



CHEMISTRY

BOOKS - VGS PUBLICATION-BRILLIANT

MODEL PAPER 1

Section A

1. Name the major particulate pollutants present in Troposphere.



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2. Why is KO_2 paramagnetic?



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3. What are open, closed and isolated systems ?

Give one example for each.



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



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



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6. Describe the important uses of quick lime.



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7. Lechatelier's principle is





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8. Define (a) mole fraction, (b) molality (c) molarity and (d) normality. Write their units.



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



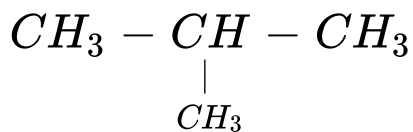
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10. Write IUPAC names of the following compounds:



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11. Write IUPAC names of the following compounds:



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Section B

1. Define sp^2 Hybridisation. Explain the structure of Ethylene (C_2H_4).



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



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3. How does diborane react with CO ?



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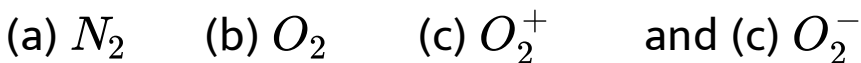
4. How does Diborane react with the following:



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5. What is meant by the term Bond order?

Calculate the bond orders in the following.





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6. What is meant by the term Bond order?

Calculate the bond orders in the following.

(a) N_2 (b) O_2 (c) O_2^+ and (d) O_2^-



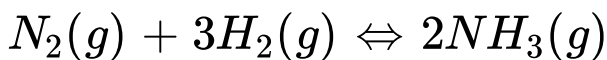
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7. A carbon compound contains 12.8% Carbon, 2.1% Hydrogen, 85.1% Bromine. The molecular weight of the compound is 187.9. Calculate the molecular formula.



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



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



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



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11. Diamond has high melting point - Explain.



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Section C

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



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2. 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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3. Describe any two methods of preparation of benzene with corresponding equations. Benzene does not behave like an alkene, why? How do we methyl benzene from benzene?



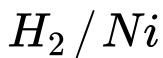
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4. How benzene reacts with the following



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5. How benzene reacts with the following



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Section A

1. Define sink and receptor.



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2. Milk is



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3. What is Lewis acid? Give one example.



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4. Write any two important uses of caustic soda.



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



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6. What are silicones ?



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7. What is the oxidation number of manganese in $KMnO_4$?



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8. Give examples and explain what is meant by external fertilisation?



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9. A and B are the compounds of carbon. A on passing over red hot coke is converted to B. A and B respectively are



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10. Depletion of ozone layer cause



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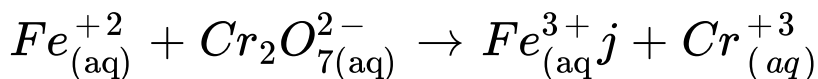
Section B

1. Deduce (a) Graham's law and (b) Daltons law from Kinetic gas equation.



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2. Balance the following equation in acid medium by ion-electron method :



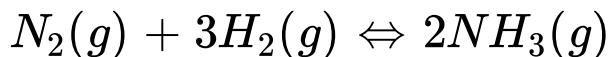
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3. State and explain the Hess's law of constant heat summation.



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



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5. What causes the temporary and permanent hardness of water?



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6. Define sp^2 Hybridisation. Explain the structure of Ethylene (C_2H_4).



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



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8. Explain the structure of diborane.



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Section C

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



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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. Write any two methods for preparation of benzene.



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Section A

1. What are S.T.P conditions?



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



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3. What are the sign conventions of the work done on the system and work done by the system?



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



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5. No work is done on the system, but heat (q) is taken out from the system by the surroundings.

What type of wall does the system have?



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6. Work is done by the system and heat (q) is supplied to the system. What type of system would it be?



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7. All Lewis acids are not Bronsted acids. Why?



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8. SiO_2 is a solid while CO_2 is a gas - explain.



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9. What happens when the following are heated

?

$CaCO_3$ and SiO_2



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10. Which oxides cause acid rain ?



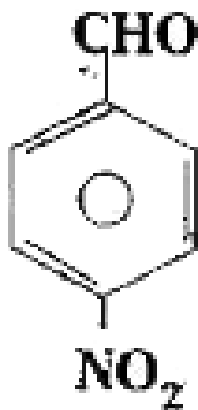
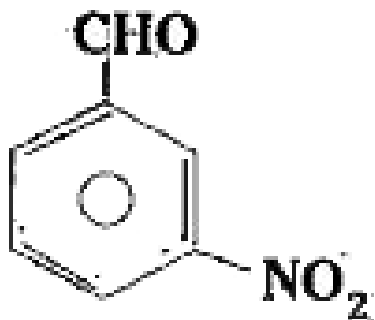
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11. Name the green house gases.



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12. Write the IUPAC names of :



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



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



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15. What are intensive and extensive properties?



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16. Give the equation that gives the relationship between ΔU and ΔH .



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17. Ice melts slowly at high altitudes. Explain Why?



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18. What is 'synthesis gas' ?



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19. What is 'producer gas' ?



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20. What happen when

CO_2 is passed through slaked lime



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21. What is Chemical Oxygen Demand (COD) ?

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22. What is Biochemical Oxygen Demand (BOD) ?



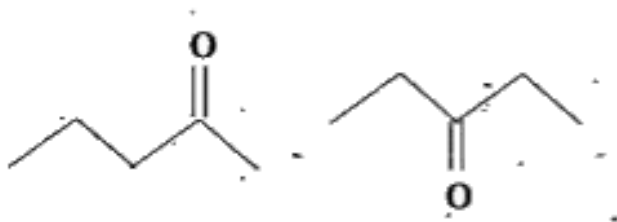
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23. What is PAN ? What effect is caused by it ?



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24. Write the IUPAC names of: -



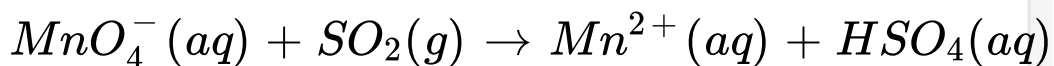
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Section B

1. Deduce (a) Boyle's law and (b) Charles law from Kinetic gas equation.

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2. Balance the following redox reactions by ion-electron method :



(in acidic solution)



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3. Which buffer solution has maximum pH?



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4. Discuss the principle and the method of softening of hard water by synthetic, ionexchange resins.



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



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6. Explain borax bead test with a suitable example



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7. Explain the following :

b) Thin layer chromatography



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8. In paper chromatography



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9. What is dehydrogenation? Write the equation for the formation of alkene from alkyl halide.



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



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



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13. The reactants in the industrial method of preparation of diborane are



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14. Write a few lines about cement.



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15. Explain the structure of diborane.



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16. What is substitution reaction? Explain any two substitution reactions of benzene.



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17. Explain cryatallization and sublimation phenomena which are used in the purification of organic compounds.



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Section C

1. Write a short notes on Fluorine



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2. Given the outer electronic configuration of s,p,d and f-block elements.



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3. What do you understand by Hybridisation ?

Explain different types of hybridisation involving s and p orbitals.



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4. 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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5. Explain the construction of periods in Modern periodic table.



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



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7. Explain the formation of Ionic Bond with a suitable example.



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