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Previous Year Paper

Chemistry - 2014



Multiple Choice Questions

1. Assertion (A): van der Waals' forces are responsible for chemisorptions.

Reason (R): High temperature is favourable for chemisorptions.

The correct answer is:

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

Answer

2. What are the shapes of ethyne and methane?

- A. Square planar and linear
- B. Tetrahedral and trigonal planar
- C. Linear and tetrahedral
- D. Trigonal planar and linear

Answer

3. In an atom the order of increasing energy of electrons with quantum numbers

(i) $n=4, l=1$ (ii) $n=4, l=0$ (iii) $n=3, l=2$ and (iv) $n=3, l=1$ is

- A. III < I < IV < II
- B. II < IV < I < III
- C. I < III < II < IV
- D. IV < II < III < I

Answer

4. The number of angular and radial nodes of 4d orbital respectively are

- A. 3,1
- B. 1,2
- C. 3,0
- D. 2,1

Answer

5. The number of electrons in the valence shell of the central atom of a molecule is 8. The molecule is

- A. BCl_3
- B. BeH_2

D. SF_6

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Answer

6. Which one of the following has longest covalent bond distance?

- A. C—C
- B. C—H
- C. C—N
- D. C—O

Answer

7. The ratio of rates of diffusion of gases X and Y is 1 : 5 and that of Y and Z is 1 : 6. The ratio of rates of diffusion of Z and X is

- A. 1:30
- B. 1:6
- C. 30:1
- D. 6:1

Answer

8. KMnO_4 reacts with KI in basic medium to form I_2 and MnO_2 . When 250ml of 0.1M KI solution is mixed with 250ml of 0.02M KMnO_4 in basic medium, what is the number of moles of I_2 formed?

- A. 0.015
- B. 0.0075
- C. 0.005
- D. 0.01

Answer

9. The oxide of a metal contains 40% of oxygen. The valency of metal is 2. What is the atomic weight of metal?

- A. 24
- B. 13
- C. 40
- D. 36

Answer

10. The temperature of K at which $\Delta G = 0$, for a given reaction with $\Delta H = -20.5 \text{ kJ mol}^{-1}$ and $\Delta S = -500 \text{ JK}^{-1}\text{mol}^{-1}$ is

- A. -410
- B. 410
- C. -2.44
- D. 2.44

Answer

11. In a reaction, $\text{A} + \text{B} \rightleftharpoons \text{C} + \text{D}$, 40% of B has reacted at equilibrium, when 1 mole of A wasHeated with 1 mole of B in a closed system. Make Notes, Print Your Favorite Questions. Join www.zigya.com

B. 0.18

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C. 0.22

D. 0.36

Answer

12. If the ionic product of $\text{Ni}(\text{OH})_2$ is 1.9×10^{-15} , the molar solubility of $\text{Ni}(\text{OH})_2$ in 1.0 M NaOH

A. 1.9×10^{-18} MB. 1.9×10^{-13} MC. 1.9×10^{-15} MD. 1.9×10^{-15} M

Answer

13. Which one of the following elements on doping with germanium, make it a p-type semiconductor?

A. Boron

B. Selenium

C. Arsenic

D. Germanium

Answer

14. Which one of the following gives sooty flame on combustion?

A. C_2H_4 B. CH_4 C. C_2H_6 D. C_6H_6

Answer

15. What is Z in the following reaction?



A. propane

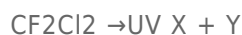
B. n-butane

C. ethane

D. ethyne

Answer

16. What are X and Y in the following reaction?

A. CF_2Cl , ClB. C_2F_4 , Cl_2 C. CFCl_2 , F

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Answer

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17. Which one of the following elements reacts with steam?

- A. C
- B. Ge
- C. Si
- D. Sn

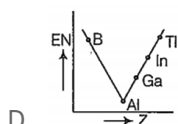
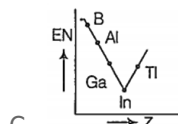
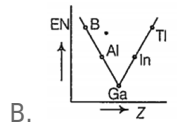
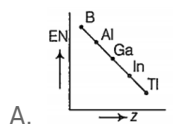
Answer

18. Temporary hardness of water is removed in Clark's process by adding

- A. caustic soda
- B. calgon
- C. borax
- D. lime

Answer

19. Which one of the following correctly represents the variation of electronegativity (EN) with atomic number (Z) of group 13 elements?



Answer

20. Which one of the following is more readily hydrolysed by S_N1 mechanism?

- A. $(C_6H_5)_2C(CH_3)Br$
- B. $C_6H_5CH_2Br$
- C. $C_6H_5CH(CH_3)Br$
- D. $(C_6H_5)_2CHBr$

Answer

21. In a first order reaction, the concentration of the reactant decrease from 0.6 M to 0.3 M in 15 min. The time taken for the concentration to change from 0.1 M to 0.025 M in minutes is

- A. 14
- B. 12

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22. At 298 K the molar conductivities at infinite dilution (Λ_m°) of NH_4Cl , KOH and KCl are 152.8, 272.6 and $149.8 \text{ S cm}^2 \text{ mol}^{-1}$ respectively. The Λ_m° of NH_4OH in $\text{S cm}^2 \text{ mol}^{-1}$ and % dissociation of 0.01 M NH_4OH with $\Lambda_m = 25.1 \text{ S cm}^2 \text{ mol}^{-1}$ at the same temperature are
- 275.6, 0.91
 - 275.6, 91
 - 266.6, 96
 - 30, 84

[Answer](#)

23. Vapour pressure in mm Hg of 0.1 mole of urea in 180 g of water at 25°C is (The vapour pressure of water at 25°C is 24 mm Hg)
- 2.376
 - 20.76
 - 23.76
 - 24.76

[Answer](#)

24. The molar mass of a solute X in g mol^{-1} , if its 1% solution is isotonic with a 5% solution of cane sugar (molar mass = 342 g mol^{-1}), is
- 68.4
 - 34.2
 - 136.2
 - 171.2

[Answer](#)

25. The structure of XeOF_4 , is
- trigonal bipyramidal
 - square pyramidal
 - square planar
 - pyramidal

[Answer](#)

26. The charring of sugar takes place when treated with concentrated H_2SO_4 . What is the type of reaction involved in it?
- Dehydration reaction
 - Hydrolysis reaction
 - Addition reaction
 - Disproportionation reaction

[Answer](#)

27. What is the role of limestone during the extraction of iron from haematite ore?
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- A. Bleaching agent
B. Oxidising agent
C. Reducing agent

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D. Flux

Answer

28. The oxidation state and covalency of Al in $[\text{AlCl}(\text{H}_2\text{O})_5]^{2+}$ are respectively

- A. +6,6
B. +3,6
C. +2,6
D. +3,3

Answer

29. The increasing order of the atomic radius of Si, S, Na, Mg, Al is

- A. $\text{S} < \text{Si} < \text{Al} < \text{Mg} < \text{Na}$
B. $\text{Na} < \text{Mg} < \text{Si} < \text{Al} < \text{S}$
C. $\text{Na} < \text{Mg} < \text{Si} < \text{Al} < \text{S}$
D. $\text{Na} < \text{Mg} < \text{Al} < \text{Si} < \text{S}$

Answer

30. The molecular interactions responsible for hydrogen bonding in HF

- A. ion-induced dipole
B. dipole-dipole
C. dipole- induced dipole
D. ion-dipole

Answer

31. KO_2 exhibits paramagnetic behaviour. This is due to the paramagnetic nature of

- A. $\text{KO}^\cdot$
B. K^+
C. O_2
D. $\text{O}_2^\cdot$

Answer

32. Which one of the following ions has same number of unpaired electrons as those present in V^+ ion?

- A. Fe^{3+}
B. Ni^{2+}
C. Mn^{2+}
D. Cr^{3+}

Answer

33. Match the following.
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Chemistry JEE 2014		Exam Year 2014	
Column I	Column II		
(A) sp^3 , Assignments, Solved Previous Year Papers, Questions and Answers. Free Forever.	(i) $[\text{Co}(\text{NH}_3)_6]^{3+}$		
(B) dsp^2	(ii) $[\text{Ni}(\text{CO})_4]$		
(C) sp^3d^2	(iii) $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$		
(D) d^2sp^3	(iv) $[\text{CoF}_6]^{3-}$		
	(v) $[\text{Fe}(\text{CO})_5]$		

- A. A B C D
(v) (ii) (i) (iii)
- B. A B C D
(ii) (iii) (iv) (v)
- C. A B C D
(ii) (iii) (i) (v)
- D. A B C D
(iii) (ii) (iv) (i)

Answer

34. What is Z in the following reaction sequence?

$\text{C}_6\text{H}_5\text{NH}_2 \rightarrow$ (iii) CO, HCl anhy $\text{AlCl}_3/\text{CuCl}(\text{i})$ $\text{NaNO}_2 + \text{HCl} / 273\text{K}$, (ii) $\text{H}_3\text{PO}_2 + \text{H}_2\text{O}$ Z

- A. $\text{C}_6\text{H}_5\text{CO}_2\text{H}$
- B. $\text{C}_6\text{H}_5\text{OH}$
- C. $\text{C}_6\text{H}_5\text{CHO}$
- D. C_6H_6

Answer

35. $\text{CH}_3\text{MgBr} + \text{CO}_2 \rightarrow$ Dry ether Y $\rightarrow \text{H}_3\text{O}^+$ Z. Identify Z from the following.

- A. Ethyl acetate
- B. Acetic acid
- C. Propanoic acid
- D. Methyl acetate.

Answer

36. $\text{X} \rightarrow \text{Y}$ Benzoquinone. Identify X and Y in the above reaction.

X	Y
	Zn

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 $\text{Na}_2\text{Cr}_2\text{O}_7 / \text{H}_2\text{SO}_4$

X	Y
	$\text{Na}_2\text{Cr}_2\text{O}_7 / \text{H}_2\text{SO}_4$

X	Y
	Zn

Answer

37. $\text{C}_6\text{H}_5\text{-O-CH}_2\text{-CH}_3 \xrightarrow{\Delta, \text{HI}}$ Y + Z

Identify Y and Z in the above reaction.

X	Y
$\text{C}_6\text{H}_5\text{OH}$	H_3CCH_3

X	Y
$\text{C}_2\text{H}_5\text{I}$	$\text{C}_6\text{H}_5\text{CHO}$

X	Y
$\text{C}_6\text{H}_5\text{I}$	$\text{H}_3\text{CCH}_2\text{OH}$

X	Y
$\text{C}_6\text{H}_5\text{OH}$	$\text{H}_3\text{CCH}_2\text{I}$

Answer

38. What are the substances which mimic the natural chemical messengers?

A. Antibiotics

B. Antagonists

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D. Receptors

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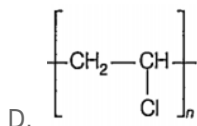
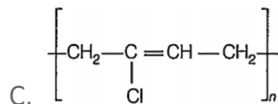
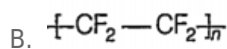
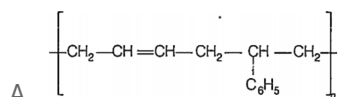
Answer

39. Lactose is disaccharide of

- A. α - D - glucose and α - D - fructose
- B. β - D- glucose and β - D-galactose
- C. α - D - glucose and β - D-ribose
- D. α - D - glucose and β - D-galactose

Answer

40. Identify the copolymer from the following



Answer