

NEET CHEMISTRY 2018-19 - Chennai

Test ID : 038

Number of questions: 150

Name: _____

ID No: _____

Test date: 16.04.2019

Time: 3HRS

Negative Marks : 4 marks for correct attempt & 1 mark deducted for every wrong attempt.

- Which of the following statements is wrong for gases?
 - Confined gas exerts uniform pressure on the walls of its container in all directions.
 - Volume of the gas is equal to volume of container confining the gas.
 - Gases do not have a definite shape and volume
 - Mass of a gas cannot be determined by weighing a container in which it is enclosed.
- The average kinetic energy of an ideal gas, per molecule in S.I units, at 25°C will be
 - 6.17×10^{-20} J
 - 7.16×10^{-20} J
 - 61.7×10^{-21} J
 - 6.17×10^{-21} J
- At what temperature, the rate of effusion of N₂ would be 1.625 times than the rate of SO₂ at 500°C?
 - 373°C
 - 620°C
 - 110°C
 - 173°C
- Which of the following mixture of gases does not obey Dalton's Law of partial pressure?
 - Cl₂ and SO₂
 - CO₂ and He
 - O₂ and CO₂
 - N₂ and O₂
- An ideal gas, obeying kinetic theory of gases cannot be liquefied because
 - It solidifies before becoming a liquid.
 - Forces acting between its molecules are negligible
 - Its critical temperature is above 0°C
 - Its molecules are relatively small in size.
- Standard entropies of X₂, Y₂ and XY₃ are 60, 40 and 50 JK⁻¹ mol⁻¹ respectively. For the reaction $\frac{1}{2}X_2 + \frac{3}{2}Y_2 \rightleftharpoons XY_3$, $\Delta H = -30$ kJ, to be at equilibrium, the temperature should be
 - 750 K
 - 1000 K
 - 1250 K
 - 500 K
- Match List I (Equations) with List II (Type of processes) and select the correct option.

List I Equations	List II Type of processes
A. $K_p > Q$	(i) Non-spontaneous
B. $\Delta G^\circ < RT \ln Q$	(ii) Equilibrium
C. $K_p = Q$	(iii) Spontaneous and endothermic
D. $T > \frac{\Delta H}{\Delta S}$	(iv) Spontaneous

 - A - (i), B - (ii), C - (iii), D - (iv)
 - A - (iii), B - (iv), C - (ii), D - (i)
 - A - (iv), B - (i), C - (ii), D - (iii)
 - A - (ii), B - (i), C - (iv), D - (iii)

8. Three moles of an ideal gas expanded spontaneously into vacuum. The work done will be
- infinite
 - 3 Joules
 - 9 Joules
 - Zero
9. For vaporization of water at 1 atmospheric pressure, the values of ΔH and ΔS are $40.63 \text{ kJ mol}^{-1}$ and $108.8 \text{ JK}^{-1} \text{ mol}^{-1}$, respectively. The temperature when Gibb's energy change (ΔG) for this transformation will be zero, is
- 273.4 K
 - 393.4 K
 - 373.4 K
 - 293.4 K
10. The following two reactions are known
- $$\text{Fe}_2\text{O}_3(\text{s}) + 3\text{CO}(\text{g}) \longrightarrow 2\text{Fe}(\text{s}) + 3\text{CO}_2(\text{g}); \Delta H = -26.8 \text{ kJ}$$
- $$\text{FeO}(\text{s}) + \text{CO}(\text{g}) \longrightarrow \text{Fe}(\text{s}) + \text{CO}_2(\text{g}); \Delta H = -16.5 \text{ kJ}$$
- The value of ΔH for the following reaction
- $$\text{Fe}_2\text{O}_3(\text{s}) + \text{CO}(\text{g}) \longrightarrow 2\text{FeO}(\text{s}) + \text{CO}_2(\text{g}) \text{ is}$$
- + 10.3 kJ
 - 43.3 kJ
 - 10.3 kJ
 - + 6.2 kJ
11. Which of these is least likely to act as a Lewis base?
- BF_3
 - PF_3
 - CO
 - F^-
12. Accumulation of lactic acid ($\text{HC}_3\text{H}_5\text{O}_3$), a monobasic acid in tissues leads to pain and a feeling of fatigue. In a 0.10 M aqueous solution, lactic acid is 3.7 % dissociates. The value of dissociation constant K_a , for this acid will be
- 1.4×10^{-5}
 - 1.4×10^{-4}
 - 3.7×10^{-4}
 - 2.8×10^{-4}
13. At 100°C the K_w of water is 55 times its value at 25°C . What will be the pH of neutral solution? ($\log 55 = 1.74$)
- 7.00
 - 7.87
 - 5.13
 - 6.13
14. The values of K_{sp} of CaCO_3 and CaC_2O_4 are 4.7×10^{-9} and 1.3×10^{-9} respectively at 25°C . If the mixture of these two is washed with water, what is the concentration of Ca^{2+} ions in water?
- $5.831 \times 10^{-5} \text{ M}$
 - $6.856 \times 10^{-5} \text{ M}$
 - $3.606 \times 10^{-5} \text{ M}$
 - $7.746 \times 10^{-5} \text{ M}$
15. The dissociation constant of a weak acid is 1×10^{-4} . In order to prepare a buffer solution with a pH = 5, the [Salt]/[Acid] ratio should be
- 4:5
 - 10:1
 - 5:4
 - 1:10
16. The pair of compounds that can exist together is
- $\text{FeCl}_3, \text{SnCl}_2$
 - $\text{HgCl}_2, \text{SnCl}_2$
 - $\text{FeCl}_2, \text{SnCl}_2$
 - FeCl_3, KI
17. (I) $\text{H}_2\text{O}_2 + \text{O}_3 \longrightarrow \text{H}_2\text{O} + 2\text{O}_2$
 (II) $\text{H}_2\text{O}_2 + \text{Ag}_2\text{O} \longrightarrow 2\text{Ag} + \text{H}_2\text{O} + \text{O}_2$
 Role of hydrogen peroxide in the above reactions is respectively
- Oxidizing in (I) and reducing in (II)
 - Reducing in (I) and oxidizing in (II)
 - Reducing in (I) and (II)
 - Oxidizing in (I) and (II)

18. In acidic medium, H_2O_2 changes $\text{Cr}_2\text{O}_7^{2-}$ to CrO_5 which has two (-O-O-O) bonds. Oxidation state of Cr in CrO_5 is
- +5
 - +3
 - +6
 - 10
19. When Cl_2 gas reacts with hot and concentrated sodium hydroxide solution, the oxidation number of chlorine changes from
- zero to +1 and zero to -5
 - zero to -1 and zero to +5
 - zero to -1 and zero to +3
 - zero to +1 and zero to -3
20. A mixture of potassium chlorate, oxalic acid and sulphuric acid is heated. During the reaction which element undergoes maximum change in the oxidation number?
- S
 - H
 - Cl
 - C
21. Some statements about heavy water are given below:
- Heavy water is used as a moderator in nuclear reactors.
 - Heavy water is more associated than ordinary water.
 - Heavy water is more efficient solvent than ordinary water.
- Which of the above statements are correct?
- (i) and (ii)
 - (i),(ii) and (iii)
 - (ii) and (iii)
 - (i) and (iii)
22. The structure of H_2O_2 is
- Spherical
 - Non-planar
 - Planar
 - Linear
23. Which one of the following pairs of substances on reaction will not evolve H_2 gas?
- Copper and HCl (aqueous)
 - Iron and steam
 - Iron and H_2SO_4 (aqueous)
 - Sodium and ethyl alcohol
24. The volume strength of 1.5 N H_2O_2 solution is
- 8.8
 - 8.4
 - 4.8
 - 5.2
25. The O-O-H bond angle in H_2O_2 is
- 106°
 - $109^\circ 28'$
 - 120°
 - 97°
26. In the case of alkali metals, the covalent character decreases in the order
- $\text{MF} > \text{MCl} > \text{MBr} > \text{MI}$
 - $\text{MF} > \text{MCl} > \text{MI} > \text{MBr}$
 - $\text{MI} > \text{MBr} > \text{MCl} > \text{MF}$
 - $\text{MCl} > \text{MI} > \text{MBr} > \text{MF}$
27. Which of the following oxides is not expected to react with sodium hydroxide?
- CaO
 - SiO_2
 - BeO
 - B_2O_3
28. Equimolar solutions of the following were prepared in water separately. Which one of the solutions will record the highest pH?
- MgCl_2
 - CaCl_2
 - SrCl_2
 - BaCl_2

29. The sequence of ionic mobility in aqueous solution is

- (a) $Rb^+ > K^+ > Cs^+ > Na^+$
- (b) $Na^+ > K^+ > Rb^+ > Cs^+$
- (c) $K^+ > Na^+ > Rb^+ > Cs^+$
- (d) $Cs^+ > Rb^+ > K^+ > Na^+$

30. The alkali metals form salt like hydrides by the direct synthesis at elevated temperature. The thermal stability of these hydrides decreases in which of the following orders?

- (a) $NaH > LiH > KH > RbH > CsH$
- (b) $LiH > NaH > KH > RbH > CsH$
- (c) $CsH > RbH > KH > NaH > LiH$
- (d) $KH > NaH > LiH > CsH > RbH$

31. Which one of the following compounds is not a protonic acid?

- a) $B(OH)_3$
- b) $PO(OH)_3$
- c) $SO(OH)_2$
- d) $SO_2(OH)_2$

32. Which compound is electron deficient?

- a) $BeCl_2$
- b) BCl_3
- c) CCl_4
- d) PCl_5

33. Which of the following does not show electrical conduction?

- a) Diamond
- b) Graphite
- c) Potassium
- d) Sodium

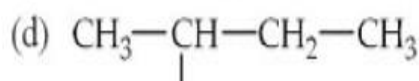
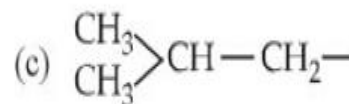
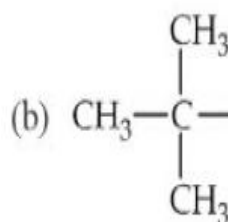
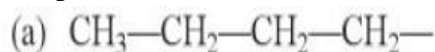
34. The type of hybridisation of boron in diborane is

- a) sp^3 - hybridisation
- b) sp^2 - hybridisation
- c) sp - hybridisation
- d) sp^3d^2 - hybridisation

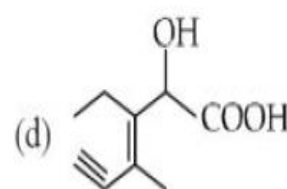
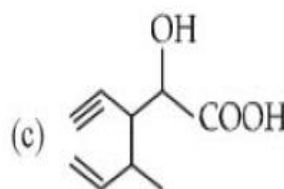
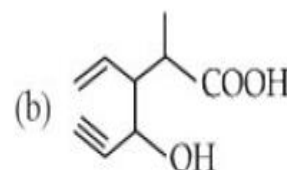
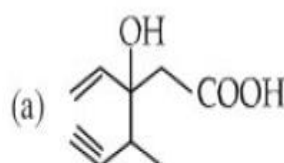
35. Percentage of lead in lead pencil is

- a) 80
- b) 20
- c) Zero
- d) 70

36. The structure of isobutyl group in an organic compound is



37. Structure of the compound whose IUPAC name is 3-Ethyl-2-hydroxy-4-methylhex-3-en-5-ynoic acid is



38. Some meta-directing substituents in aromatic substitution are given. Which one is most deactivating?

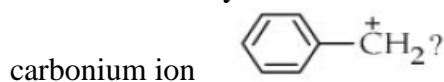
- a) $-COOH$
- b) $-NO_2$
- c) $-C \equiv N$
- d) $-SO_3H$

39. Arrange the following in increasing order of stability

1. $(\text{CH}_3)_2\overset{+}{\text{C}}-\text{CH}_2-\text{CH}_3$
2. $(\text{CH}_3)_3\overset{+}{\text{C}}$
3. $(\text{CH}_3)_2\overset{+}{\text{C}}\text{H}$
4. $\text{CH}_3-\overset{+}{\text{C}}\text{H}_2$
5. $\overset{+}{\text{C}}\text{H}_3$

- a) $5 < 4 < 3 < 1 < 2$
- b) $4 < 5 < 3 < 1 < 2$
- c) $1 < 5 < 4 < 3 < 2$
- d) $5 < 4 < 3 < 2 < 1$

40. What is the hybridisation state of benzyl



- a) sp^2
- b) sp^{d^2}
- c) sp^2d
- d) sp^3

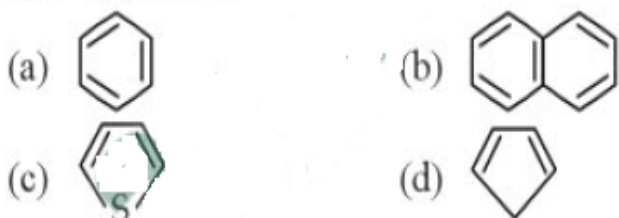
41. Which of the following organic compounds has some hybridization as its combustion product (CO_2)

- a) Ethane
- b) Ethyne
- c) Ethene
- d) Ethanol

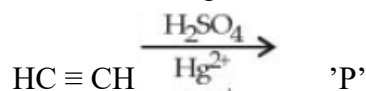
42. Which of the following compounds will not undergo Friedal-Craft's reaction easily?

- a) Nitrobenzene
- b) Toluene
- c) Cumene
- d) Xylene

43. Which of the following chemical system is non aromatic?



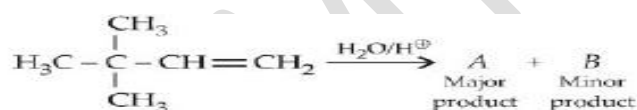
44. In the following reaction:



Product 'P' will not give

- a) Tollen's reagent test
- b) Brady's reagent test
- c) Victor Meyer test
- d) Iodoform test

45. In the following reaction



The major product is

- (a) $\text{H}_3\text{C}-\overset{\text{CH}_3}{\underset{\text{OH}}{\text{C}}}-\underset{\text{CH}_3}{\text{CH}}-\text{CH}_3$
- (b) $\text{CH}_2-\overset{\text{CH}_3}{\underset{\text{OH}}{\text{C}}}-\text{CH}_2-\text{CH}_3$
- (c) $\text{H}_3\text{C}-\overset{\text{CH}_3}{\underset{\text{CH}_3}{\text{C}}}-\underset{\text{OH}}{\text{CH}}-\text{CH}_3$
- (d) $\text{H}_3\text{C}-\overset{\text{CH}_3}{\underset{\text{CH}_3}{\text{C}}}-\text{CH}_2-\underset{\text{OH}}{\text{CH}_2}$

46. Which one of the following is not a common component of Photochemical smog?

- a) Ozone
- b) Acrolein
- c) Peroxyacetyl nitrate
- d) Chlorofluorocarbons

47. Which one of the following statements is not true?

- a) Clean water would have a BOD value of 5 ppm
- b) Fluoride deficiency in drinking water is harmful. Soluble fluoride is often used to bring its concentration upto 1 ppm
- c) When the pH of rain water is higher than 6.5 it is called rain water
- d) Dissolved Oxygen (DO) in cold water can reach a concentration upto 10 ppm

48. Which one of the following statements regarding photochemical smog is not correct?

- a) Carbon monoxide does not play any role in photochemical smog formation
- b) Photochemical smog is an oxidising agent in character
- c) Photochemical smog is formed through photochemical reaction involving solar energy
- d) Photochemical smog does not cause irritation in eyes and throat.

49. Which one of the following statement is not true?

- a) pH of drinking water should be between 5.5 – 9.5
- b) Concentration of DO below 6 ppm is good for the growth of fish
- c) Clean water would have a BOD value of less than 5 ppm
- d) Oxides of sulphur, nitrogen and carbon, are the most widespread air pollutant.

50. Green chemistry means such reactions which

- a) are related to the depletion of ozone layer
- b) study the reactions in plants
- c) produce colour during reactions
- d) reduce the use and production of hazardous chemical