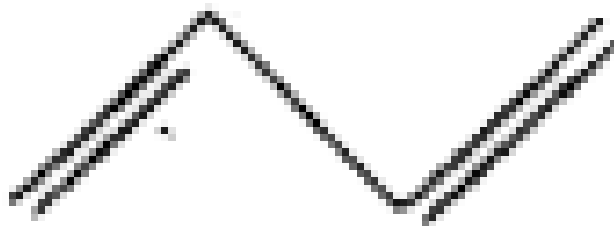
6. Write the IUPAC names of:





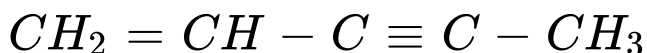
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7. Write the IUPAC names



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8. Write IUPAC names of the following compounds.





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9. Given two examples each for position and functional isomerism.



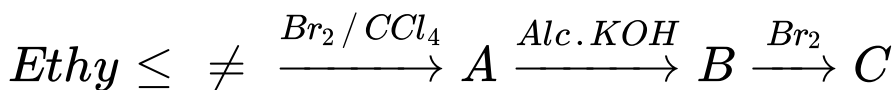
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10. What is the product formed when sodium proplonate is heated with soda lime?



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11. Name the product A,B and C formed in the following reactions. Give the equations for the reactions.



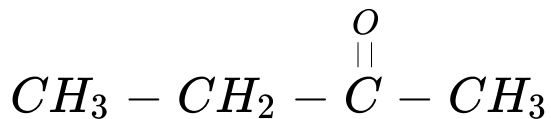
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12. Write the IUPAC names of



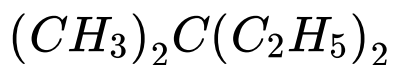
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13. Write the IUPAC names



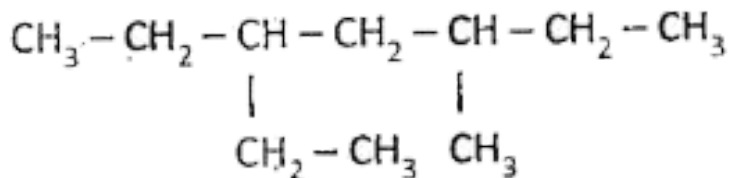
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14. Write the IUPAC names of the following compounds.



Watch Video Solution

15. Write the IUPAC names of the following compounds.

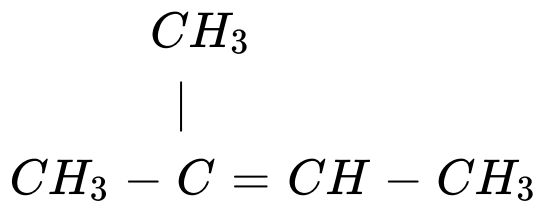


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16. IUPAC name of $\text{CH}_2 = \text{CH} - \text{CH} = \text{CH}_2$ is

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17. Write IUPAC names of the following structures :



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Organic Chemistry Short Answer Type Questions

1. Describe two methods of preparation of ethane. Given any three reactions of ethane.



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2. Mention any five chemical properties of alkanes.



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3. Describe any two methods of preparation of ethylene. Give the equations for the reactions of ethylene with :



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4. Give equation for the oxidation reactions of ethylene with cold, dilute alkaline $KMnO_4$.



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5. Write any two methods of preparation of ethylene . How does it reacts with following ?

(a) Cold , dil.alk. $KMnO_4$

(b) Br_2 / CCl_4



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6. Describe any two methods of preparation of ethylene. How does ethylene react with the following? Give equations.

(a) Hydrogen,

(b) Chlorine,

(c) Hydrogen bromide,

(d) Water and

(e) Oxygen in presence of Ag at $200^{\circ}C$



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7. Given two methods of preparation of acetylene. How does it react with water and Ozone?



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8. How does acetylene react with the Acetic acid ? Give corresponding equations.



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9. How does acetylene react with the following reagents? Give the corresponding equations and name the product formed in the reactions?

Water



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10. How does acetylene react with the Hydrogen ? Give corresponding equations.



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11. How does acetylene react with the following reagents? Give the corresponding equations and name the product formed in the reactions?

Halogens



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12. How does acetylene react with the following reagents? Give the corresponding equations and name the product formed in

the reactions?

Hydrogen halide



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13. How does acetylene react with the following reagents? Give the corresponding equations and name the product formed in the reactions?

Ammonical $AgNO_3$ and Cu_2Cl_2



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14. How do we get benzene from acetylene?

Give the corresponding equation. Explain the halogenation, alkylation, acylation, nitration and sulphonation of benzene.



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