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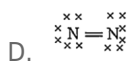
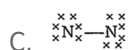
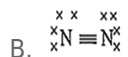
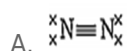
Previous Year Paper

Chemistry - 2006



Multiple Choice Questions

1. Which of the following represents the Lewis structure of N_2 molecule?



Answer

2. The decomposition of a certain mass of $CaCO_3$ gave 11.2 dm^3 of CO_2 gas at STP. The mass of KOH required to completely neutralise the gas is :

- A. 56 g
- B. 28 g
- C. 42 g
- D. 20 g

Answer

3. The density of a gas is 1.964 g dm^{-3} at 273 K and 76 cm Hg. The gas is :

- A. CH_4
- B. C_2H_6
- C. CO_2
- D. Xe

Answer

4. 0.06 mole of KNO_3 solid is added to 100 cm^3 of water at 298K. The enthalpy of KNO_3 aqueous solution is 35.8 kJ mol^{-1} . After the solute is dissolved the temperature of the solution will be:

- A. 293 K
- B. 298 K
- C. 301 K
- D. 304 K

Answer

5. 4 moles each of SO_2 and O_2 gases are allowed to react to form SO_3 , in a closed vessel. At equilibrium 25% of O_2 is used up. The total number of moles of all the gases at equilibrium is :

- A. 6.5

D. 2.0

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Answer

6. ΔG° vs T plot in the Ellingham's diagram slopes upwards for the reactions:

- A. $\text{Mg} + 1/2\text{O}_2 \rightarrow \text{MgO}$
- B. $2\text{Ag} + 1/2\text{O}_2 \rightarrow \text{Ag}_2\text{O}$
- C. $\text{C} + 1/2\text{O}_2 \rightarrow \text{CO}$
- D. $\text{CO} + 1/2\text{O}_2 \rightarrow \text{CO}_2$

Answer

7. Which of the following has the highest bond order?

- A. N_2
- B. O_2
- C. He_2
- D. H_2

Answer

8. Which of the following is diamagnetic?

- A. H_2^+
- B. O_2
- C. Li_2
- D. He_2^+

Answer

9. Solubility product of a salt AB is $1 \times 10^{-8} \text{ M}^2$ in a solution in which the concentration of A^+ ions is 10M. The salt will precipitate when the concentration of B ions is kept :

- A. between 10^{-8} M to 10^{-7} M
- B. between 10^{-7} M to 10^{-8} M
- C. $>10^{-5} \text{ M}$
- D. $<10^{-8} \text{ M}$

Answer

10. The pH of 10^{-8} M HCl solution is:

- A. 8
- B. more than 8
- C. between 6 and 7
- D. slightly more than 7

Answer

11. For a reaction to be spontaneous at all temperatures :

- A. ΔG and ΔH should be negative

- B. ΔG and ΔH should be positive

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D. $\Delta H < \Delta G$ Study, Assignments, Solved Previous Year Papers . Questions and Answers. Free Forever.
Answer

12. For a reversible reaction:

$X(g) + 3Y(g) \rightleftharpoons 2Z(g)$; $\Delta H = -40\text{kJ}$, the standard entropies of X, Y and Z are 60 , 40 and $50\text{ J K}^{-1}\text{ mol}^{-1}$ respectively. The temperature at which the above reaction attains equilibrium is about :

- A. 400 K
- B. 500 K
- C. 273 K
- D. 373 K

Answer

13. Among the alkali metals cesium is the most reactive because :

- A. its incomplete shell is nearest to the nucleus
- B. it has a single electron in the valence shell
- C. it is the heaviest alkali metal
- D. the outermost electron is more loosely bound than the outer most electron of the other alkali metals

Answer

14. During the fusion of an organic compound with sodium metal, nitrogen of the compound is converted into :

- A. NaNO_2
- B. NaNH_2
- C. NaCN
- D. NaNC

Answer15. Which cycloalkane has the lowest heat of combustion per CH_2 group?

- A. Cyclopropane
- B. Cyclobutane
- C. Cyclopentane
- D. Cyclohexane

Answer

16. Inductive effect involves:

- A. displacement of σ -electrons
- B. delocalisation of π -electrons
- C. delocalisation of σ -electrons
- D. displacement of π -electrons

Answer

17. Which of the following solutions will exhibit highest boiling point?

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B. 0.1M KNO_3 (aq)

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C. 0.015 M urea(aq)

D. 0.015 M glucose(aq)

Answer

18. Which of the following is not an ore of magnesium?

A. Carnallite

B. Dolomite

C. Calamine

D. Sea water

Answer

19. The atomic number of Ni and Cu are 28 and 29 respectively. The electronic configuration.

$1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10}$ represents.

A. Cu^+

B. Cu^{2+}

C. Ni^{2+}

D. Ni

Answer

20. In the following, the element with the highest ionisation energy is :

A. $[\text{Ne}]3s^2 3p^1$

B. $[\text{Ne}]3s^2 3p^3$

C. $[\text{Ne}]3s^2 3p^2$

D. $[\text{Ne}]3s^2 3p^4$

Answer

21. In the conversion of Br_2 to Br_3^- , the oxidation number of Br changes from:

A. zero to +5

B. +1 to +5

C. zero to -3

D. +2 to +5

Answer

22. Hydrogen bond is strongest in :

A. $\text{S-H}\cdots\text{O}$

B. $\text{O-H}\cdots\text{S}$

C. $\text{F-H}\cdots\text{F}$

D. $\text{O-H}\cdots\text{N}$

Answer

23. Liquor ammonia bottles are opened only after cooling. This is because

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B. it is a corrosive liquid

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D. it generates high vapour pressure and mild explosive

Answer

24. A transition metal ion exists in its highest oxidation state. It is expected to behave as :

A. a chelating agent

B. a central metal in a coordination compound

C. an oxidising agent

D. a reducing agent

Answer

25. Chemical reactions with very high E_a values are generally :

A. very fast

B. very slow

C. moderately fast

D. spontaneous

Answer

26. Which of the following does not conduct electricity?

A. Fused NaCl

B. Solid NaCl

C. Brine solution

D. Copper

Answer

27. Osmotic pressure observed when benzoic acid is dissolved in benzene is less than that expected from theoretical considerations. This is because:

A. benzoic acid is an organic solute

B. benzoic acid has higher molar mass than benzene

C. benzoic acid gets associated in benzene

D. benzoic acid gets dissociated in benzene

Answer

28. An example for autocatalysis is :

A. oxidation of NO to NO_2

B. oxidation of SO_2 to SO_3

C. decomposition of KClO_3 to KCl and O_2

D. oxidation of oxalic acid by acidified KMnO_4

Answer

29. Which of the following taking place in the blast furnace is endothermic?

A. $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$

B. $2\text{C} + \text{O}_2 \rightarrow 2\text{CO}$

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Answer

30. The formation of $\text{O}_2 + [\text{PtF}_6]^-$ is the basis for the formation of xenon fluorides. This is because :

- A. O_2 and Xe have comparable size
- B. Both O_2 and Xe are gases
- C. O_2 and Xe have both comparable ionisation size energies and comparable sizes.
- D. O_2 and Xe have comparable electro- negativities.

Answer

31. The highest magnetic moment is shown by the transition metal ion with the configuration :

- A. $3d^2$
- B. $3d^5$
- C. $3d^7$
- D. $3d^9$

Answer

32. In which of the following complex ion, the central metal ion is in a state of sp^3d^2 hybridisation?

- A. $[\text{CoF}_6]^{3-}$
- B. $[\text{Co}(\text{NH}_3)_6]^{3+}$
- C. $[\text{Fe}(\text{CN})_6]^{3-}$
- D. $[\text{Cr}(\text{NH}_3)_6]^{3+}$

Answer

33. Which of the following can participate in linkage isomerism?

- A. NO_2^-
- B. $\text{H}_2\text{N} \cdots \text{CH}_2\text{CH}_2\text{N} \cdots \text{H}_2$
- C. H_2O
- D. $:\text{NH}_3$

Answer

34. The concentration of a reactant X decreases from 0.1 M to 0.005 M in 40 minute. If the reaction follows 1 order kinetics, the rate of the reaction when the concentration of X is 0.01 M will be :

- A. $1.73 \times 10^{-4} \text{ M min}^{-1}$
- B. $3.47 \times 10^{-4} \text{ M min}^{-1}$
- C. $3.47 \times 10^{-5} \text{ M min}^{-1}$
- D. $7.5 \times 10^{-5} \text{ M min}^{-1}$

Answer

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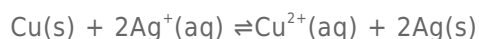
35. When a quantity of electricity is passed through CuSO_4 solution, 0.16 g of copper is deposited.

If the same quantity of electricity is passed through acidulated water, then the volume of H_2 liberated at STP will be : [given : atomic weight of Cu = 64]

- A. 4.0 cm^3
- B. 56 cm^3
- C. 604 cm^3
- D. 8.0 cm^3

Answer

36. Which one of the following condition will increase the voltage of the cell represented by the equation?



- A. Increase in the dimension of Cu electrode
- B. Increase in the dimension of Ag electrode
- C. Increase in the concentration of Cu^{2+} ion.
- D. Increase in the concentration of Ag^+ ions.

Answer

37. The mass of glucose that should be dissolved in 50 g of water in order to produce the same lowering of vapour pressure as is produced by dissolving 1 g of urea in the same quantity of water is:

- A. 1g
- B. 3g
- C. 6g
- D. 18g

Answer

38. Which of the following electrolyte will have maximum flocculation value for Fe(OH)_3 sol?

- A. NaCl
- B. Na_2S
- C. $(\text{NH}_4)_3\text{PO}_4$
- D. K_2SO_4

Answer

39. The radii of Na^+ and Cl^- ions are 95 pm and 181 pm respectively. The edge length of NaCl unit cell is :

- A. 276 pm
- B. 138 pm
- C. 552 pm
- D. 415 pm

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40. The formula mass of Mohr's salt is 392. The iron present in it is oxidised by KMnO_4 in acid medium. The equivalent mass of Mohr's salt is :

A. 392
B. 31.6
C. 278
D. 156

Answer

41. The brown ring test for nitrates depends on :
- A. the reduction of nitrate to nitric oxide
B. oxidation of nitric oxide to nitrogen dioxide
C. reduction of ferrous sulphate to iron
D. oxidising action of sulphuric acid

Answer

42. An organic compound which produces a bluish green coloured flame on heating in presence of copper is :
- A. chlorobenzene
B. benzaldehyde
C. aniline
D. benzoic acid

Answer

43. For a reaction $A + B \rightarrow C + D$ if the concentration of A is doubled without alternating the concentration of B, the rate gets doubled. If the concentration of B is increased by nine times without alternating the concentration of A, the rate gets tripled. The order of the reaction is :
- A. 2
B. 1
C. $3/2$
D. $4/3$

Answer

44. Methyl bromide is converted into ethane by heating it in ether medium with :
- A. Al
B. Zn
C. Na
D. Cu

Answer

45. The catalyst used in the preparation of an alkyl chloride by the action of dry HCl on an alcohol is:
- A. anhydrous AlCl_3
B. FeCl_3
C. anhydrous ZnCl_2

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Answer

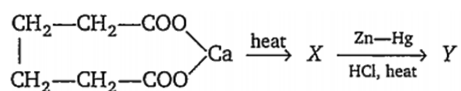
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46. Which of the following compound would not evolve CO_2 when treated with NaHCO_3 solution?

- A. Salicylic acid
- B. Phenol
- C. Benzoic acid
- D. 4-nitrobenzoic acid

Answer

47. Identify the product Y in the following reaction sequence:



- A. pentane
- B. cyclobutane
- C. cyclopentane
- D. cyclopentanone

Answer

48. The reaction $\text{C}_2\text{H}_5\text{ONa} + \text{C}_2\text{H}_5\text{I} \rightarrow \text{C}_2\text{H}_5\text{OC}_2\text{H}_5 + \text{NaI}$ is known as:

- A. Kolbe's synthesis
- B. Wurtz's synthesis
- C. Williamson's synthesis
- D. Grignard's synthesis

Answer

49. The basicity of aniline is less than that of cyclohexylamine. This is due to :

- A. +R-effect of -NH_2 group
- B. -I effect of -NH_2 group
- C. -R effect of -NH_2 group
- D. hyperconjugation effect

Answer

50. Which of the following compound is expected to be optically active?

- A. $(\text{CH}_3)_2\text{CHCHO}$
- B. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHO}$
- C. $\text{CH}_3\text{CH}_2\text{CHBrCHO}$
- D. $\text{CH}_3\text{CH}_2\text{CBr}_2\text{CHO}$

Answer

51. In the reaction, $\text{R-X} \xrightarrow{\text{alcoholic KCN}} \text{A} \xrightarrow{\text{dilute HCl}} \text{B}$

The product B is :

- A. alkyl chloride

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52. By heating phenol with chloroform in alkali, it is converted into :

- A. salicylic acid
- B. salicylaldehyde
- C. anisole
- D. phenyl benzoate

Answer

53. When a mixture of calcium benzoate and calcium acetate is dry distilled, the resulting compound is :

- A. acetophenone
- B. benzaldehyde
- C. benzophenone
- D. acetaldehyde

Answer

54. Which of the following does not give benzoic acid on hydrolysis?

- A. Phenyl cyanide
- B. Benzoyl chloride
- C. Benzyl chloride
- D. Methyl benzoate

Answer

55. Which of the following would undergo Hofmann reaction to give a primary amine?

- A. $R-CO-Cl$
- B. $RCONHCH_3$
- C. $RCONH_2$
- D. $RCOOR$

Answer

56. Glucose contains in addition to aldehyde group:

- A. one secondary OH and four primary OH groups
- B. one primary OH and four secondary OH groups
- C. two primary OH and three secondary OH groups
- D. three primary OH and two secondary OH groups

Answer

57. A distinctive and characteristic functional group of fats is

- A. a peptide group
- B. an ester group
- C. an alcoholic group

D. a ketonic group

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58. At pH = 4, glycine exists as

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- A. $\text{H}_3\text{N}^+-\text{CH}_2-\text{COO}^-$
- B. $\text{H}_3\text{N}^+-\text{CH}_2-\text{COOH}$
- C. $\text{H}_2\text{N}-\text{CH}_2-\text{COO}^-$
- D. $\text{H}_2\text{N}-\text{CH}_2-\text{COOH}$

Answer

59. Insulin regulates the metabolism of

- A. minerals
- B. amino acids
- C. glucose
- D. vitamins

Answer

60. Acrolein test is positive for:

- A. polysaccharides
- B. proteins
- C. oils and fats
- D. reducing sugars

Answer