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Previous Year Paper

Chemistry - 2008

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Multiple Choice Questions

1. Which of the following equations represent de-Broglie relation?

- A. $hmv=p$
- B. $\lambda m =vp$
- C. $\lambda=hmp$
- D. $\lambda=hmv$

Answer

2. Which of the following sequences of the energy levels of the subshells related to principal quantum number four ($n = 4$)?

- A. $s < p < d < f$
- B. $s < d < p < f$
- C. $s < f < p < d$
- D. $p < s < d < f$

Answer

3. The correct electronic configuration of iron is

- A. $1s^2, 2s^2 2p^6, 3s^2 3p^6, 4s^2, 3d^6$
- B. $1s^2, 2s^2 2p^6, 3s^2 3p^6, 4s^2, 3d^5$
- C. $1s^2, 2s^2 2p^6, 3s^2 3p^6, 4s^2, 3d^7$
- D. $1s^2, 2s^2 2p^6, 3s^2 3p^6, 4s^2, 3d^5$

Answer

4. Which of the electronic shell of the following elements is not rounded?

- A. He
- B. Be
- C. B
- D. Li

Answer

5. The shape of water molecule according to VSEPR theory, is

- A. octahedral
- B. distorted tetrahedral
- C. trigonal planar
- D. trigonal bipyramidal

Answer

6. In a radioactive change $R \rightarrow \alpha X + \beta Y + \gamma Z$, R and Z are

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B. isobars

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C. isomers

D. isotones

Answer

7. Which one of the following elements belongs to s-block?

A. Aluminium

B. Chromium

C. Carbon

D. Potassium

Answer

8. Which one is the correct decreasing order of the ionic radii of the ions?

A. $N^{3-} > O^{2-} > F^- > Na^+$ B. $N^{3-} > Na^+ > O^{2-} > F^-$ C. $Na^+ > O^{2-} > N^{3-} > F^-$ D. $Na^+ > F^- > O^{2-} > N^{3-}$

Answer

9. The chemical decomposition of XY_2 occurs as $XY_2(g) \rightleftharpoons XY(g) + Y(g)$. The initial vapour pressure of XY_2 is 600 mm of mercury and at equilibrium it is 800 mm of mercury. Find out the value of K for this reaction when the volume of the system remains constant.

A. 50

B. 100

C. 166.6

D. 150

Answer

10. The degree of ionisation of decinormal solution of CH_3COOH is 1.3%. If the log of 1.3 is 0.11, the pH of this solution is

A. 2.89

B. 3.89

C. 4.89

D. 0.89

Answer

11. A buffer solution is obtained by mixing 10 mL of 1.0M CH_3COOH and 20mL of 0.5M CH_3COONa and it is diluted to 100mL using distilled water. pK_a of CH_3COOH is 4.76. The pH of this buffer solution is

A. 2.76

B. 3.76

C. 4.76

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Answer

12. To which of the following determinations of heat, Hess's law is used?

A. Heat of chemical reaction
B. Heat of formation
C. Heat of bond formation
D. All of the above

Answer

13. 1.0 L of 1.0 M solution of sodium hydroxide is neutralised by 1.0 L of 1.0 M of methanoic acid. If the heat of formation of water is X, the neutralisation energy of above reaction is

A. less than X
B. more than X
C. equal to X
D. None of the above

Answer

14. Which of the following units of energy, represents maximum amount of energy?

A. Calorie
B. Joule
C. Erg
D. Electron volt

Answer

15. Combustion of liquid benzene in oxygen occurs as $2\text{C}_6\text{H}_6 + 15\text{O}_2 \rightarrow 12\text{CO}_2 + 6\text{H}_2\text{O}$. At STP, what volume (in litre) of oxygen is required for the full combustion of 3.9 g liquid benzene?

A. 11.2 L
B. 22.4 L
C. 8.4 L
D. 7.4 L

Answer

16. Which one of the following is maximum electronegative?

A. lead
B. Silicon
C. Carbon
D. Tin

Answer

17. The reduction potential of three metallic ions X, Y and Z correspondingly are +0.52, -303 and -1.18 V. The sequence of reducing capacity of these metals will be

A. $Y > Z > X$
B. $X > Y > Z$
C. $X > Z > Y$

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Answer

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18. For the reaction $\text{MnO}_4^- + \text{C}_2\text{O}_4^{2-} + \text{H}^+ \rightarrow \text{Mn}^{2+} + \text{CO}_2 + \text{H}_2\text{O}$, which of the following is correct?

Mn^{2+}	$\text{C}_2\text{O}_4^{2-}$	CO_2	H^+
5	2	4	10

Mn^{2+}	$\text{C}_2\text{O}_4^{2-}$	CO_2	H^+
2	5	10	16

Mn^{2+}	$\text{C}_2\text{O}_4^{2-}$	CO_2	H^+
6	8	16	18

Mn^{2+}	$\text{C}_2\text{O}_4^{2-}$	CO_2	H^+
10	12	24	12

Answer

19. Acidic $\text{K}_2\text{Cr}_2\text{O}_7$ reacting with H_2S_2 the oxidation number of chromium is changed
- from +3 to +6
 - from +6 to +3
 - from +6 to +2
 - remains unchanged

Answer

20. Which of the following compounds does not show optical isomerism?
- $\text{CH}_3\text{CH}(\text{OH})\text{Br}$
 - $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$
 - $\text{CH}_3\text{CH}_2\text{CHBrCH}_2\text{CH}_3$
 - $\text{CH}_3\text{-CHOH-CHBr-CH}_2\text{OH}$

Answer

21. Which of the following metals has highest melting point
- Barium
 - Calcium
 - Strontium
 - Radium

Answer

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A. NaHCO_3 and NaCl

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B. NaHCO_3 and NaOH C. NaHCO_3 and Na_2CO_3 D. Na_2CO_3 and NaOH

Answer

23. On dissolving a non-volatile solute in a solvent, the vapour pressure of the solvent is decreased by 10 mm of mercury. The mole fraction of the solute in this solution is 0.2. If the vapour pressure of the solvent is decreased by 20 mm of mercury by dissolving more solute, what is the mole fraction of solvent in this solution now?

A. 0.2

B. 0.4

C. 0.6

D. 0.8

Answer

24. Which of the following statements about ionic crystals is false?

A. Melting and boiling temperature of ionic crystals are very high

B. These are soluble in water and other solvent

C. At low temperature in solid state they are good conductor of electricity.

D. They have high cohesive energy

Answer

25. 8.0 g of a radioactive substance remains 0.5 g in 1 h. What is its half-life period?

A. 10min

B. 15min

C. 30min

D. None of these

Answer

26. The electronic configuration of an element is $1s^2, 2s^2 2p^6, 3s^2 3p^6, 3d^{10}, 4s^2 4p^3$. To which of the following elements it is similar in properties?

A. Boron

B. Oxygen

C. Nitrogen

D. Chlorine

Answer

27. Malachite is the ore of which metal?

A. Fe

B. Cu

C. Zn

D. Hg

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28. Blister copper is melted in a furnace then stirred with green wooden logs. The purpose is

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- A. to expel the soluble gases out of the blister copper
- B. to bring the impurities on the surface to oxidise them
- C. to increase the carbon in copper
- D. to reduce the metallic oxide impurities by the hydrocarbon gases coming out of the log during the process

Answer

29. During smelting of an ore an additional substance is added to make the impurities fusible. The name of it is

- A. Slag
- B. mud
- C. gangue
- D. flux

Answer

30. 1.0 L of 2.0 M acetic acid is mixed with 1.0 L of 3.0 Methyl alcohol. The reaction is $\text{CH}_3\text{COOH} + \text{C}_2\text{H}_5\text{OH} \rightleftharpoons \text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O}$. 1.0 L of 2.0 M acetic acid is mixed with 1.0 L of 3.0 Methyl alcohol. The reaction is

- A. 0.5 times
- B. 2.0 times
- C. 4.0 times
- D. 0.25 times

Answer

31. The velocity constant for a reaction is $0.693 \times 10^{-1} \text{ min}^{-1}$ and initial concentration is 0.2 mol/L, the half-life periods is

- A. 400s
- B. 600s
- C. 800s
- D. 100s

Answer

32. For the chemical reaction $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$, if $d[\text{NH}_3]/dt = 2 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$, the value of $-d\text{H}_2/dt$ is

- A. $1 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$
- B. $3 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$
- C. $4 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$
- D. $6 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$

Answer

33. Like Share Book Mark Download Make Notes & Print Your Pa 76 Vite Question reaction, $\text{Zn}^{2+} + 2\text{e}^- \rightarrow \text{Zn}$.

A. Fe is more electropositive

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B. Zn is more electropositive

C. Zn is more electronegative

D. None of the above

Answer

34. For the electrolysis of aqua CuSO_4 solution using inert Pt electrodes, the reaction on anodeA. $2\text{SO}_4^{2-} \rightarrow \text{S}_2\text{O}_8^{2-} + 2\text{H}_2\text{O} + 2\text{e}^-$ B. $\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu}$ C. $2\text{H}_2\text{O} \rightarrow \text{O}_2 + 4\text{H}^+ + 4\text{e}^-$ D. $2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2$

Answer

35. Which of the following chemical reactions is homogeneous catalytic reaction?

A. $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \xrightarrow{\text{Fe}} 2\text{NH}_3(\text{g})$ B. $2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \xrightarrow{\text{NO}} 2\text{SO}_3(\text{g})$ C. $\text{CO}(\text{g}) + 3\text{H}_2(\text{g}) \xrightarrow{\text{Ni}} \text{CH}_4(\text{g}) + \text{H}_2\text{O}(\text{g})$ D. $2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \xrightarrow{\text{V}_2\text{O}_5} 2\text{SO}_3(\text{g})$

Answer

36. In which of the following compound the oxidation number of oxygen is +2?

A. H_2O_2 B. CO_2 C. H_2O D. OF_2

Answer

37. $[(\text{C}_6\text{H}_5)_2\text{Pd}(\text{NCS})_2]$ and $[(\text{C}_6\text{H}_5)_2\text{Pd}(\text{SCN})_2]$ are

A. bond isomeric

B. coordinated isomeric

C. ionic isomeric

D. geometrical isomeric

Answer

38. In which of the following complex compounds the oxidation number of the metal is zero?

A. $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$ B. $[\text{Cr}(\text{CO})_6]$ C. $[\text{Cr}(\text{NH}_3)_3\text{Cl}_3]$ D. $[\text{Cr}(\text{en})_2\text{Cl}_2]$

Answer

39. Transitional elements are mostly

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B. paramagnetic

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C. neither diamagnetic nor paramagnetic

D. diamagnetic and paramagnetic both

Answer

40. In which of the following compounds carboxylic group (-COOH) is not present?

- A. Acetic acid
- B. Lactic acid
- C. Benzoic acid
- D. Picric acid

Answer

41. When calcium acetate mixed with calcium formate is distilled, which of the following is not obtained?

- A. Acetone
- B. Formaldehyde
- C. Acetaldehyde
- D. Propionaldehyde

Answer

42. Glucose response to silver mirror test due to the presence of

- A. -COOH group
- B. an alkaline group
- C. a ketonic group
- D. an aldehydic group

Answer

43. Which one of the following compounds is used to obtain polymer teflon?

- A. Difluoro ethane
- B. Monofluoro ethane
- C. Tetrafluoro ethene
- D. None of the above

Answer

44. The increasing order of acidic character of phenol, *p*-cresol, *m*-nitrophenol and *p*-nitrophenol is

- A. phenol, *p*-cresol, *p*-nitrophenol, *m*-nitrophenol
- B. *p*-cresol, phenol, *m*-nitrophenol *p*-nitrophenol
- C. *p*-cresol, *m*-nitrophenol, phenol, *p*-nitrophenol
- D. *m*-nitrophenol, phenol, *p*-cresol, *p*-nitrophenol

Answer

45. The commercial production of methanol is done by

- A. the catalytic reduction of CO in presence of ZnO, Cr₂O₃

- B. the reaction of water vapour on CH₄ at 900°C in presence of nickel catalys

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D. reaction of aqua KOH on HCHO

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Answer

46. In which of the following compounds, the chlorine atom is most easily substituted?

- A. Chlorobenzene
- B. Vinyl chloride
- C. Allyl chloride
- D. *p*-chlorotoluene

Answer

47. Acetylene reacting with HCN in presence of $\text{Ba}(\text{CN})_2$ gives

- A. vinyl cyanide
- B. 1,1-dicyanoethane
- C. 1,2-dicyanoethane
- D. None of the above

Answer

48. In dehydrolysing reaction, $\text{CH}_3\text{CONH}_2 \xrightarrow{\text{P}_2\text{O}_5} \text{CH}_3\text{CN} + \text{H}_2\text{O}$ the hybridisation state of carbon is changed from

- A. sp^3 to sp^2
- B. sp to sp^2
- C. sp^2 to sp
- D. sp to sp^3

Answer

49. What is the IUPAC name of the following compound?



- A. 3-methyl cyclo-1-butene-2-ol
- B. 4-methyl cyclobut-2-ene-1-ol
- C. 4-methyl cyclobut-1-ene-3-ol
- D. 2-methyl cyclo-3-butene-1-ol

Answer

50. The main compound obtained by fusion of sodium with aniline is

- A. NaCN
- B. NaN_3
- C. NaSCN
- D. NaNO_2

Answer