

CHEMISTRY

BOOKS - FULL MARKS CHEMISTRY (TAMIL ENGLISH)

SAMPLE PAPER 09 (SOLVED)

Part I

1. When 6.3 g of sodium bicarbonate is added to 30 g of acetic acid solution, the residual

solution is found to weigh 33 g. The number of moles of carbon dioxide released in the reaction is

A. 3

B. 0.75

C. 0.075

D. 0.3

Answer: C



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2. Two electrons occupying the same orbital are distinguished by

A. azimuthal quantum number

B. spin quantum number

C. magnetic quantum number

D. orbital quantum number

Answer: B



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3. Statement - I: Ionization enthalpy of N is greater than that of O.

Statement - II: N has exactly half filled electronic configuration which is more stable than electronic configuration of O.

A. Statement - I is wrong but statement - II is correct

B. Statement - I is correct but statement - II is wrong

C. Statement - I and II are correct and statement - II is the correct explanation of statement - I.

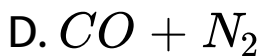
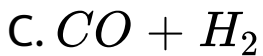
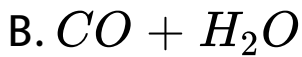
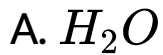
D. Statement - I and II are correct but statement - II is not the correct explanation of statement - I.

Answer: C



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4. Water gas is

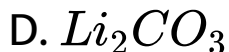
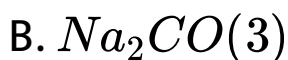
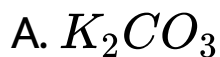


Answer: C



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5. Among the following the least thermally stable is



Answer: D



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6. C(diamond) \rightarrow C(graphite),

$\partial haH = -ve$, this indicates that

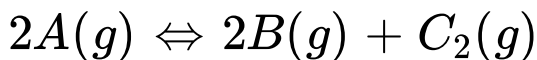
- A. graphite is more stable than diamond
- B. graphite has more energy than diamond
- C. both are equally stable
- D. stability cannot be predicted

Answer: A



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7. In the equilibrium,



the equilibrium concentration of A, B and C_2

at 400 K are

$1 \times 10^{-4}M$, $2.0 \times 10^{-3}M$, $1.5 \times 10^{-4}M$

respectively. The value of K_C for the

equilibrium at 400 K is

A. 0.06

B. 0.09

C. 0.62

D. 3×10^{-2}

Answer: A



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8. Which of the following is a non-aqueous solution ?

A. Salt solution

B. Sugar solution

C. Br_2 in Cl_4

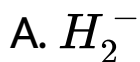
D. Ethanol dissolved in water

Answer: C



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9. Which of the following molecule does not exist due to its zero bond order?



D. H_2^+

Answer: C



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10. Which of the following is optically active ?

A. 3 - Chloropentane

B. 2 - Chloropropane

C. Meso - tartaric acid

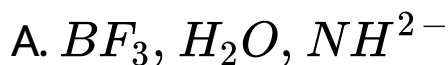
D. Glucose

Answer: D



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11. Which of the following represent a set of nucleophiles ?



Answer: C



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12. Propyne on passing through red hot iron tube gives

A. 

B. 

C. 

D. one of these

Answer: A



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13. Consider the following statements :

(i) E_2 reaction is a bimolecular elimination reaction of second order.

(ii) E_2 reaction takes place in two steps.

(iii) E_2 reaction generally takes place in primary alkyl halides.

Which of the above statement is/are not correct?

A. (i) ony

B. (ii) ony

C. (iii) ony

D. (i) and (iii)

Answer: B



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14. Photo chemical smog formed in congested metropolination cities mainly consists of

..... .

A. Ozone, SO_2 and hydrocarbons

B. Ozone, PAN and NO_2

C. PAN, smoke, SO_2

D. Hydrocarbons, SO_2 and CO_2

Answer: B



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1. Why interstitial hydrides have lower density than the parent metal.



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2. Prove that calcium oxide is basic oxide.



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3. Given the mathematical expression that relates gas volume and moles. Describe in

words what the mathematical expression means.



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4. Why pressure has no effect on the synthesis of HI?



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5. Draw the Lewis structure of PCl_5 and SF_6



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6. How are naphthalene and camphor purified?



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7. How will you convert ethyl chloride into (i) ethane (ii) n - butane



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8. Chloroform is kept with a little ethyle alcohol in dark coloured bottle, why?

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9. How does classical smog differ from photochemical smog?

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1. An ice cube at $0^{\circ}C$ is placed in some liquid water at $0^{\circ}C$, the ice cube sinks - Why?

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2. Write the chemical equations for the reactions involved in Solvay process of preparation of sodium carbonate.

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3. Explain whether a gas approaches ideal behaviour or deviates from ideal behaviour if

(a) it is compressed to a small volume at constant temperature

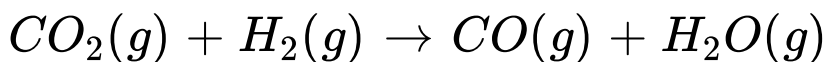
(b) the temperature is raised while keeping the volume constant

© more gas is introduced into the same volume and at the same temperature



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4. Calculate δH_r^0 for the reaction



given that ΔH_r^0 for CO_2 (g), CO (g) and H_2O (g) are -393.5 , -111.31 and -242 KJmol^{-1} respectively.



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5. Draw the M.O diagram for oxygen molecule and calculate its bond order and show that O_2 is paramagnetic.





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6. Give the principle involved in the estimation of halogen in an organic compound by Carius method.



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7. What polymerisation? Explain with suitable example.



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8. Compare S_{N1} and S_{N2} reaction mechanisms.

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9. From where ozone come in the photochemical smog?

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1. (i) An atom of an element contains 35 electrons and 45 neutrons. Deduce

1. the number of protons

2. the electronic configuration for the element

3. All the four quantum numbers for the last electron

(ii) How many unpaired electrons are present

in the ground state of

Fe^{3+} ($z = 26$), Mn^{2+} ($z = 25$) and argon (z

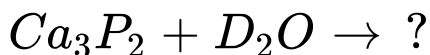
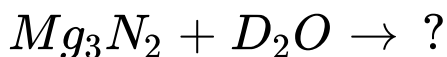
= 18)?



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2. (i) Explain why hydrogen is not placed with the halogen in the periodic table.

(ii) Complete the following reactions.



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3. (i) Why alkali metals have high chemical reactivity? How this changes along the group?

(ii) Distinguish between alkali metals and alkaline earth metals.



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4. (i) The size of a weather balloon becomes larger and larger as it ascends up into larger altitude.

(ii) Explain the graphical representation of Charles' law.



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5. (i) Why standard entropy of an elementary substance is not zero whereas standard enthalpy of formation is taken as zero ?

(ii) Derive the relationship between standard free energy (ΔG°) and equilibrium constant (K_{eq}).



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6. 2.56g of Sulphur is dissolved in 100g of carbon disulphide. The solution boils at 319.692 K. What is the molecular formula of

Sulphur in solution. The boiling point of CS_2 is 319.450K. Given that K_b for $CS_2 = 2.42Kkgmol^{-1}$

(ii) Show that the sum of mole fraction of a solution is equal to one.



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7. (i) Explain about the procedure and calculation behind the carius method of estimation of sulphur.

(ii) What is the difference between distillation,

distillation under reduced pressure and stream distillation?



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8. (i) An organic compound (A) of a molecular formula C_2H_4 which is a simple alkene. A reacts with dil H_2SO_4 to give B. A again reacts with Cl_2 to give C. A, B and C and write the equations.

(ii) Why chloro acetic acid is stronger acid than acetic acid?



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9. (i) Write a chemical reaction useful to prepare the following:

1. Freon-12 from carbon tetrachloride.

2. Carbon tetrachloride from carbon disulphide.

(ii) What are ambident nucleophiles? Explain with an example.



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10. (i) Write about hydrosphere (or) Why Earth is called as Blue planet?

(ii) Even through the use of pesticides increase the crop production, they adversely affect the living organisms. Explain the function and the adverse effects of the pesticides.



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