doubtnut
India's Number 1 Education App

CHEMISTRY

BOOKS - FULL MARKS CHEMISTRY (TAMIL ENGLISH)

SAMPLE PAPER -4

Part I

1. The energies E_1 and E_2 of two radiations are 25 eV and 50 eV respectively. The relatior

between their wavelengths i.e. λ_1 and λ_2 will be .....

A. $\frac{\lambda_1}{\lambda_2} = 1$

B. $\Lambda_1 = 2\lambda_2$

C. $\lambda_1 = \sqrt{25 \times 50\lambda_2}$

D. $2\lambda_1 = \lambda_2$

Answer: B

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2. In which of the following options the order of arrangement does not agree with the variation of property indicated against it?

A. I lt Br lt Cl lt F (increasing electron gain enthalpy)

B. LiltNaltKltRb (increasing metallic radius)

C. $Al^{3+} < Mg^{2+} < Na^{+}$ (increasing ionic size)

D. BltCltOltN (increasing first ionization enthalpy)

Answer: A

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3. For decolourisation of I mole of acidified $KMnO_4$ the moles of H_2O_2 required is .....

A. $\frac{1}{2}$

B. $\frac{3}{2}$

C. $\frac{5}{2}$

D. $\frac{7}{2}$

Answer: C

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4. The compound (X) on heating gives a colourless gas and a residue that is dissolved in water to obtain (B). Excess of CO_2 is bubbled through aqueous solution of B, C is formed. Solid (C) or heating gives back X. (B) is .....

A. $CaCO_3$

B. $Ca(OH)_2$

C. Na_2CO_3

D. $NaHCO_3$

Answer: B

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5. Which law is used in the process of enriching the isotope of U23s from other isotopes?

A. Boyle's law

B. Dalton's law of partial pressure

C. Graham's law of diffusion

D. Charles law

Answer: C

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6. The enthalpies of formation of AI_2O_3 and Cr_2O_3 are -1596 kJ and -1134 kJ, respectively.

ΔH for reaction

$2AI + Cr_2O_3 \rightarrow 2Cr + Al_2O_3$ is.....

A. $-1365KJ$

B. 2730 KJ

C. $-2730KJ$

D. $-462KJ$

Answer: D

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7. Solubility of carbon dioxide gas in cold water can be increased by.....

A. increase in pressure

B. decrease in pressure

C. increase in volume

D. none of these

Answer: A

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8. Two liquids X and Y on mixing gives a warm solution. The solution is .....

A. ideal

B. non-ideal and shows positive deviation from Raoults law

C. ideal and shows negative deviation from Raoults Law

D. non-ideal and shows negative deviation from Raoults Law

Answer: D

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9. Which of the following molecules have bond order equal to 1?

A. NO, HF, HCI, Li_2, CO

B. H_2, Li_2, HF, Br_2, HCI

C. $Li_2, B_2, CO, NO, He_2^+$

D. B_2, CO, He_2^+, NO, HF

Answer: B

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10. How many cyclic and acyclic isomers are possible for the molecular formula C_3H_6O?

A. 4

B. 5

C. 9

D. 10

Answer: C

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11. Statement-I: Fluoro acetic acid is stronger acid than acetic acid.

Statement-II: Fluorine has high electronegativity and it is facilitate to dissociate the O-H bond easily.

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

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

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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12. Consider the following statements.

(i) Alkanes are saturated hydrocarbons in which all the bonds between the carbon atoms are single bond.

(ii) Alkenes are saturated hydrocarbons in which atleast one carbon - carbon double bond is present.

(iii) Alkynes are unsaturated hydrocarbons in which atleast one carbon-carbon triple how present.

A. (i) and (ii)

B. (i) and (iii)

C. (ii) and (iii)

D. only (ii)

Answer: B

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13. $CH_3Mgl \xrightarrow{C_2H_5OH} X + C_2H_5OMgl$ The product X is.....

A. CH_4

B. C_2H_6

C. HCHO

D. CH_3OH

Answer: A

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14. Eutrophication causes reduction in .....

A. dissolved oxygen

B. dissolved nitrogen

C. dissolved salts

D. all of the above

Answer: a

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Part Ii

1. Explain about the factors that affect electronegativity?

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2. How do you convert para-hydrogen into ortho-hydrogen?

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3. Gases don't settle at the bottom of a container?

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4. Define - Normality.

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5. If there is no change in concentration why is the equilibrium state considered dynamic?

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6. In CH_4, NH_3 and H_2O the central atom undergoes sp hybridization - yet their bond

angles are different. Why?

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7. Identify the compound in the following reaction,

(a) 

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8. Classify the following compounds in the form of alkyl, allylie, vinyl, benzylic halides,

(a) $CH_2 = CH - CH_2Cl$ (b) $C_6H_5CH_2I$ (c)

$CH_3 - \underset{\underset{Br}{|}}{CH} - CH_3$ (d) $CH_2 = CH - Cl$

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9. Define-Smog.

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Part Iii

1. Explain how effective nuclear charge is related with stability of the orbital?

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2. Write a notes on hydrogen sponge.

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3. In what way lithium differs from other metals of the same group?

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4. A 0.25 M gulcose solution at 370.28 K has approximately the pressure as blood does what is the osmotic pressure of blood?

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5. Write the important principles of VSEPR theory to predict the shape of molecules.

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6. 0.26 g of an organic compund gave 0.039 g of water and 0.245 g of CO_2 on combustion. Calculate the percentage of carbon and hydrogen.

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7. How will you distingusih 1-butane and 2-butne ?

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8. Write the structure of the following compounds, (a) 1-Brumo-4-ethyl cyclobexane (b) 1,4-Dichlorobut-2-ene (c) 2-Chloro-3-metyl pentane

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9. Explain how does green house effect cause global warming.

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Part Iv

1. (i) Write the steps to be followed for writing empirical formula.

(ii) What do you understand by the terms empirical formula and molecular formula?

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2. (i) Explain the shape of s and p-orbital. (ii) The mass of an electron is 9.1×10^{-31}kg. If its kinetic energy is 3.0×10^{-25} J.

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3. (i) Explain the exchange reactions of deuterium.

(ii) Explain the action of soap with hard water.

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4. (i) Derive ideal gas equation.

(ii) CO_2 gas cannot be liquified at room temperature. Give the reason.

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5. (i) Why deep-sea divers use air diluted with helium gas in their air tanks?

(ii) What is molal depression constant? Does it depend on nature of the solute.

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6. (i) Write the resonance structures for ozone molecule and N_2O?

(ii) Draw MO diagram of CO and calculate its bond order.

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7. (i) What are cis-trans isomerism? Explain with example.

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

(a) $CH_3 - \underset{\underset{CH_3}{|}}{CH} - \underset{\underset{Br}{|}}{CH} - CH_3$ (b) 

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8. (i) What is enzymatic browning?

(ii) How will you convert nitrile into primary amine?

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9. An organic compound (A) of a molecular formula C_2H_4, decolourises brom water. (A) on reacts with Cl_2 gives (B). (A) reacts with HBr to give (C). (A) rean presence of Ni to give D. Identify A, B, C and D. Explain the reactions.

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10. (i) Explain the harmful effects of acid rain.

(ii) What is Eutrophication?

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