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Previous Year Paper

Chemistry - 2007

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Multiple Choice Questions

1. For a stable molecule, the value of bond order must be
- A. there is no relationship between stability and bond order
 - B. zero
 - C. positive
 - D. negative

Answer

2. During the formation of a chemical bond
- A. electron-electron repulsion becomes more than the nucleus-electron attraction.
 - B. energy of the system does not change.
 - C. energy increases
 - D. energy decreases

Answer

3. Formation of coloured solution is possible when metal ion in the compound contains
- A. paired electrons
 - B. lone pair of electrons
 - C. unpaired electrons
 - D. none of the above

Answer

4. Dalton's law of partial pressure is applicable to which one of the following systems?
- A. $\text{NH}_3 + \text{HCl}$
 - B. $\text{NO} + \text{O}_2$
 - C. $\text{H}_2 + \text{Cl}_2$
 - D. $\text{CO} + \text{H}_2$

Answer

5. In acetylene molecule, between the carbon atoms there are
- A. three pi bonds
 - B. one sigma and two pi bonds
 - C. two sigma and one pi bonds
 - D. three sigma bonds

Answer

6. Which of the following is an intensive property?

A. temperature

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C. surface tension

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D. all of these

Answer

7. In equilibrium state the value of ΔG is

- A. zero
- B. negative
- C. positive
- D. may be negative or positive

Answer

8. In the ionic equation

 $\text{-BiO}_3^- + 6\text{H}^+ + x\text{e}^- \rightarrow \text{Bi}^{3+} + 3\text{H}_2\text{O}$, the value of x is

- A. 6
- B. 2
- C. 4
- D. 3

Answer

9. Molarity of a given orthophosphoric acid solution is 3M. It's normality is

- A. 9 N
- B. 0.3 N
- C. 3 N
- D. 1 N

Answer

10. A body of mass 10 mg is moving with a velocity of 100 ms^{-1} . The wavelength of de-Broglie wave associated with it would be ($h = 6.63 \times 10^{-34} \text{ Js}$)

- A. $6.63 \times 10^{-35} \text{ m}$
- B. $6.63 \times 10^{-34} \text{ m}$
- C. $6.63 \times 10^{-31} \text{ m}$
- D. $6.63 \times 10^{-37} \text{ m}$

Answer

11. Angle strain in cyclopropane is

- A. $24^\circ 44'$
- B. $9^\circ 44'$
- C. $44'$
- D. $-5^\circ 16'$

Answer

12. The number of antibonding electron pairs in O_2^{2-} molecular ion on the basis of molecular orbital
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A. 5

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C. 3

D. 2

Answer

13. Hydroxyl ion concentration of 10^{-2} M HCl is

A. $1 \times 10^1 \text{ mol dm}^{-3}$

B. $1 \times 10^{-12} \text{ mol dm}^{-3}$

C. $1 \times 10^{-1} \text{ mol dm}^{-3}$

D. $1 \times 10^{-14} \text{ mol dm}^{-3}$

Answer

14. Mg^{2+} is isoelectronic with

A. Cu^{2+}

B. Zn^{2+}

C. Na^{+}

D. Ca^{2+}

Answer

15. Gram molecular volume of oxygen at STP is

A. 3200 cm^3

B. 5600 cm^3

C. 22400 cm^3

D. 11200 cm^3

Answer

16. The electronic configuration of Cr^{3+} is

A. $[\text{Ar}] 3d^4 4s^2$

B. $[\text{Ar}] 3d^3 4s^0$

C. $[\text{Ar}] 3d^2 4s^1$

D. $[\text{Ar}] 3d^5 4s^1$

Answer

17. What is the equivalent weight of SnCl_2 in the following reaction?



A. 95

B. 45

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D. 30

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Answer

18. Entropy of the universe is

- A. constant
- B. zero
- C. continuously decreasing
- D. continuously increasing

Answer

19. Which one of the following salts on being dissolved in water gives pH > 7 at 25°C?

- A. KCN
- B. KNO₃
- C. NH₄Cl
- D. NH₄CN

Answer

20. The volume of 10 N and 4 N HCl required to make 1 L of 7 N HCl are

- A. 0.50 L of 10 N HCl and 0.50 L of 4 N HCl
- B. 0.60 L of 10 N HCl and 0.40 L of 4 N HCl
- C. 0.80 L of 10 N HCl and 0.20 L of 4 N HCl
- D. 0.75 L of 10 N HCl and 0.25 L of 4 N HCl

Answer

21. An oxide of the element contains 20% O₂ by weight. Calculate the equivalent weight of the element.

- A. 8
- B. 16
- C. 32
- D. 12

Answer

22. Maximum number of molecules of CH₃I that can react with a molecule of CH₃NH₂ are

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

Answer

23. The relation between ΔH and ΔU is

- A. $\Delta H = \Delta U + RT$
- B. $\Delta H = \Delta U - \Delta nRT$
- C. $\Delta H = \Delta U + \Delta nRT$
- D. $\Delta U = \Delta H + \Delta nRT$

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24. In which of the following process, maximum increase in entropy is observed?

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A. Melting of ice

B. Sublimation of naphthalene

C. Condensation of water

D. Dissolution of salt in water

Answer

25. Considering the reaction $C(s) + O_2(g) \rightarrow CO_2(g) + 393.5 \text{ kJ}$ the signs of ΔH , ΔS and ΔG respectively are

A. +, -, -

B. -, +, +

C. -, -, -

D. -, +, -

Answer

26. +I effect is shown by

A. $-CH_3$

B. $-Br$

C. $-Cl$

D. $-NO_2$

Answer

27. Benzene reacts with chlorine in sunlight to give a final product

A. CCl_4

B. $C_6H_6Cl_6$

C. C_6Cl_6

D. C_6H_5Cl

Answer

28. The general formula of a cycloalkane is

A. C_nH_n

B. C_nH_{2n}

C. C_nH_{2n-2}

D. C_nH_{2n+2}

Answer

29. How many chiral carbon atoms are present in 2, 3, 4-trichloropentane?

A. 4

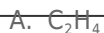
B. 1

C. 2

D. 3

Answer

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Answer

31. Geometrical isomerism is shown by



D. None of these

Answer

32. The oxidation state of iron in $K_4[Fe(CN)_6]$ is

A. 1

B. 4

C. 3

D. 2

Answer

33. Graphite is a soft solid lubricant extremely difficult to melt. The reason for this anomalous behaviour is that graphite

A. is an allotropic form of carbon

B. is a non-crystalline substance

C. has carbon atoms arranged in large plates of ring of strongly bond carbon atoms with weak interplate bonds

D. has molecules of variable molecular masses like polymers

Answer

34. Which one of the following has maximum number of atoms of oxygen?

A. 2 gm of carbon monoxide

B. 2gm of carbon dioxide

C. 2 gm of sulphur dioxide

D. 2 gm of water

Answer

35. Presence of halogen in organic compounds can be detected using

A. Leibig's test

B. Duma's test

C. Kjeldahl test

D. Beilstein's test

Answer

36. The number of unidentate ligands in the complex ion is called
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B. primary valency

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D. EAN

Answer

37. $2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons 2\text{SO}_3(\text{g})$ is an example for

- A. neutralisation reaction
- B. homogeneous catalysis
- C. heterogeneous catalysis
- D. irreversible reaction

Answer

38. Which one of the following is a second order reaction?

- A. $\text{H}_2 + \text{Br}_2 \rightarrow 2\text{HBr}$
- B. $\text{NH}_4\text{NO}_3 \rightarrow \text{N}_2 + 3\text{H}_2\text{O}$
- C. $\text{H}_2 + \text{Cl}_2 \xrightarrow{\text{sunlight}} 2\text{HCl}$
- D. $\text{CH}_3\text{COOCH}_3 + \text{NaOH} \rightarrow \text{CH}_3\text{COONa} + \text{H}_2\text{O}$

Answer

39. One mole of oxygen at 273 K and one mole of sulphur dioxide at 546 K are taken in two separate containers, then,

- A. kinetic energy of $\text{O}_2 >$ kinetic energy of SO_2
- B. kinetic energy of $\text{O}_2 <$ kinetic energy of SO_2
- C. kinetic energy of both are equal
- D. None of the above

Answer

40. In the periodic table metals usually used as catalysts belong to

- A. *f*-block
- B. *d*-block
- C. *p*-block
- D. *s*-block

Answer

41. IUPAC name of $\text{Na}_3[\text{Co}(\text{NO}_2)_6]$ is

- A. sodium hexanitrito cobaltate (II)
- B. sodium hexanitro cobaltate (III)
- C. sodium hexanitrito cobaltate (III)
- D. sodium cobaltnitrite

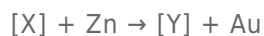
Answer

42. Acidified sodium fusion extract on addition of ferric chloride solution gives blood red colouration which confirms the presence of

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Answer

43. During the extraction of gold the following reactions take place



X and Y are respectively



Answer

44. The number of gram molecules of chlorine in 6.02×10^{25} hydrogen chloride molecules is

A. 10

B. 100

C. 50

D. 5

Answer

45. Which of the following forms a colourless solution in aqueous medium?



Answer

46. When a sulphur sol is evaporated sulphur is obtained. On mixing with water sulphur sol is not formed. The sol is

A. lyophilic

B. reversible

C. hydrophobic

D. hydrophilic

Answer

47. When conc. H_2SO_4 is heated with P_2O_5 , the acid is converted into

A. sulphur trioxide

B. sulphur dioxide

Answer

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48. When KBr is dissolved in water, K^+ ions are

- A. hydrated
- B. hydrolysed
- C. reduced
- D. oxidised

Answer

49. The noble gas mixture is cooled in a coconut bulb at 173 K. The gases that are not adsorbed are

- A. Ne and Xe
- B. He and Xe
- C. Ar and Kr
- D. He and Ne

Answer

50. Identify the ore not containing iron.

- A. limonite
- B. siderite
- C. carnallite
- D. chalcopyrites

Answer

51. Which complex cannot ionise in solution?

- A. $[CoCl_3(NH_3)_3]$
- B. $K_4[Fe(CN)_6]$
- C. $K_2[Pt(F_6)]$
- D. $[Pt(NH_3)_6]Cl_4$

Answer

52. The amino acid which is not optically active is

- A. lactic acid
- B. serine
- C. alanine
- D. glycine

Answer

53. Denatured alcohol is

- A. ethanol + methanol
- B. rectified spirit + methanol + naphtha
- C. undistilled ethanol
- D. rectified spirit

Answer

54. Hofmann's bromamide reaction is to convert

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B. alcohol to acid

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C. amide to amine

D. amine to amide

Answer

55. Paracetamol is a/an

A. antipyretic

B. analgesic

C. both (a) and (b)

D. antimalarial

Answer

56. An alkyl halide reacts with alcoholic ammonia in a sealed tube, the product formed will be

A. a primary amine

B. a secondary amine

C. a tertiary amine

D. a mixture of all the three

Answer

57. The reagent used in Clemmensen's reduction is

A. conc. H_2SO_4

B. Zn-Hg conc. HCl

C. aq. KOH

D. alc. KOH

Answer

58. A metal present in vitamin B_{12} is

A. aluminium

B. zinc

C. iron

D. cobalt

Answer

59. Decomposition of benzene diazonium chloride by using $\text{Cu}_2\text{Cl}_2/\text{HCl}$ to form chlorobenzene is

A. Raschig's reaction

B. Sandmeyer's reaction

C. Kolbe's reaction

D. Cannizaro's reaction

Answer

60. The product formed when hydroxylamine condenses with a carbonyl compound is called

A. hydrazide

B. oxime

C. hydrazine

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Answer

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