



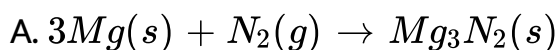
CHEMISTRY

BOOKS - FULL MARKS CHEMISTRY (TAMIL ENGLISH)

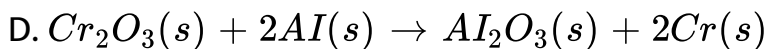
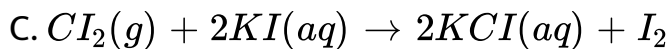
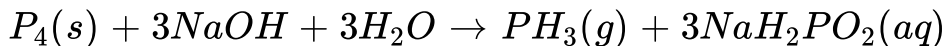
SAMPLE PAPER 05

Part I

1. Choose the disproportionation reaction among the following redox reactions.



B.



Answer: B



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2. Consider the following sets of quantum numbers:

n l m s

(i) 3 0 0 +1/2

(ii) 2 2 1 -1/2

(iii) 4 3 -2 +1/2

(iv) 1 0 -1 +!/2

$$(v) \ 3 \ 4 \ 3 \ -1/2$$

Which of the following sets of quantum number is not possible ?

A. (i), (ii), (iii) and (iv)

B. (i), (iv) and (v)

C. (i) and (ii)

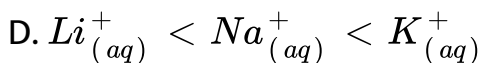
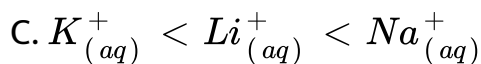
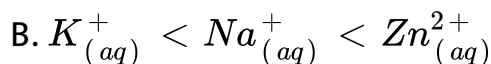
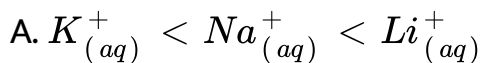
D. (ii), (iii) and (iv)

Answer: B



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3. Which of the following is arranged in order of increasing radius?



Answer: D



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4. Statement-I: The magnetic moment of para hydrogen is zero.

Statement-II: The spins of two hydrogen atoms in para H₂ molecule neutralise each other.

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

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

C. Statement-I is correct but Statement. II is wrong,

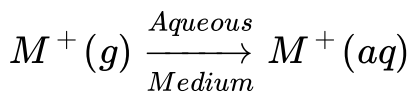
D. Statement-I is wrong but Statement-II is correct.

Answer: A



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5. Which of the following has the highest tendency to give the reaction,



A. Na

B. Li

C. Rb

D. K

Answer: B

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6. The value of universal gas constant depends upon

A. Temperature of the gas

B. Volume of the gas

C. Number of moles of the gas

D. units of Pressure and volume

Answer: D

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7. The heat of formation of CO and CO_2 , are -26.4 kcal and -94 kcal, respectively. Heat of combustion of carbon monoxide will be

A. + 26.4Kcal

B. - 67.6kcal

C. - 120.6kcal

D. + 52.8kcal

Answer: B



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8. In a chemical equilibrium, the rate constant for the forward reaction is 2.5×10^2 and the equilibrium constant is 50. The rate constant for the reverse reaction is.....

A. 11.5

B. 5

C. 2×10^2

D. 2×10^{-3}

Answer: B



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9. The Van't Hoff factor (1) for a dilute aqueous solution of the strong electrolyte barium hydroxide is.....

A. 0

B. 1

C. 2

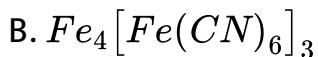
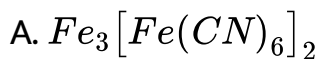
D. 3

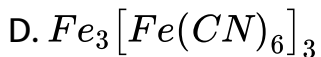
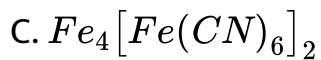
Answer: B



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10. Nitrogen detection in an organic compound is carried out by Lassaigne's test. The blue colour formed is due to the formation of ...

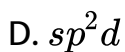
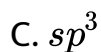
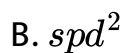
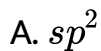




Answer: B

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11. What is the hybridisation state of benzyl carbonium ion?



Answer: A

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12. Statement-1: Boiling point of methane is lower than that of butane.

Statement - II: The boiling point of continuous chain alkanes increases with increase in length of carbon chain.

- A. Statement - I and II are correct and statement-II is correct explanation of statement-1.
- B. Statement - I and II are correct but statement - II is not correct explanation of statement
- C. Statement - I is correct but statement - II is wrong.
- D. Statement -II is wrong but statement - I is correct.

Answer: A



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13. Which of the following binds with haemoglobin and reduce the oxygen carrying capacity of blood?

A. CO_2

B. NO_2

C. SO_3

D. Co

Answer: D



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1. State and explain Pauli's exclusion principle.

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2. Give the general electronic configuration of lanthanides and actinides,

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3. Why alkaline earth metals are harder than alkali metals?

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4. What are the limitations of the thermodynamics?

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5. Write the application of equilibrium constant?

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6. How much volume of 6 M solution of NaOH is required to prepare 500 ml of 0.250 M NaOH solution?

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7. Define - Inductive effect.

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8. How will you convert n-hexane into benzene?

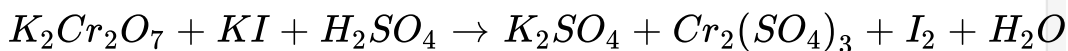
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9. Why haloalkanes have higher boiling point than parent alkanes having the same number of carbons?

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Part iii

1. Balance the following equations by using oxidation number method.



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2. Explain the periodic trend of ionization potential. ins.



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3. Distinguish between hard water and soft water.



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4. Explain how the equilibrium constant K_C predict the extent of a reaction.



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5. How many moles of solute particles are present in one litre of $10^{-4} M K_2SO_4$?

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6. Draw the Lewis structures for the following. (i) SO_4^{2-} (ii) O_3

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7. Write a short notes on hyperconjugation.

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8. How will you prepare propyne using alkylene dihalide?

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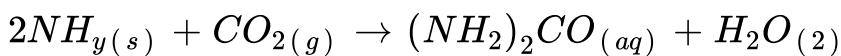
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9. Explain how the oxides of sulphur pollute the atmospheric air? Give its harmful effects

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Part Iv

1. (a) Urea is prepared by the reaction between ammonia and carbon dioxide.



In one process, 637.2 g of NH_3 are allowed to react with 1142 g of CO_2

(i) Which of the two reactants is the limiting reagent?

(ii) Calculate the mass of $(NH_2)_2$ CO formed (im) How much of the excess reagent in grams is left at the end of the reaction?

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2. (i) A student reported the ionic radii of isoelectronic species X^{3+} , Y^{2-} and Z as 136 pm, 64 pm and 49 pm respectively. Is that order correct? Comment.

(ii) Explain any three factors which influence the ionization energy.

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3. (i) Write the important common features of group 2 elements?

(ii) What is meant by retrograde solubility?



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4. (i) Derive a general expression for the equilibrium constant K_p , and K_c for the reaction.

(ii) Write the K_p and K_C for NH_3 formation reaction.



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5. (i) 0.24 g of a gas dissolves in 1 L of water at 1.5 atm pressure. Calculate the amount of dissolved gas when the pressure is raised to 6.0 atm at constant temperature.

(i) What is a vapour pressure of liquid?



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6. Explain the ionic bond formation in MgO and CaF_2

(ii) What is bond angle?

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7. (i) 0.33 g of an organic compound containing phosphorous gave 0.397 g of $Mg_2P_2O_7$, by the analysis. Calculate the percentage of P in the compound.

(ii) Give the IUPAC names of the following compounds.



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8. (i) Describe the mechanism of nitration of benzene.

(ii) How will you prepare m-dinitro benzene.

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9. Complete the following reaction, identify the products.



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10. (i) What is green chemistry?

(ii) Differentiate - BOD and COD.

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