

NEET CHEMISTRY 2018-19 - Chennai

Test ID : 037

Test date: 15.04.2019

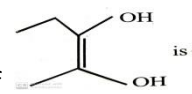
Number of questions: 150

Time: 2HRS

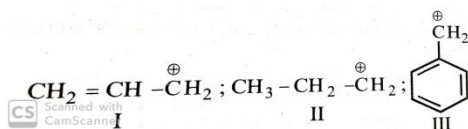
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Negative Marks : 4 marks for correct attempt & 1 mark deducted for every wrong attempt.

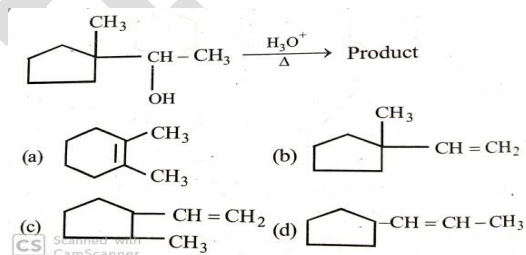
1. IUPAC name of  is:
- But - 2- ene - 2, 3 - diol
 - Pent - 2-ene - 2, 3 - diol
 - 2 - methylbut - 2 - ene - 2, 3 - diol
 - Hex - 2- ene - 2, 3 - diol

2. The order of stability of the following carbocations:



- is:
- III > II > I
 - II > III > I
 - I > II > III
 - III > I > II
3. Which of the following represents a set of nucleophiles?
- BF₃, H₂O, NH₂⁻
 - AlCl₃, BF₃, NH₃
 - CN⁻, RCH₂⁻, ROH
 - All of these

4. The major product of dehydration of the following

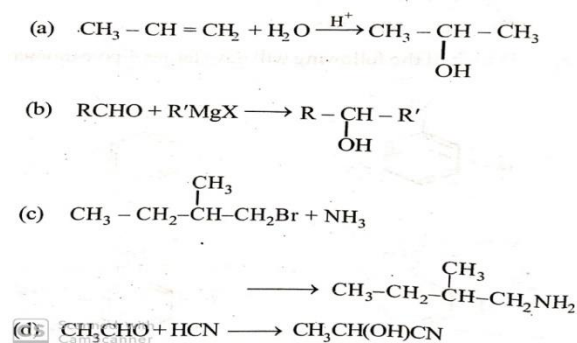


5. Which one of the following does not have SP² hybridized carbon?
- Acetonitrile
 - Acetic acid
 - Acetone
 - Acetamide

6. How many π - bonds are present in naphthalene?
- 4
 - 5
 - 6
 - 7

7. A compound of molecular formula of C₇H₁₆ shows optical isomerism, compound will be
- 2, 3-dimethylpentane
 - 2, 2-dimethylpentane
 - 2, 4-dimethylpentane
 - None of these

8. Which one is a nucleophilic substitution reaction among the following?



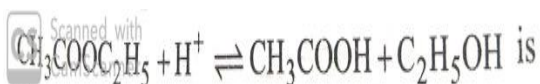
9. Iron carbonyl, $\text{Fe}(\text{Co})_5$ is
- Tetranuclear
 - Mononuclear
 - Dinuclear
 - Trinuclear
10. The hybridization involved in complex $[\text{Ni}(\text{CN})_4]^{2-}$ is (At. No. Ni = 28)
- dsp^2
 - sp^2
 - d^2sp^2
 - d^2sp^3
11. The sum of coordination number and oxidation number of the metal M in the complex $[\text{M}(\text{en})_2(\text{C}_2\text{O}_4)]\text{Cl}$ (where en is ethylenediamine) is:
- 9
 - 6
 - 7
 - 8
12. The geometry and magnetic behavior of the complex $[\text{Ni}(\text{CO})_4]$ are
- Square planar geometry and diamagnetic
 - Tetrahedral geometry and diamagnetic
 - Tetrahedral geometry and paramagnetic
 - Square planar geometry and paramagnetic
13. Which of the following complexes is used as anti-cancer agent:
- mer- $[\text{Co}(\text{NH}_3)_3\text{Cl}_3]$
 - cis- $[\text{PtCl}_2(\text{NH}_3)_2]$
 - cis- $\text{K}_2[\text{PtCl}_2\text{Br}_2]$
 - Na_2CoCl_4
14. Of the following complex ions, which is diamagnetic in nature?
- $[\text{NiCl}_4]^{2-}$
 - $[\text{Ni}(\text{CN})_4]^{2-}$
 - $[\text{CuCl}_4]^{2-}$
 - $[\text{CoF}_6]^{3-}$
15. $[\text{Sc}(\text{H}_2\text{O})_6]^{3+}$ ion is
- Colourless and diamagnetic
 - Coloured and octahedral
 - Colourless and paramagnetic
 - Coloured and paramagnetic
16. The d- electron configurations of Cr^{2+} , Mn^{2+} , Fe^{2+} and Co^{2+} are d^4 , d^5 , d^6 and d^7 respectively. Which one of the following will exhibit minimum paramagnetic behavior?
- $[\text{Mn}(\text{H}_2\text{O})_6]^{2+}$
 - $[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$
 - $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$
 - $[\text{Cr}(\text{H}_2\text{O})_6]^{2+}$
- (At. nos. Cr = 24, Mn = 25, Fe = 26, Co = 27)
17. Nickel (Z = 28) combines with a uninegative monodentate ligand to form a diamagnetic complex $[\text{NiL}_4]^{2-}$. The hybridization involved and the number of unpaired electrons present in the complex are respectively:
- sp^3 , two
 - dsp^2 , zero
 - dsp^2 , one
 - sp^3 , zero
18. Which of the following does not have a metal – carbon bond?
- $\text{Al}(\text{OC}_2\text{H}_5)_3$
 - $\text{C}_2\text{H}_5\text{MgBr}$
 - $\text{K}[\text{Pt}(\text{C}_2\text{H}_4)\text{Cl}_3]$
 - $\text{Ni}(\text{CO})_4$
19. Which of the following statements is correct for a reversible process in a state of equilibrium?
- $\Delta G = 2.30 RT \log K$
 - $\Delta G^\circ = -2.30 RT \log K$
 - $\Delta G^\circ = 2.30 RT \log K$
 - $\Delta G = -2.30 RT \log K$

20. Two moles of PCl_5 were heated in a closed vessel of 2 L. At equilibrium 40% of PCl_5 is dissociated into PCl_3 and Cl_2 .

The value of equilibrium constant is

- (a) 0.53
- (b) 0.267
- (c) 2.63
- (d) 5.3

21. The rate constant for forward and backward reaction of hydrolysis of ester are 1.1×10^{-2} and 1.5×10^{-3} per minute respectively. Equilibrium constant for the reaction



- (a) 4.33
- (b) 5.33
- (c) 6.33
- (d) 7.33

22. For a reaction the free energy change, $\Delta G = -RT \ln K_p + RT \ln Q_p$ where K_p = equilibrium constant, Q_p = reaction quotient. For the reaction to be in equilibrium state

- (a) $\frac{Q_p}{K_p} > 1$
- (b) $\frac{Q_p}{K_p} < 1$
- (c) $\frac{Q_p}{K_p} = 1$
- (d) $Q_p K_p = 1$

23. A buffer solution is prepared by mixing 0.1 M ammonia and 1.0 M ammonium chloride. At 298 K, the $\text{p}K_b$ of NH_4OH is 5.0. The pH of the buffer is

- (a) 10.0
- (b) 9.0
- (c) 6.0
- (d) 8.0

24. Which of the following $\text{p}K_a$ value represents the strongest acid?

- (a) 10^{-4}
- (b) 10^{-8}
- (c) 10^{-5}
- (d) 10^{-2}

25. Carbon monoxide (CO) is harmful to man because

- (a) It forms carbolic acid
- (b) It generates excess CO_2
- (c) It is carcinogenic
- (d) It competes with O_2 for haemoglobin

26. The maximum prescribed concentration of cadmium in drinking water in ppm is

- (a) 0.05
- (b) 3
- (c) 2
- (d) 0.005

27. Green chemistry means such reactions which:

- (a) Produce colour during reactions
- (b) Reduce the use and production of hazardous chemicals
- (c) Are related to the depletion of ozone layer
- (d) Study the reactions in plants

28. Which of the following reaction(s) represents commercial method for production of dihydrogen?

- (i) $\text{CO}(\text{g}) + \text{H}_2\text{O}(\text{g}) \xrightarrow[\text{catalyst}]{673\text{K}} \text{CO}_2(\text{g}) + \text{H}_2(\text{g})$
- (ii) $2\text{H}_2\text{O}(\text{l}) \xrightarrow[\text{traces of acid/base}]{\text{electrolysis}} 2\text{H}_2(\text{g}) + \text{O}_2(\text{g})$
- (iii) $\text{Zn} + 2\text{H}^+ \longrightarrow \text{Zn}^{2+} + \text{H}_2$
- (iv) $\text{CH}_4(\text{g}) + \text{H}_2\text{O}(\text{g}) \xrightarrow[\text{Ni}]{1270\text{K}} \text{CO}(\text{g}) + 3\text{H}_2(\text{g})$

- (a) (i), (ii) and (iii)
- (b) (iii) only
- (c) (i), (ii) and (iv)
- (d) (ii), (iii) and (iv)

29. Hydrogen accepts an electron to form inert gas configuration. In this it resembles

- (a) Halogen
- (b) Alkali metals
- (c) Chalcogens
- (d) Alkaline earth metals

30. Which one of the following pairs of substances will not produce hydrogen when reacted together?

- (a) Copper and conc. Nitric acid
- (b) Ethanol and metallic sodium
- (c) Magnesium and steam
- (d) Phenol and metallic sodium

31. Ortho and para hydrogen differ.

- (a) In the number of protons
- (b) In the molecular mass
- (c) In the nature of spins of protons
- (d) In the nature of spins of electrons

32. Which hydride is an ionic hydride?

- (a) H_2S
- (b) TiH_4
- (c) NH_3
- (d) NaH

33. The shape of water molecule is same as that of

- (a) C_2H_2
- (b) CO_2
- (c) NH_3
- (d) Cl

34. Which of the following groups of ions makes the water hard?

- (a) Sodium and bicarbonate
- (b) Magnesium and chloride
- (c) Potassium and sulphate
- (d) Ammonium and chloride

35. The boiling point of water is exceptionally high because

- (a) there is covalent bond between H and O.
- (b) water molecules is linear.
- (c) Water molecules associate due to hydrogen bonding.
- (d) Water molecule is not linear.

36. When H_2O_2 is oxidized, the product is:

- a) OH^-
- b) O_2
- c) O_2^-
- d) HO_2^-

37. The structure of H_2O_2 is

- (a) Planar
- (b) Non planar
- (c) Spherical
- (d) Linear

38. Metal hydrides are ionic, covalent or molecular in nature. Among LiH , NaH , KH , RbH , CsH , the correct order of increasing ionic character is

- (a) $\text{LiH} > \text{NaH} > \text{CsH} > \text{KH} > \text{RbH}$
- (b) $\text{LiH} < \text{NaH} < \text{KH} < \text{RbH} < \text{CsH}$
- (c) $\text{RbH} > \text{CsH} > \text{NaH} > \text{KH} > \text{LiH}$
- (d) $\text{NaH} > \text{CsH} > \text{RbH} > \text{LiH} > \text{KH}$

39. Acidified $\text{K}_2\text{Cr}_2\text{O}_7$ on oxidation by H_2O_2 gives

- (a) Blue solution
- (b) CrO_5
- (c) Chromium peroxide
- (d) All of these

40. Hydrogen can react with the following even in dark:

- (a) I_2
- (b) Cl_2
- (c) F_2
- (d) Br_2

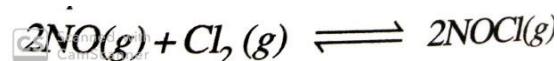
41. The solubility of silver chloride 25°C is 1.05×10^{-5} moles per litre. Calculate the solubility product

- (a) 1.1205×10^{-10}
- (b) 1.1025×10^{-10}
- (c) 1.0125×10^{10}
- (d) 1.1205×10^{10}

42. At 500°C, the reaction between N₂ and H₂ to form ammonia has K_c = 6.0 x 10⁻². What is the numerical value of K_p for the reaction?

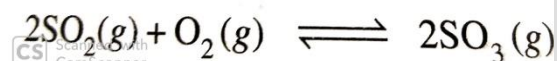
- (a) 1.5 x 10⁻⁵
- (b) 1.5 x 10⁵
- (c) 0.5 x 10¹⁰
- (d) 0.5 x 10⁻¹⁰

43. The value of K_p at 25°C for the reaction



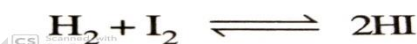
- (a) 4.6 x 10⁴
- (b) 6.4 x 10⁴
- (c) 4.6 x 10⁻⁴
- (d) 6.4 x 10⁻⁴

44. At equilibrium for the reaction



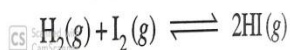
- (a) 3.7 mol l⁻¹
- (b) 3.5 mol l⁻¹
- (c) 3.6 mol l⁻¹
- (d) 3.4 mol l⁻¹

45. At a certain temperature, 0.100 mole of H₂ and 0.100 mole of I₂ were placed in a one-litre flask. The purple colour of iodine vapour was used to monitor the reaction. After a time, the equilibrium



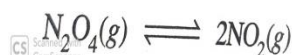
- (a) 46
- (b) 56
- (c) 66
- (d) 64

46. 13.5 ml of HI are produced by the interaction of 8.1 ml of hydrogen and 9.3 ml of iodine vapour at 444°C. Calculate the equilibrium constant at this temperature of the reaction.



- (a) 50.00
- (b) 52.94
- (c) 59.49
- (d) 60.00

47. At 60°C and a total pressure of 1 atmosphere dinitrogen tetroxide, N₂O₄, is 50% dissociated into nitrogen, NO₂.

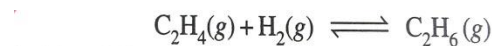


- (a) 1.33
- (b) 1.30
- (c) 2.00
- (d) 2.03

48. When PCl₅ is heated it gasifies and dissociates into PCl₃ and Cl₂. The density of the gas mixture at 200°C is 70.2. Find the degree of dissociation of PCl₅ at 200°C.

- (a) 0.485
- (b) 1.425
- (c) 0.485
- (d) 0.200

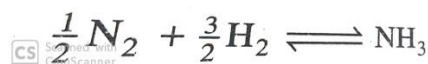
49. The equilibrium constant, K_p for the reaction



is 5.04×10^{17} atm⁻¹ at 25°C. Calculate ΔG°.

- (a) -001 KJ
- (b) -100 KJ
- (c) -101 KJ
- (d) -102 KJ

50. The value of K_p at 298 K for the reaction



is found to be 826.0, partial pressures being measured in atmospheric units. Calculate ΔG° at 298 K.

- (a) 1777.72 cal
- (b) 1777.57 cal
- (c) 2707.78 cal
- (d) 3977.78 Cal