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Previous Year Paper

Chemistry - 2016



Multiple Choice Questions

1. The boiling points of HF, HCl, HBr and HI follow the order

- A. $\text{HF} > \text{HCl} > \text{HBr} > \text{HI}$
- B. $\text{HF} > \text{HI} > \text{HBr} > \text{HCl}$
- C. $\text{HI} > \text{HBr} > \text{HCl} > \text{H}$
- D. $\text{HCl} > \text{HF} > \text{HBr} > \text{HI}$

Answer

2. The energy required to break one mole of hydrogen-hydrogen bonds in H_2 is 436 kJ. What is the longest wavelength of light required to break a single hydrogen-hydrogen bond?

- A. 68.5nm
- B. 137nm
- C. 274nm
- D. 584nm

Answer

3. The correct order of O-O bond length in O_2 , H_2O_2 , and O_3

- A. $\text{O}_2 > \text{O}_3 > \text{H}_2\text{O}_2$
- B. $\text{H}_2\text{O}_2 > \text{O}_3 > \text{O}_2$
- C. $\text{O}_3 > \text{O}_2 > \text{H}_2\text{O}_2$
- D. $\text{O}_3 > \text{H}_2\text{O}_2 > \text{O}_2$

Answer

4. The number of σ and π bonds between two carbon atoms in calcium carbide are

- A. one σ , one π
- B. one σ , two π
- C. two σ , one π
- D. one σ , 112 π

Answer

5. An element E loses one α and two β particles in three successive stages. The resulting element will be

- A. an isobar of E
- B. an isotone of E
- C. an isotope of E
- D. E itself

Answer

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6. An element X belongs to fourth period and fifteenth group of the periodic table. Which of the following statements is true?

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A. It has completely filled s-orbital and a partially filled d-orbital.

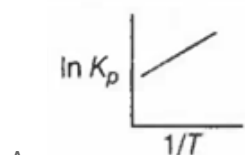
B. It has completely filled s-and p -orbitals and a partially filled d-orbital.

C. It has completely filled s- and p-orbitals and a half filled d-orbital.

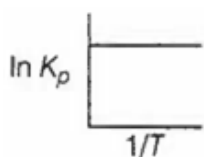
D. It has a half filled p -orbital and completely filled s-and d-orbitals.

Answer

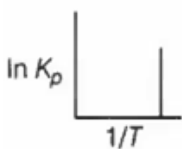
7. Which of the following plots represent an exothermic reaction?



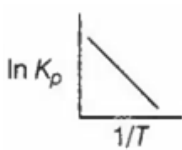
A.



B.



C.



D.

Answer

8. The condition for a reaction to occur spontaneously is

A. ΔH must be negative

B. ΔS must be negative

C. $\Delta H - T\Delta S$ must be negative

D. $\Delta H + T\Delta S$ must be negative

Answer

9. The molar solubility (in mol L^{-1}) of a sparingly soluble salt MX_4 is 'S'. The corresponding solubility product is K_{sp} in terms of ' K_{sp} ' is given by the relation

A. $S = K_{sp}^{1/4}$

B. $S = K_{sp}^{1/5}$

C. $S = (256 K_{sp})^{1/5}$

D. $S = (128 K_{sp})^{1/4}$

Answer

10. The time taken for an electron to complete one revolution in Bohr orbit of hydrogen atom is

A. $4\pi^2 r^3 / n^2 h^2$

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Answer

11. Amongst the following, which should have the highest rms speed at the same temperature?

- A. SO_2
- B. CO_2
- C. O_2
- D. H_2

Answer

12. Of the following molecules, which have shape similar to CO_2 ?

- A. HgCl_2
- B. SnCl_2
- C. C_2H_2
- D. NO_2

Answer

13. In which of the following mixed aqueous solutions, $\text{pH} = \text{pK}_a$ at equilibrium?

- (1) 100 mL of 0.1 M CH_3COOH + 100 mL 0.1 M CH_3COONa .
- (2) 100 mL of 0.1 M CH_3COOH + 50 mL of 0.1 M NaOH .
- (3) 100 mL of 0.1 M CH_3COOH + 100 mL of 0.1 M NaOH .
- (4) 100 mL of 0.1 M CH_3COOH + 100 mL of 0.1 M NH_3 .

- A. (1) is correct
- B. (2) is correct
- C. (3) is correct
- D. Both (1) and (2) are correct

Answer

14. Which statement is not correct for *ortho* and *para* hydrogen?

- A. They have different boiling points
- B. *Ortho*-form is more stable than *para*-form
- C. They differ in their nuclear spin
- D. The ratio of *ortho* to *para* hydrogen changes with change in temperature

Answer

15. Ozonolysis of an alkene produces only one dicarbonyl compound. The structure of the alkene is

- A. $\text{H}_3\text{C} - \text{CH} = \text{CH} - \text{CH}_3$



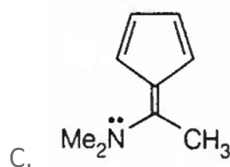
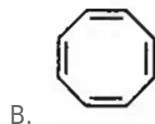
B.

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D. $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH} = \text{CH}_3$

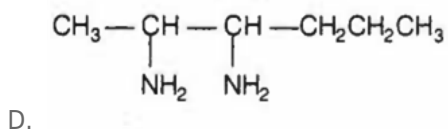
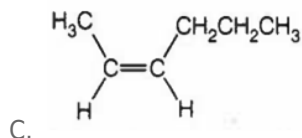
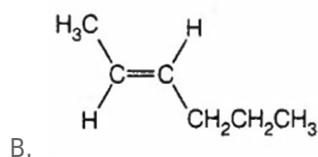
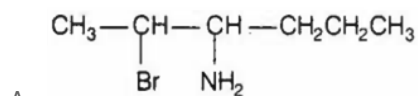
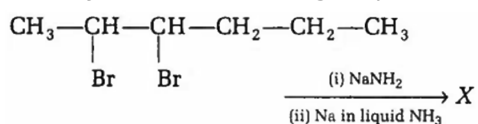
Answer

16. From the following compounds, choose the one which is not aromatic.



Answer

17. Identify X in the following sequence reactions



Answer

reductions with Zn and H_2O are

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A. methanoic acid and 2-methyl-2-butanone

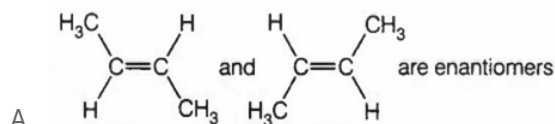
B. methanal and 3-methyl-2-butanone

C. methanol and 2, 2 -dimethyl-3-butanone

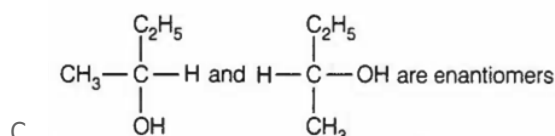
D. methanoic acid and 2-methyl-3-butanone

Answer

19. Choose the correct statement(s) among the following.



B. CH_3CHO on reaction with HCN gives racemic mixture



D. $CH_3-CH=NOH$ shows geometrical isomerism

Answer

20. Which of the following statement(s) is (are) correct when a mixture of $NaCl$ and $K_2Cr_2O_7$ is gently warmed with conc. H_2SO_4 ?

A. A deep red vapour is evolved

B. The vapour when passed through $NaOH$ solution, gives a yellow solution

C. Chlorine gas is also evolved

D. Chromyl chloride is formed

Answer

21. Point out the false statement.

A. Colloidal sols are homogeneous

B. Colloids carry + ve or - ve charges

C. Colloids show Tyndall effect

D. The size range of colloidal particles is $10-1000 \text{ \AA}$

Answer

22. Which of the following statements regarding Lanthanides is false?

A. All lanthanides are solid at room temperature

B. Their usual oxidation state is +3

C. They can be separated from one another by ion-exchange method

D. Ionic radii of trivalent lanthanides steadily increases with increase in atomic number

Answer

23. Nitrogen dioxide is not produced on heating

A. KNO_3

B. $Pb(NO_2)_2$

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D. AgNO_3

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Answer

24. In the solid state, PCl_5 exists as

- A. $[\text{PCl}_4]^-$ and $[\text{PCl}_6]^+$ ions
- B. covalent PCl_5 molecules only
- C. $[\text{PCl}_4]^+$ and $[\text{PCl}_6]^-$
- D. covalent P_2Cl_{10} molecules only

Answer

25. The acid in which O-O bonding is present is

- A. $\text{H}_2\text{S}_2\text{O}_3$
- B. $\text{H}_2\text{S}_2\text{O}_6$
- C. $\text{H}_2\text{S}_2\text{O}_8$
- D. $\text{H}_2\text{S}_4\text{O}_6$

Answer

26. The metal which can be used to obtain metallic Cu from aqueous CuSO_4 solution is

- A. Na
- B. Ag
- C. Hg
- D. Fe

Answer

27. If radium and chlorine combine to form radium chloride, the compound would be

- A. half as radioactive as radium
- B. twice as radioactive
- C. as radioactive as radium
- D. not radioactive

Answer

28. Which of the following arrangements is correct in respect of solubility in water?

- A. $\text{CaSO}_4 > \text{BaSO}_4 > \text{BeSO}_4 > \text{MgSO}_4 > \text{SrSO}_4$
- B. $\text{BeSO}_4 > \text{MgSO}_4 > \text{CaSO}_4 > \text{SrSO}_4 > \text{BaSO}_4$
- C. $\text{BaSO}_4 > \text{SrSO}_4 > \text{CaSO}_4 > \text{MgSO}_4 > \text{BeSO}_4$
- D. $\text{BeSO}_4 > \text{CaSO}_4 > \text{MgSO}_4 > \text{SrSO}_4 > \text{BaSO}_4$

Answer

29. If p° and p are the vapour pressure of the pure solvent and solution and n_1 and n_2 are the moles of solute and solvent respectively in the solution then the correct relation between p and p° is

A. $p^\circ = p \frac{n_1}{n_1 + n_2}$

B. $p^\circ = p \frac{n_2}{n_1 + n_2}$

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D. $p = \frac{n_1}{n_1 + n_2}$

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Answer

30. Ionic solids with Schottky defect may contain in their structure

- A. cation vacancies only
- B. cation vacancies and interstitial cations
- C. equal number of cation and anion vacancies
- D. anion vacancies and interstitial anions

Answer

31. The order of equivalent conductances at infinite dilution for LiCl, NaCl and KCl is

- A. $\text{LiCl} > \text{NaCl} > \text{KCl}$
- B. $\text{KCl} > \text{NaCl} > \text{LiCl}$
- C. $\text{NaCl} > \text{KCl} > \text{LiCl}$
- D. $\text{LiCl} > \text{KCl} > \text{NaCl}$

Answer

32. Compound X is tested and the results are shown in the table.

Test	Result
Aqueous sodium hydroxide is added, then heated gently.	Gas given off which turns damp red litmus paper blue
Dilute hydrochloric acid is added.	Effervescence, gas given off which turns lime water milky and acidified $\text{K}_2\text{Cr}_2\text{O}_7$, paper green.

Which ions are present in compound X?

- A. Ammonium ions and sulphite ions
- B. Ammonium ions and carbonate ions
- C. Sodium ions and carbonate ions
- D. Ammonium ions and sulphate ions

Answer

33. Amongst the following compounds, the one that will not respond to Cannizzaro reaction upon treatment with alkali as

- A. Cl_3CCHO
- B. Me_3CCHO
- C. $\text{C}_6\text{H}_5\text{CHO}$
- D. HCHO

Answer

34. Which of the following compounds would not react with Lucas reagent at room temperature?

- A. $\text{H}_2\text{C}=\text{CHCH}_2\text{OH}$

B. $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$ Like. Share. Bookmark. Download. Make Notes. Print - Your Favourite Questions. Join www.zigya.com

D. $(\text{CH}_3)_3\text{COH}$

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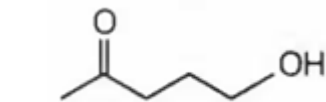
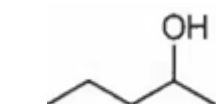
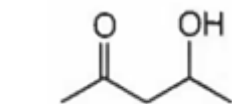
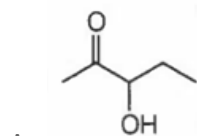
Answer

35. Amongst the following compounds, the one which would not respond to iodoform test is

- A. $\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{CH}_3$
- B. $\text{ICH}_2\text{COCH}_2\text{CH}_3$
- C. CH_3COOH
- D. CH_3CHO

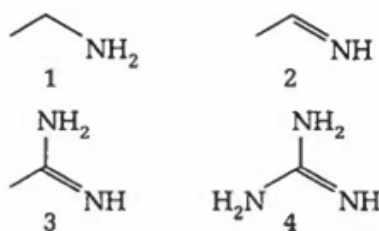
Answer

36. Which of the following will be dehydrated most readily in alkaline medium?



Answer

37. The correct order of basicity of the following compounds is



- A. $1 < 2 < 3 < 4$
- B. $1 < 2 < 4 < 3$
- C. $2 < 1 < 3 < 4$
- D. $4 < 3 < 2 < 1$

Answer

38. Which of the following reaction will not result in the formation of carbon - carbon bonds?

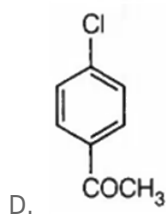
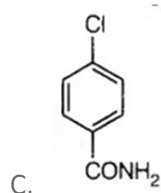
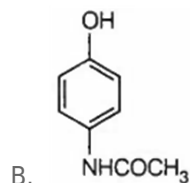
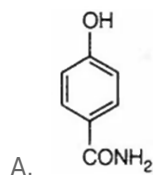
- A. Cannizzaro reaction
- B. Wurtz reaction

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D. Friedel-Crafts acylation

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39. The correct structure of the drug paracetamol is



Answer

40. Amongst the following compounds, the one(s) which readily react with ethanolic KCN.

- A. Ethyl chloride
- B. Chlorobenzene
- C. Benzaldehyde
- D. Salicylic acid

Answer