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Previous Year Paper

Chemistry - 2015



Multiple Choice Questions

1. Which of the following sets of quantum numbers is correct for an electron in 3d-orbital?

- A. $n = 3$; $l = 2$; $m = -3$; $s = +12$
- B. $n = 3$; $l = 3$; $m = +3$; $s = -12$
- C. $n = 3$; $l = 2$; $m = -2$; $s = +12$
- D. $n = 3$; $l = 2$; $m = -3$; $s = -12$

Answer

2. If the kinetic energy of a particle is reduced to half, de-Broglie wavelength becomes

- A. 2 times
- B. 12 times
- C. 4 times
- D. 2 times

Answer

3. Identify the most acidic oxide among the following oxides based on their reaction.

- A. SO_3
- B. P_4O_{10}
- C. Cl_2O_7
- D. N_2O_5

Answer

4. Match the following:

List - I	List - II
A. Rubidium	1. Germanium
B. Platinum	2. Radioactive chalcogen
C. Eka-silicon	3. s-block element
D. Polonium	4. Atomic number 78

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

Answer

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A. N_2

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B. CO

C. NO

D. C_{22}

Answer

6. In which one of the following pairs the two species have identical shape, but differ in hybridisation?

A. I_3^- , $BeCl_2$ B. NH_3 , BF_3 C. XeF_2 , I_3^- D. NH_4^+ , SF_4

Answer

7. Which one of the following is the wrong statement about the liquid?

A. It has intermolecular force of attraction.

B. Evaporation of liquids increase with the decrease of surface area.

C. It resembles a gas near the critical temperature.

D. It is an intermediate state between gaseous and solid state.

Answer

8. A carbon compound contains 12.8% of carbon, 21.% of hydrogen and 85.1% of bromine. The molecular weight of the compound is 187.9. Calculate the molecular formula of the compound.

(Atomic weight : H = 1.008; C = 12.0; Br = 79.9)

A. CH_3Br B. CH_2Br_2I C. $C_2H_4Br_2$ D. $C_2H_3Br_3$

Answer

9. 3.011×10^{22} atoms of an element weight 1.15 gm. The atomic mass of the element is

A. 23

B. 10

C. 16

D. 35.5

Answer

10. Which one of the following is applicable for an adiabatic expansion of an ideal gas?

A. $\Delta E = 0$ B. $\Delta W = \Delta E$ C. $\Delta W = -\Delta E$ D. $\Delta W = 0$

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11. On increasing temperature, the equilibrium constant of exothermic and endothermic reactions, respectively
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- A. increases and decreases
- B. decreases and increases
- C. increases and increases
- D. decreases and decreases

Answer

12. What is the pH of the NaOH solution when 0.04 g of it dissolved in water and made to 100 mL solution?

- A. 2
- B. 1
- C. 13
- D. 12

Answer

13. Identify the correct statement.

- A. Lead forms compounds in +2 oxidation state due to inert pair effect.
- B. All halogens show only negative oxidation state.
- C. Catenation property increases from boron to oxygen.
- D. Oxadation state of oxygen is - 1 in ozonides.

Answer

14. The bond angle of bond in methoxy methane is

- A. 111.7°
- B. 109°
- C. 108.9°
- D. 180°

Answer

15. Which of the following compounds has zero dipole moment?

- A. 1, 4-dichlorobenzene
- B. 1, 2-dichlorobenzene
- C. 1, 3-dichlorobenzene
- D. 1-chloro-2-methyl benzene

Answer

16. A gas 'X' is dissolved in water at 2 bar pressure. Its mole fraction is 0.02 in solution. The mole fraction of water when the pressure of gas is doubled at the same temperature is

- A. 0.04
- B. 0.98
- C. 0.96
- D. 0.02

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 $E_{\text{Ag}^+/\text{Ag}}^\circ = 0.80 \text{ V}$ and $E_{\text{Zn}^{2+}/\text{Zn}}^\circ = -0.76 \text{ V}$

- A. -305 kJ/ mol
- B. -301 kJ/ mol
- C. 305 kJ/ mol
- D. 301 kJ/ mol

Answer

18. Which one of the following is correct with respect to basic character?

- A. $\text{P}(\text{CH}_3)_3 > \text{PH}_3$
- B. $\text{PH}_3 > \text{P}(\text{CH}_3)_3$
- C. $\text{PH}_3 > \text{NH}_3$
- D. $\text{PH}_3 = \text{NH}_3$

Answer

19. On the top of mountain, water boils at

- A. high temperature
- B. same temperature
- C. high pressure
- D. low temperature

Answer

20. Which of the following methods is used for the removal of temporary hardness of water?

- A. Treatment with washing soda
- B. Calgon method
- C. Ion-exchange method
- D. Clark's method

Answer

21. Assertion (A) : Alkali metals are soft and have low melting and boiling points.

Reason (R) : This is because interatomic bonds are weak.

- A. Both (A) and (R) are not true.
- B. (A) is true but (R) is not the correct explanation of (A).
- C. (A) is true but (R) is false.
- D. Both (A) and (R) are true and (R) is the correct explanation of (A).

Answer

22. Which of the following statements are correct?

- A. Ocean is sink for CO_2 .
- B. Greenhouse effect causes lowering of temperature of earth's surface.

C. To control CO emission by automobiles, usually catalytic convertor are fitted into exhaust
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D. H_2SO_4 , herbicides and insecticides form mist.

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A. C and D

B. A and B

C. B and D

D. A and D

Answer

23. Which of the following reagent is used to find out carbon-carbon multiple bonds?

A. Grignard reagent

B. Baeyer's reagent

C. Sandmeyer's reagent

D. Gattermann reagent

Answer

24. Pure silicon doped with phosphorus is

A. amorphous

B. *p*-type semiconductor

C. *n*-type semiconductor

D. insulator

Answer

25. Sea divers use a mixture of

A. O_2 , N_2

B. O_2 , H_2

C. O_2 , He

D. N_2 , H_2

Answer

26. Assertion (A) : Noble gases have very low boiling points.

Reason (R) : All noble gases have general electronic configuration of $ns^2 np^6$ (except He).

A. Both (A) and (R) are true and (R) is the correct explanation of (A).

B. (A) is false but (R) is true.

C. (A) is true but (R) is false.

D. Both (A) and (R) are true and (R) is not the correct explanation of (A).

Answer

27. 18 g of glucose is dissolved in 90 g of water. The relative lowering of vapour pressure of the solution is equal to

A. 6

B. 0.2

C. 5.1

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28. The time required for a first order reaction to complete 90% is 't'. What is the time required to complete 99% of the same reaction?

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

Answer

29. Which of the following is the most effective in causing coagulation of ferric hydroxide solution?

- A. KCl
- B. KNO_3
- C. K_2SO_4
- D. $\text{K}_3[\text{Fe}(\text{CN})_6]$

Answer

30. Which of the following process involve heating?

- A. Calcination
- B. Smelting
- C. Roasting
- D. Levigation

Answer

31. When AgNO_3 solution is added in excess to 1M solution of $\text{CoCl}_3 \cdot x \text{NH}_3$ one mole of AgCl is formed. What is the value of x?

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

Answer

32. In which of the following coordination compounds, the central metal ion is in zero oxidation state?

- A. $[\text{Fe}(\text{H}_2\text{O})_6]\text{Cl}_3$
- B. $\text{K}_4[\text{Fe}(\text{CN})_6]$
- C. $\text{Fe}(\text{CO})_5$
- D. $[\text{Fe}(\text{H}_2\text{O})_6]\text{Cl}_2$

Answer

33. The percentage of lanthanides and iron respectively in misch metal are

- A. 50, 50
- B. 75, 25
- C. 90, 10

34. The polymer obtained with methylene bridges by condensation polymer is

A. PVC
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- B. buna-S
- C. polyacrylonitrile
- D. bakelite

Answer

35. The amino acid containing indole part is

- A. tryptophan
- B. tyrosine
- C. proline
- D. methionine

Answer

36. The drug used as post operative analgesic in medicine is

- A. L-dopa
- B. amoxycillin
- C. sulphapyridine
- D. morphine

Answer

37. $\text{C}_2\text{H}_5\text{OH} + 4\text{I}_2 + 3\text{Na}_2\text{CO}_3 \rightarrow \text{X} + \text{HCOONa} + 5\text{NaI} + 3\text{CO}_2 + 2\text{H}_2\text{O}$

In the above reaction, 'X' is

- A. diodomethane
- B. triodomethane
- C. iodomethane
- D. tetrariodomethane

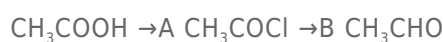
Answer

38. Phenol on oxidation in air gives

- A. quinone
- B. catechol
- C. resorcinol
- D. o-cresol

Answer

39. Identify the reagents A and B respectively in the following reaction.



- A. SOCl_2 , H_2 / Pd-BaSO₄
- B. H_2 / Pd-BaSO₄, SOCl_2
- C. SOCl_2 , H_2O_2

D. SOCl_2 , O_2

40. Predict respectively 'X and 'Y' in the following reactions.

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 $\text{Ar-NH}_2 \rightarrow \text{X} \quad \text{Ar-N}^+ \equiv \text{N}$

$\text{Cl} \rightarrow \text{Y} \quad \text{Ar-Cl}$

- A. NaNO_3 and Cl_2
- B. NaNO_3 - HCl and HCl
- C. NaNO_2 - HCl and Cu/ HCl
- D. NaNO_2 - HCl and NaNH_2

Answer