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Previous Year Paper

Chemistry - 2016



Multiple Choice Questions

1. The equation that represents general van't Hoff equation is

- A. $\pi = nVRT$
- B. $\pi = nRT$
- C. $\pi = VnRT$
- D. $\pi = nVRT$

Answer

2. 5.0 g of sodium hydroxide (molar mass 40 g mol^{-1}) is dissolved in little quantity of water and the solution is diluted upto 100 ml. What is the molarity of the resulting solution?

- A. 0.1 mol dm^{-3}
- B. 1.0 mol dm^{-3}
- C. $0.125 \text{ mol dm}^{-3}$
- D. 1.25 dm^{-3}

Answer

3. Which among the following solid is a non-polar solid?

- A. Hydrogen chloride
- B. Sulphur dioxide
- C. Water
- D. Carbon dioxide

Answer

4. Mathematical equation of first law of thermodynamics for isochoric process is

- A. $\Delta U = q_v$
- B. $-\Delta U = q_v$
- C. $q = -W$
- D. $\Delta U = W$

Answer

5. The criterion for a spontaneous process is

- A. $\Delta G > 0$
- B. $\Delta G < 0$
- C. $\Delta G = 0$
- D. $\Delta S_{\text{total}} < 0$

Answer

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A. Viscosity

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B. Heat capacity

C. Density

D. Surface tension

Answer

7. What is the amount of work done when 0.5 mole of methane, $\text{CH}_4(\text{g})$, is subjected to combustion at 300 K? (Given, $R=8.314\text{JK}^{-1}\text{mol}^{-1}$)

A. -2494 J

B. -4988 J

C. + 4988 J

D. + 2494 J

Answer

8. If 'n' represents total number of asymmetric carbon atoms in a compound then the possible number of optical isomers of the compound is

A. $2n$ B. 2^n C. n^2 D. $2n+2$ **Answer**

9. Which is the most stable allotrope of sulphur?

A. Octahedral sulphur

B. Monoclinic sulphur

C. Plastic sulphur

D. Colloidal sulphur

Answer

10. The compound which is not formed when a mixture of n-butyl bromide and ethyl bromide treated with sodium metal in the presence of dry ether is

A. butane

B. octane

C. hexane

D. ethane

Answer

11. The element that does not form acidic oxide is

A. carbon

B. phosphorus

C. chlorine

D. barium

carbon atom is

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Answer

13. How many Faradays of electricity are required to deposit 10g of calcium from molten calcium chloride using inert electrodes? (Molar mass of calcium = 40g mol^{-1})

A. 0.5 F

B. 1F

C. 0.25 F

D. 2 F

Answer

14. Name the reagent that is used in leaching of gold.

A. Carbon

B. Sodium cyanide

C. Carbon monoxide

D. Iodine

Answer

15. What is the general molecular formula of the product obtained on heating lanthanoids (Ln) with sulphur?

A. LnS

B. LnS_3

C. Ln_3S_2

D. Ln_2S_3

Answer

16. In the cell represented by

$\text{Pb(s)}|\text{Pb}^{2+}(1\text{M})||\text{Ag}^+(1\text{M})|\text{Ag(s)}$, the reducing agents is

A. Pb^{2+}

B. Pb

C. Ag

D. Ag^+

Answer

17. Which metal crystallises in a simple cubic structure?

A. Polonium

B. Copper

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D. Iron

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Answer

18. Which metal is refined by Mond's process?

- A. Titanium
- B. Copper
- C. Nickel
- D. Zinc

Answer

19. In face centred cubic unit cell, what is the volume occupied?

- A. $43\pi r^3$
- B. $83\pi r^3$
- C. $163\pi r^3$
- D. $64r^3$

Answer

20. How is sodium chromate converted into sodium dichromate in the manufacture of potassium dichromate from chromite ore?

- A. By the action of concentrated sulphuric acid
- B. By roasting with soda ash
- C. By the action of sodium hydroxide
- D. By the action of limestone

Answer

21. In dry cell, what acts as a negative electrode?

- A. Zinc
- B. Graphite
- C. Ammonium chloride
- D. Manganese dioxide

Answer

22. Which halide of magnesium has highest ionic character?

- A. Chloride
- B. Bromide
- C. Iodide
- D. Fluoride

Answer

23. The reaction takes place in two steps as



Identify the reaction intermediate.

A. $\text{NO}_2\text{Cl}(g)$

B. $\text{NO}_2(g)$

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D. Cl(g)

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24. The relation between solubility of a gas in liquid at constant temperature and external pressure is stated by which law?

- A. Raoult's law
- B. van't Hoff- Boyle's law
- C. van't Hoff- Charles' law
- D. Henry's law

Answer

25. Identify the metal that forms colourless compounds.

- A. Iron ($Z = 26$)
- B. Chromium ($Z = 24$)
- C. Vanadium ($Z=23$)
- D. Scandium ($Z =21$)

Answer

26. What is the highest oxidation state exhibited by group 17 elements?

- A. +1
- B. +3
- C. +5
- D. +7

Answer

27. The rate constant and half-life of a first order reaction are related to each other as

- A. $t_{1/2}=0.693k$
- B. $t_{1/2} = 0.693 k$
- C. $k = 0.693 t_{1/2}$
- D. $kt_{1/2} =10.693$

Answer

28. Brown ring test is used for detection of which radical?

- A. Ferrous
- B. Nitrite
- C. Nitrate
- D. Ferric

Answer

29. Which of the following is a neutral complex?

- A. $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$
- B. $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$
- C. $[\text{Ni}(\text{NH}_3)_4]\text{Cl}_2$
- D. $[\text{K}_2\text{Fe}(\text{CN})_6]$

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30. Identify the compound amongst the following of which 0.1 M aqueous solution has highest boiling point.

- A. Glucose
- B. Sodium chloride
- C. Calcium chloride
- D. Ferric chloride

Answer

31. The most abundant noble gas in atmosphere is

- A. neon
- B. argon
- C. xenon
- D. krypton

Answer

32. Average rate of reaction for the following reaction.

$2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{SO}_3(\text{g})$ is written as

- A. $\Delta[\text{SO}_2]/\Delta t$
- B. $-\Delta[\text{O}_2]/\Delta t$
- C. $1/2\Delta[\text{SO}_2]/\Delta t$
- D. $\Delta[\text{SO}_3]/\Delta t$

Answer

33. Select the correct statement for thermoplastic polymer.

- A. It does not become soft on heating under pressure
- B. It cannot be remoulded
- C. It is either linear or branched chain polymer
- D. It is a cross- linked polymer.

Answer

34. Which of the following is not an analgesic?

- A. Ofloxacin
- B. Penicillin
- C. Aminoglycosides
- D. Paracetamol

Answer

35. Butylated hydroxy anisole is a/an

- A. antioxidant
- B. cleansing agent
- C. disinfectant
- D. antihistamine

Answer

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36. The amine A when treated with nitrous acid gives yellow oily substance. The amine A is

- A. triethylamine
- B. trimethylamine

- C. aniline
- D. methylphenylamine

Answer

37. Bullet proof helmets are made from

- A. lexan
- B. saran
- C. glyptal
- D. thiokol

Answer

38. Isopropyl methyl ether when treated with cold hydrogen iodide gives

- A. isopropyl iodide and methyl iodide
- B. isopropyl alcohol and methyl iodide
- C. isopropyl alcohol and methyl alcohol
- D. isopropyl iodide and methyl alcohol

Answer

39. Glucose on oxidation with bromine water yields gluconic acid. This reaction confirms the presence of

- A. six carbon atoms linked in straight chain
- B. secondary alcoholic group in glucose
- C. aldehyde group in glucose
- D. primary alcoholic group in glucose

Answer

40. Select the compound which on treatment with nitrous acid liberates nitrogen.

- A. Nitroethane
- B. Triethylamine
- C. Diethylamine
- D. Ethylamine

Answer

41. Which of the following compound when treated with dibenzyl cadmium yields benzyl methyl ketone?

- A. Acetone
- B. Acetaldehyde
- C. Acetic acid
- D. Acetyl chloride

Answer

42. Which of the following amino acid is basic in nature?

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C. Tyrosine

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D. Arginine

Answer

43. Which among the following phenolic compound is most acidic in nature?

- A. *p*-aminophenol
- B. Phenol
- C. *m*-nitrophenol
- D. *p*-nitrophenol

Answer

44. Name the catalyst used in commercial method of preparation of phenol.

- A. Silica
- B. Calcium phosphate
- C. Anhydrous aluminium chloride
- D. Cobalt naphthenate

Answer

45. What is the combining ratio of glycerol and fatty acid when they combine to form triglyceride?

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

Answer

46. The molecular formula of Wilkinson's catalyst used in the hydrogenation of alkenes is

- A. $\text{Co}(\text{CO})_8$
- B. $(\text{Ph}_3\text{P})_3\text{RhCl}$
- C. $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$
- D. $\text{K}[\text{Ag}(\text{CN})_2]$

Answer

47. The reagent used in Wolff-Kishner reduction is

- A. $\text{NH}_2\text{-NH}_2$ and KOH in ethylene glycol
- B. Zn-Hg / conc. HCl
- C. NaBH_4
- D. Na-Hg/ H_2O

Answer

48. Which reagent is used in Etard reaction?

- A. Chromyl chloride
- B. Ethanoyl chloride
- C. SnCl_2 and HCl
- D. Cadmium chloride

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49. Which of the following carboxylic acids is a tricarboxylic acid?

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- A. Oxalic acid
- B. Citric acid
- C. Succinic acid
- D. Adipic acid

Answer

50. Primary nitroalkanes are obtained in good yield by oxidising aldoximes with the help of

- A. trifluoroperoxy acetic acid
- B. acidified potassium permanganate
- C. concentrated nitric acid
- D. potassium dichromate and dilute sulphuric acid

Answer