

CHEMISTRY

BOOKS - NAGEEN CHEMISTRY (ENGLISH)

SELF ASSESSMENT PAPER 05

Questions

1. Fill in the blanks by choosing the appropriate word/words from those given in the brackets: [7, Zero, unstable electronic configuration, acids, 60,

lone, pitch, greater, less, stable electronic . configuration, bases, peat, 50]

(i) In a basic solution, $[H_3O^+]$ is_____ than $[OH^-]$ and pH is greater than_____at 298K..

(ii) The electron affinities of noble gases are equal to _due to their_____.

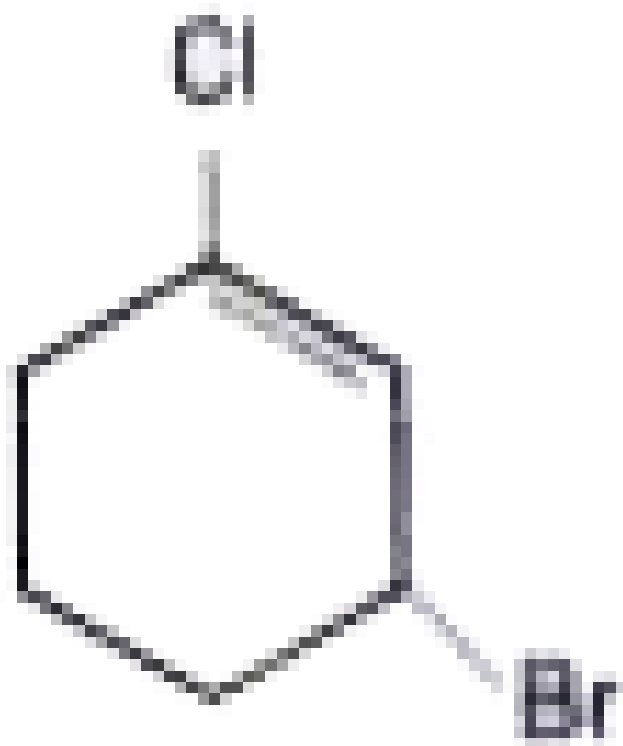
(iii) Nucleophiles are Lewis _and possesses _____pair of electrons.

(iv) The first stage in the formation of coal in nature is _____ which contain _____ % of cartoon.



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2. The IUPAC name of the compound shown below is



- A. 2-bromo-6-chlorocyclohex-1-ene
- B. 6-bromo-2-chlorocyclohexene
- C. 3-bromo-1-chlorocyclohexene

D. 1-bromo-3-chlorocyclohexene

Answer:



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3. The total number of neutrons in dipositive zinc ions with mass number 70 is

A. 34

B. 40

C. 36

D. 38

Answer:



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4. According to the periodic law of elements, the variation in properties of elements is related to their :

atomic masses

nuclear masses

atomic numbers

nuclear neutron-proton number ratios.

A. atomic masses

B. nuclear masses

C. atomic numbers

D. nuclear neutron-proton number ratios

Answer:



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5. Which of the following does not constitute 0.1g mole ?

A. 6.022×10^{22} molecules of benzene

B. 0.14 g of N_2 gas

C. 2.24 litre of CO_2 at S.T.P.

D. 0.40 g of He gas

Answer:



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6. Write the chemical composition of rust.



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7. Answer the following questions:

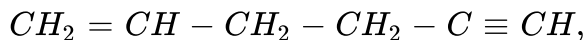
(i) (1) State Hund's rule of maximum multiplicity.

(2) Name the principle by which Electrons are filled in various orbitals in the increasing order of energies and fill up the orbitals of lower energy first.



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8. In the organic compound



the pair of hybridised orbitals involved in the formation of $C_2 - C_3$ bond is



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9. What type of multiple bonds are involved in the compounds containing

$C \equiv C$, $C \equiv O$ and $-C \equiv N$ groups ?



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10. (1) What is the shape of the curve obtained on plotting P against V at constant temperature for an ideal gas ?

(2) Which law is signified by the relation, $\frac{V_1}{T_1} = \frac{V_2}{T_2}$?



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11. Explain the law of conservation of charge with an example.



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12. Carbon and oxygen combine to form two oxides, carbon monoxide and carbon dioxide in which the ratio of the weight of carbon and oxygen is respectively 12: 16 and 12: 32. These figures illustrate the :

- (a) law of multiple proportions
- (b) law of reciprocal proportions
- (c) law of conservation of mass
- (d) law of constant proportions



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13. How is silicon carbide manufactured?



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14. A solution contains 25% water, 25% ethanol and 50% acetic acid by mass. Calculate the mole fraction of each component.



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15. Give condensed and bond line structural formulas and identify the functional group(s) present, if any, for :

(a) 2,2,4-Trimethylpentane

(b) 2-Hydroxy-1,2,3-propanetricarboxylic acid

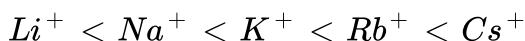
(c) Hexanedial



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16. Comment on each of the following observations:

(a) The mobilities of the alkali metal ions in aqueous solution are



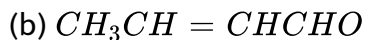
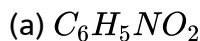
(b) Lithium is the only alkali metal to form a nitride directly

(c) E^\ominus for $M^{2+}(\text{aq}) + 2e^- \rightarrow M(s)$ (where $M = \text{Ca, Sr or Ba}$) is nearly constant



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17. Draw the resonance structures for the following compounds. Show the electron shift using curved-arrow notation.



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18. Draw formulas for the first five members of each homologous series beginning with the following compounds. (a) $H-COOH$ (b) CH_3COCH_3 (c) $H-CH = CH_2$



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19. What is the difference between the terms 'hydrolysis' and 'hydration' ?



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20. Predict the formula of the binary compounds formed by combination of the following pairs of elements: (i) Magnesium and nitrogen (ii) Silicon and oxygen



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21. One mole of H_2 , two moles of I_2 and three moles of HI injected in a one litre flask. What will be the concentrations of H_2 , I_2 and HI at equilibrium at $490^\circ C$. The equilibrium constant for the reaction at $490^\circ C$ is 45.9



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22. A gas filled in a bulb of capacity 25.1 mL at 27°C and 750 mm pressure weighs 0.072 g. If 1 litre of hydrogen at S.T.R weighs 0.09 g, calculate the molecular mass of the gas.



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23. What happens when:

(i) Sodium hydrogen carbonate is-heated ?



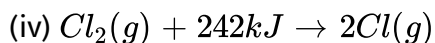
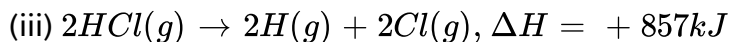
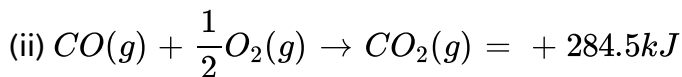
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24. A 5.0 litres cylinder contained 10 moles of hydrogen gas at 27°C . Due to leakage, entire gas escaped into the atmosphere. The atmospheric pressure is 1.0 atm. Calculate the work done by the gas assuming hydrogen to be an ideal gas.



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25. Sort out the exothermic and endothermic reactions among the following:



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26. Which part of the environment do different types of rocks constitute?



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27. What are particulates and why is their presence in the atmosphere is harmful?



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28. Write all possible isomers of pentane and hexane.



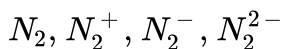
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29. What is ring-chain isomerism ? Give an example.



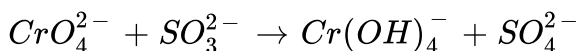
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30. Arrange the following species in the decreasing order of their bond dissociation energy :



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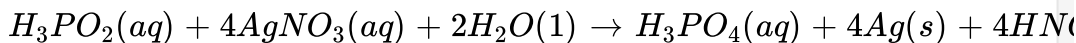
31. Balance the following equations by oxidation number method.



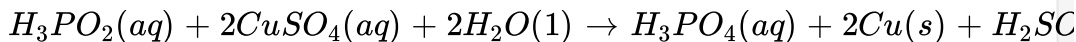
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32. Consider the reactions :

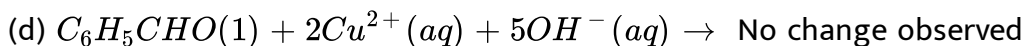
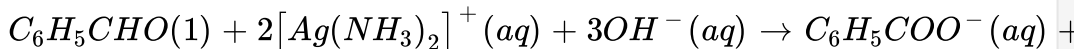
(a)



(b)



(c)



What inference do you draw about the behaviour of Ag^+ and Cu^{2+} from these reactions ?



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33. Why does benzene undergo electrophilic substitution reactions easily and nucleophilic substitutions with difficulty?



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34. What happens when acetylene is passed in a dilute solution of H_2SO_4 containing $HgSO_4$



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35. (1) Isopropyl bromide is heated with alcoholic KOH,

(2) Pent-2-ene reacts with HBr,

(3) Ethene is treated with chlorine water,

(4) 2-methyl propene is heated with acidic $KMnO_4$

(5) 2-methylpent-2-ene is subjected to reductive ozonolysis?



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36. Equal volumes of 0.002 M solutions of sodium iodate and cupric chlorate are mixed together. Will it lead to precipitation of copper iodate? (For cupric iodate $K_{sp} = 7.4 \times 10^{-8}$).



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37. What do you understand by salt hydrolysis? Discuss the hydrolysis of different types of salts.



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