



www.zigya.com

Previous Year Paper

Chemistry - 2007



Multiple Choice Questions

1. The relative lowering of vapour pressure of a dilute aqueous solution containing non-volatile solute is 0.0125. The molality of the solution is about
- A. 0.70
B. 0.50
C. 0.90
D. 0.80

Answer

2. The activation energy of exothermic reaction $A \rightarrow B$ is 80 kJ mol^{-1} . The heat of reaction is 200 kJ mol^{-1} . The activation energy for the reaction $B \rightarrow A$ (in kJ mol^{-1}) will be
- A. 280
B. 200
C. 120
D. 40

Answer

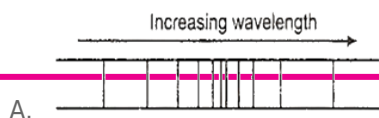
3. The strongest base among the following is
- A. $\text{C}_6\text{H}_5\text{NH}_2$
B. $(\text{C}_6\text{H}_5)_2\text{NH}$
C. NH_3
D. $(\text{C}_2\text{H}_5)_2\text{NH}$

Answer

4. The radius of the first Bohr orbit of hydrogen atom is $0.529 \text{ \AA}$. The radius of the third orbit of H^+ will be
- A. $8.46 \text{ \AA}$
B. $0.705 \text{ \AA}$
C. $1.59 \text{ \AA}$
D. $4.29 \text{ \AA}$

Answer

5. Which diagram best represents the appearance of the line spectrum of atomic hydrogen in the visible region?

Like. Share. Bookmark. Download. Make Notes. Print - Your Favourite Questions. Join www.zigya.com

B.

Study, Assignments, Solved Previous Year Papers . Questions and Answers. Free Forever.

C.

D.

Answer

6. Which of the following is paramagnetic with bond order 0.5?

- A. F_2
 B. H_2^+
 C. N_2
 D. O_2^-

Answer

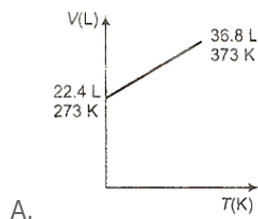
7. Match List-I with List-II and choose the correct matching codes from the choices given.

List - I	List - II
A. PCl_5	1. Linear
B. IF_7	2. Pyramidal
C. H_3O^+	3. Trigonal bipyramidal
D. ClO_2	4. Tetrahedral
E. NH_4^+	5. Pentagonal bipyramidal 6. Angular

- A. A - 3; B - 5; C - 2; D - 1; E - 4
 B. A - 3; B - 5; C - 4; D - 1; E - 2
 C. A - 3; B - 5; C - 6; D - 1; E - 2
 D. A - 3; B - 5; C - 2; D - 6; E - 4

Answer

8. Which one of the following volume (V)- temperature (T) plots represents the behaviour of one mole of an ideal gas at one atmospheric pressure?

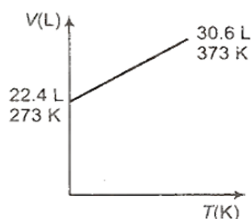


Study Assignments, Solved Previous Year Papers . Questions and Answers. Free Forever.

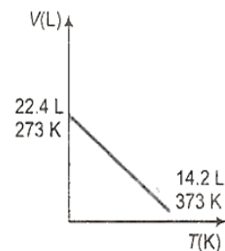
B.



C.



D.



Answer

9. In which one of the following pairs the radius of the second species is greater than that of the first?

- A. Na, Mg
- B. O^{2-} , N^{3-}
- C. Li^+ , Be^{2+}
- D. Ba^{2+} , Sr^{2+}

Answer

10. Match List-I with List-II Choose the correct matching codes from the choices given.

List - I (Hydride)	List - II (Type of hydride)
A. BeH_2	1. Complex
B. AsH_3	2. Lewis acid
C. B_2H_6	3. Interstitial
D. LaH_3	4. Covalent
E. $LiAlH_4$	5. Intermediate 6. Ionic

A. A - 6; B - 2; C - 4; D - 5; E - 1

B. A - 5; B - 4; C - 2; D - 3; E - 1

C. A - 6; B - 4; C - 2; D - 3; E - 5

D. A - 6; B - 4; C - 2; D - 3; E - 1

Like. Share. Bookmark. Download. Make Notes. Print - Your Favourite Questions. Join www.zigya.com

11. Among the following, the pair in which the two species are not isostructural are
Study, Assignments, Solved Previous Year Papers . Questions and Answers. Free Forever.

- A. IO_3^- and XeO_3
B. PF_6^- and SF_6
C. BH_4^- and NH_4^+
D. CO_3^{2-} and NO_2^-

Answer

12. Which of the following ions has a magnetic moment of 5.93 BM ?

(At. no. V = 23; Cr = 24; Mn = 25; Fe = 26)

- A. Mn^{2+}
B. Fe^{2+}
C. Cr^{2+}
D. V^{3+}

Answer

13. The equilibrium constant for the reaction

$2\text{NO}_2(\text{g}) \rightleftharpoons 2\text{NO}(\text{g}) + \text{O}_2(\text{g})$ is 2×10^{-6} at 185°C . Then the equilibrium constant for the reaction,
 $4\text{NO}(\text{g}) + 2\text{O}_2(\text{g}) \rightleftharpoons 2\text{NO}_2(\text{g})$ at the same temperature would be

- A. 2.5×10^{-5}
B. 4×10^{-12}
C. 2.5×10^{11}
D. 2×10^6

Answer

14. Compare List-I and List-II and choose the correct matching codes from the choices given.

List - I	List - II
A. Glycerol	i. Sublimation
B. <i>o</i> -nitrophenol	ii. Beilstein's test
C. Anthracene	iii. Victor- Meyer's method
D. Halogens	iv. Steam distillation
E. Molecular weight	v. Vacuum distillation vi. Eudiometry

A. A - v; B - iv; C - i; D - ii; E - iii

Like, Share, Bookmark, Download, Make Notes. Print - Your Favourite Questions. Join www.zigya.com

D. A - v; B - iv; C - vi; D - ii; E - iii

Answer Study, Assignments, Solved Previous Year Papers . Questions and Answers. Free Forever.

15. An aromatic hydrocarbon with empirical formula C_5H_4 on treatment with concentrated H_2SO_4 gave a monosulphonic acid. 0.104 g of the acid required 10 mL of N/20 NaOH for complete neutralisation. The molecular formula of hydrocarbon is

- A. C_5H_4
- B. $C_{10}H_8$
- C. $C_{15}H_{12}$
- D. $C_{20}H_{16}$

Answer

16. Pick out the wrong statement.

- A. Toluene shows resonance



- B.  is non-aromatic

- C. The hybrid state of carbon in carbonyl group is sp^2
- D. The hyper-conjugative effect is known as no bond resonance

Answer

17. The number of isomers for the compound with the molecular formula $C_2BrClFI$ is

- A. 3
- B. 4
- C. 5
- D. 6

Answer

18. Which among the following statements is correct with respect to the optical isomers?

- A. Enantiomers are non-superimposable mirror images
- B. Diastereomers are superimposable mirror images
- C. Enantiomers are superimposable mirror images
- D. Meso forms have no plane of symmetry

Answer

19. The photochemical smog can be suppressed by

- A. nitrogen oxides
- B. hydrocarbons
- C. radical traps
- D. formaldehyde

Answer

20. The hardness of water sample containing 0.002 mole of magnesium sulphate dissolved in a litre of water is expressed as

Like. Share. Bookmark. Download. Make Notes. Print - Your Favourite Questions. Join www.zigya.com

B. 200 ppm

Study Assignments, Solved Previous Year Papers . Questions and Answers. Free Forever.

C. 2000 ppm

D. 120 ppm

Answer

21. The carbonate that will not decompose on heating is

A. Na_2CO_3 B. CaCO_3 C. BaCO_3 D. SrCO_3

Answer

22. Which among the following statements are correct?

(i) Carbon monoxide is neutral whereas SO_3 is acidic.

(ii) Potassium oxide is basic whereas nitrous oxide is acidic.

(iii) Aluminium and zinc oxides are amphoteric.

(iv) Sulphur trioxide is acidic whereas phosphorus pentoxide is basic.

(v) Carbon dioxide is neutral whereas sulphur dioxide is amphoteric.

A. (ii) and (iii)

B. (i) and (iv)

C. (i) and (iii)

D. (ii) and (iv)

Answer

23. When hydrogen peroxide is added to acidified potassium dichromate, a blue colour is produced due to formation of

A. CrO_3 B. Cr_2O_3 C. CrO_5 D. CrO_4^{2-}

Answer

24. The pH of a neutral water is 6.5. Then the temperature of water

A. is 25°C B. is more than 25°C C. is less than 25°C D. can be more or less than 25°C

Answer

25. If the elevation in boiling point of a solution of 10g of solute (mol. wt. = 100) in 100g of water is ΔT_b , the ebullioscopic constant of water is

A. 10

Like. Share. Bookmark. Download. Make Notes. Print - Your Favourite Questions. Join www.zigya.com

C. ΔT_b

Study, Assignments, Solved Previous Year Papers . Questions and Answers. Free Forever.

D. $10 T_b$

Answer

26. An alloy of Pb-Ag weighing 1.08 g was dissolved in dilute HNO_3 and the volume made to 100 mL.

A silver electrode was dipped in the solution and the emf of the cell set up $\text{Pt(s), H}_2(\text{g}) | \text{H}^+(1\text{M})$

$|| \text{Ag}^+(\text{aq}) | \text{Ag(s)}$ was 0.62V. If $E^\circ_{\text{cell}} = 0.80\text{V}$. What is the percentage of Ag in the alloy? [At 25°C , $RT/F = 0.06$]

A. 50

B. 25

C. 2.50

D. 10

Answer

27. The standard oxidation potentials of Zn, Cu, Ag and Ni electrodes are +0.76, 0.34, -0.80 and +0.25 V respectively. Which of the following reaction will provide maximum voltage?

A. $\text{Cu} + 2\text{Ag}^+(\text{aq}) \rightarrow \text{Cu}^{2+}(\text{aq}) + 2\text{Ag}$ B. $\text{Zn} + 2\text{Ag}^+(\text{aq}) \rightarrow \text{Zn}^{2+}(\text{aq}) + 2\text{Ag}$ C. $\text{H}_2 + \text{Ni}^{2+}(\text{aq}) \rightarrow 2\text{H}^+(\text{aq}) + \text{Ni}$ D. $\text{Zn} + \text{Cu}^{2+}(\text{aq}) \rightarrow \text{Zn}^{2+}(\text{aq}) + \text{Cu}$

Answer

28. At 500 K, the half-life period of a gaseous reaction at an initial pressure of 80 kPa is 350 s. When the pressure is 40 kPa, the half-life period is 175 s. The order of the reaction is

A. zero

B. one

C. two

D. three

Answer

29. On adding 1 mL of solution of 10% NaCl to 10 mL of gold sol in the presence of 0.25 g of starch, the coagulation is just prevented. The gold number of starch is

A. 250

B. 25

C. 2.5

D. 0.25

Answer

30. Which of the following statements is not correct?

A. The complexes $[\text{NiCl}_4]^{2-}$ and $[\text{Ni}(\text{CN})_4]^{2-}$ differ in the state of hybridization of nickel

C. The complexes $[\text{NiCl}_4]^{2-}$ and $[\text{Ni}(\text{CN})_4]^{2-}$ differ in geometry

D. The complexes $[\text{NiCl}_4]^{2-}$ and $[\text{Ni}(\text{CN})_4]^{2-}$ differ in primary valencies of nickel

Study, Assignments, Solved Previous Year Papers : Questions and Answers. Free Forever.

Answer

31. Both Co^{3+} and Pt^{4+} have a coordination number of six. Which of the following pairs of complexes will show approximately the same electrical conductance for their 0.001M aqueous solutions?

- A. $\text{CoCl}_3 \cdot 4\text{NH}_3$ and $\text{PtCl}_4 \cdot 4\text{NH}_3$
- B. $\text{CoCl}_3 \cdot 3\text{NH}_3$ and $\text{PtCl}_4 \cdot 5\text{NH}_3$
- C. $\text{CoCl}_3 \cdot 6\text{NH}_3$ and $\text{PtCl}_4 \cdot 5\text{NH}_3$
- D. $\text{CoCl}_3 \cdot 6\text{NH}_3$ and $\text{PtCl}_4 \cdot 3\text{NH}_3$

Answer

32. The cubic unit cell of Al (molar mass 27 g mol^{-1}) has an edge length of 405 pm. Its density is 2.7 g cm^{-3} . The cubic unit cell is

- A. face centred
- B. body centred
- C. primitive
- D. edge centred

Answer

33. The radioactive isotope of caesium -137 of weight 8 g was collected on 1st February, 2006 and kept in a sealed tube. On 1st July 2006 it was found that only 0.25 g of it remained. The half-life period of the isotope is

- A. 37.5 day
- B. 30 day
- C. 25 day
- D. 50 day

Answer

34. Which of the following make up an isotonic triad?

- A. Ge^{3278} , As^{3377} , Ga^{3174}
- B. Ar^{1840} , K^{1940} , Ca^{2040}
- C. C^{614} , O^{816} , N^{715}
- D. C^{613} , C^{712} , N^{714}

Answer

35. The age of a specimen t is related to the daughter/ parent ratio of number of atoms (D/P) by the equation (λ = decay constant)

- A. $t = \frac{1}{\lambda} \ln DP$
- B. $t = \frac{1}{\lambda} \ln 1 + PD$
- C. $t = \frac{1}{\lambda} \ln 2 + PD$

- D. $t = \frac{1}{\lambda} \ln 1 + DP$

Like. Share. Bookmark. Download. Make Notes. Print - Your Favourite Questions. Join www.zigya.com

36. Which one of the following set of units represents the smallest and largest amount of energy respectively?
Study Assignments, Solved Previous Year Papers . Questions and Answers. Free Forever.

- A. J and erg
- B. erg and cal
- C. cal and eV
- D. eV and lit-atom

Answer

37. The efficiency of enzyme catalysis is due to its capacity to

- A. form a strong enzyme-substrate complex
- B. change the shape of the substrate
- C. lower the activation energy of the reaction
- D. form a colloidal solution in water

Answer

38. Under which one of the following conditions, does the reaction

$\text{CH} \equiv \text{CH} + \text{CH}_3\text{OH} \rightarrow ? \text{CH}_3\text{O}-\text{CH}=\text{CH}_2$ take place?

- A. $\text{NH}_4\text{OH} / 80^\circ\text{C}$
- B. conc. $\text{H}_2\text{SO}_4 / 160^\circ\text{C}$
- C. $\text{CH}_3\text{OK} / 160-200^\circ\text{C}$
- D. Dilute $\text{HCl} / \text{THF}, 80^\circ\text{C}$

Answer

39. Identify the product/s in the following reaction

$3\text{CH}_3\text{CH} = \text{CH}_2 \xrightarrow{\text{BH}_3 \cdot \text{X}} \text{H}_2\text{O}_2 / \text{OH}^- \text{Product/s} + \text{H}_3\text{BO}_3$

- A. $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$
- B. $\text{CH}_3\text{CHOCH}_3$
- C. $\text{CH}_3\text{CH}_2\text{CHO}$
- D. $\text{CH}_3\text{CH}_2\text{OH} + \text{CH}_3\text{OH}$

Answer

40. Which of the following is not true of carbanions?

- A. The carbon carrying the charge has eight valence electrons
- B. They are formed by heterolytic fission
- C. They are paramagnetic
- D. The carbon carrying the charge is sp^3 hybridised

Answer

41. The $\text{S}_{\text{N}}1$ reactivity of the following halides will be in the order

(i) $(\text{CH}_3)_3\text{CBr}$

(ii) $(\text{C}_6\text{H}_5)_2\text{CHBr}$

Like. Share. Bookmark. Download. Make Notes. Print - Your Favourite Questions. Join www.zigya.com

(iv) $(\text{CH}_3)_2\text{CHBr}$

Study, Assignments, Solved Previous Year Papers . Questions and Answers. Free Forever.
(v) $\text{C}_2\text{H}_5\text{Br}$

- A. (iii) > (ii) > (i) > (iv) > (v)
- B. (v) > (iv) > (i) > (ii) > (iii)
- C. (ii) > (i) > (iii) > (v) > (iv)
- D. (v) > (i) > (ii) > (iv) > (iii)

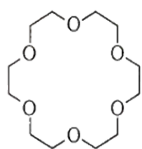
Answer

42. Which of the following does not answer iodoform test?

- A. *n*-butyl alcohol
- B. *sec*-butyl alcohol
- C. Acetophenone
- D. Acetaldehyde

Answer

43. Crown ethers are named as X-crown-Y. In the following crown ether, X and Y are respectively



- A. 6 and 12
- B. 18 and 6
- C. 24 and 6
- D. 6 and 24

Answer

44. The most suitable reagent for the conversion of primary alcohol into aldehyde with the same number of carbon is

- A. acidified $\text{K}_2\text{Cr}_2\text{O}_7$
- B. acidified KMnO_4
- C. alkaline KMnO_4
- D. pyridinium chlorochromate

Answer

45. Which one of the following compounds will dissolve in an alkali solution after it has undergone reaction with Hinsberg reagent?

- A. CH_3NH_2
- B. $(\text{CH}_3)_3\text{N}$
- C. $(\text{C}_2\text{H}_5)_2\text{NH}$
- D. $\text{C}_6\text{H}_5\text{NHC}_6\text{H}_5$

Answer

Like. Share. Bookmark. Download. Make Notes. Print - Your Favourite Questions. Join www.zigya.com

46. Which of the following hexoses will form the same osazone when treated with excess phenylhydrazine?

Study, Assignments, Solved Previous Year Papers . Questions and Answers. Free Forever.

- A. D-glucose, D-fructose and D-galactose
 B. D-glucose, D-fructose and D-mannose
 C. D-glucose, D-mannose and D-galactose
 D. D-fructose, D-mannose and D-galactose

Answer

47. Match List-I with List-II and select the correct answer using the codes given below

List-I	List-II
(Polymers)	(Monomers)
1. Buna-N	A. Phthalic acid and ethylene glycol
2. Nylon-6,6	B. Terephthalic acid and ethylene glycol
3. Dacron	C. Hexamethylene diamine and adipic acid
4. Glyptal plastic	D. Isobutylene and isoprene E. Acrylonitrile and butadiene

- A. 1 - E; 2 - C; 3 - B; 4 - A
 B. 1 - B; 2 - A; 3 - D; 4 - E
 C. 1 - D; 2 - C; 3 - B; 4 - A
 D. 1 - E; 2 - C; 3 - B; 4 - A

Answer

48. Pick out the statement which is not true?

- A. Tetrazine is harmful edible colour
 B. Alitame is an artificial sweetner
 C. BHT is an antioxidant
 D. Sodium alkyl sulphate is a cationic detergent

Answer