CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA NEET SET 45

Chemistry

1. In which of the following salts only cationic hydrolysis is involved ?

A. CH_3COONH_4

B. CH_3COONa

C. NH_4Cl

D. Na_2SO_4

Answer: C

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2. Which of these is not a monomer for a high-molecular mass silicone polymer?

A. Me_2SiCl_2

B. Me_3SiCl

C. $PhSiCl_3$

D. $MeSiCl_3$

Answer: B

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3. The differential rate law for the reaction,

$4NH_3(g) + 5O_2(g) \rightarrow 4NO(g) + 6H_2O(g)$

A. $-\frac{d[NH_3]}{dt} = -\frac{d[O_2]}{dt} = -\frac{d[NO]}{dt} = -\frac{d[H_2O]}{dt}$

B. $\frac{d[NH_3]}{dt} = \frac{d[O_2]}{dt} = -\frac{1}{4}\frac{d[NO]}{dt} = -\frac{1}{6}\frac{d[H_2O]}{dt}$

C. $\frac{1}{4}\frac{d[NH_3]}{dt} = \frac{1}{5}\frac{d[O_2]}{dt} = \frac{1}{4}\frac{d[NO]}{dt} = \frac{1}{6}\frac{d[H_2O]}{dt}$

D. $-\frac{1}{4}\frac{d[NH_3]}{dt} = -\frac{1}{5}\frac{d[O_2]}{dt} = \frac{1}{4}\frac{d[NO]}{dt} = \frac{1}{6}\frac{d[H_2O]}{dt}$

Answer: D

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4. The heating of phenyl-methyl ethers with HI produces

A. Iodobenzene

B. Phenol

C. Benzene

D. Ethyl chlorides

Answer: B

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5. If 0.50 mol of $BaCl_2$ is mixed with 0.20 mol of Na_3PO_4, the maximum number of moles of $Ba_3(PO_4)_2$ that can be formed is

A. 0.10

B. 0.20

C. 0.30

D. 0.40

Answer: A

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6. Specify the coordination geometry around and the hybridisation of N and B atoms in $1:1$ complex of BF_3 and NH_3.

A. N : tetrahedral , sp^3 , B : tetrahedral , sp^3

B. N: pyramidal , sp^3 , B: pyramidal , sp^3

C. N: pyramidal , sp^3 , B: planar , sp^2

D. N: pyramidal , sp^3 , B: tetrahedral , sp^3

Answer: A

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7. The reaction $3ClO^-(aq) \rightarrow ClO_3^-(aq) + 2Cl^-(aq)$ an example of :

A. oxidation reaction

B. reduction reaction

C. disproportionation reaction

D. decomposition reaction

Answer: C

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8. Which one is the correct order of acidity ?

A. $CH \equiv CH > CH_3 - C \equiv CH > CH_2 = \ > CH_3 - CH_3$

B. $CH \equiv CH > CH_2 = CH_2 > CH_3 - C \equiv CH > CH_3 - CH_3$

C. $CH_3 - CH_3 > CH_2 = CH_2 > CH_3 - C \equiv CH > CH \equiv CH$

D.

$$CH_2 = CH_2 > CH_3 - CH = CH_2 > CH_3 - C = CH > CH \equiv C$$

Answer: A

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9. The hardness of a water sample containing $10^{-3} MMgSO_4$ expressed as $CaCO_3$equivalents (in ppm) is _ _ _ _ _ _ (Molar mass of $MgSO_4$ is $120.37 g/mol$)

A. 50

B. 75

C. 90

D. 100

Answer: D

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10. Which one of the following compounds is a peroxide?

A. NO_2

B. KO_2

C. BaO_2

D. MnO_2

Answer: C

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11. A buffer solution is prepared by mixing 20 ml of 0.1 M CH_3COOH and 40 ml of 0.5 M CH_3COONa and then diluted by adding 100 ml of

distilled water . The pH of resulting buffer solution is (Given $pK_aCH_3COOH = 4.76$)

A. 5.76

B. 4.67

C. 3.48

D. 5.9

Answer: A

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12. Predict the correct intermediate and product in the following reaction:

$$H_3C - C \equiv CH \xrightarrow[HgSO_4]{H_2O, H_2SO_4} \text{Intermediate} \rightarrow \text{Product}$$

A. $(X): H_3C - \underset{\underset{OH}{|}}{C} = CH_2 (Y): H_3C - \underset{\underset{SO_4}{||}}{C} = CH_2$

B. $(X): H_3C - \underset{\underset{O}{||}}{C} = CH_3 (Y): H_3C - C \equiv CH$

C. $(X): H_3C - \underset{\underset{OH}{|}}{C} = CH_2 (Y): H_3C - \underset{\underset{O}{||}}{C} - CH_3$

D. $(X): H_3C - \underset{\underset{SO_4}{|}}{C} = CH_2 (Y): H_3C - \underset{\underset{O}{||}}{C} - CH_2$

Answer: C

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13. Green chemistry deals with study of ?

A. study of plant physiology

B. study of extraction of natural products from plants

C. detailed study of reactions involved in synthesis of chlorophyll

D. utilization of existing knowledge base reducing the chemical hazards along with development activities

Answer: D

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14. Benzalkonium chloride is a .

A. cationic surfactant and antiseptic

B. anionic surfactant and soluble in most of the organic solvents

C. cationic surfactant and insoluble is most of the organic solvents

D. cationic surfactant and antimalarial

Answer: A

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15. The equilibrium constant of the following are reactions

$N_2 + 3H_2 \Leftrightarrow 2NH_3 K_1$

$N_2 + O_2 \Leftrightarrow 2NO K_2$

$H_2 + \frac{1}{2}O_2 \rightarrow H_2O K_3$

The equilibrium constant (K) of the reaction $NH_3 + \frac{5}{2}O_2 \overset{K}{\longleftrightarrow} 2NO + 3H_2O$, will be

A. $K_2K_3^3 / K_1$

B. K_2K_3 / K_1

C. $K_2^3K_3 / K_1$

D. $K_1K_3^3 / K_2$

Answer: A

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16. In the electrolytic cell, flow of electrons is form :

A. cathode to anode in solution

B. cathode to anode through external supply

C. cathode to anode through internal supply

D. anode to cathode through internal supply

Answer: B

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17. The enthalpy change involved in the oxidation of glucose is $-2880kJmol^{-1}$. Twenty five per cent of this energy is available for muscular work . If $100kJ$ of muscular work is needed to walk one kilometre, what is the maximum distance that a person will be able to walk after eating $120g$ of glucose ?

A. 7.9 km

B. 9.7 km

C. 4.8 km

D. 8.4 km

Answer: C

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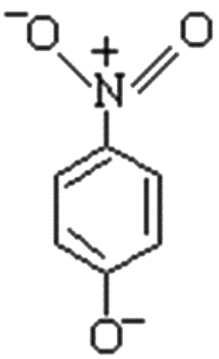
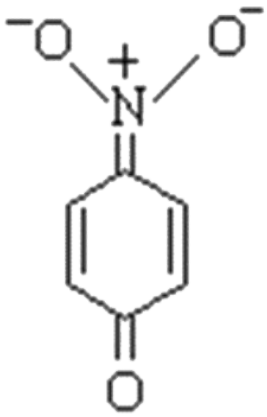
18. The most unlikely representation of resonance structure of p-nitrophenoxide ion is:

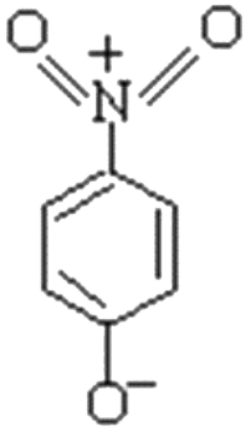
A.

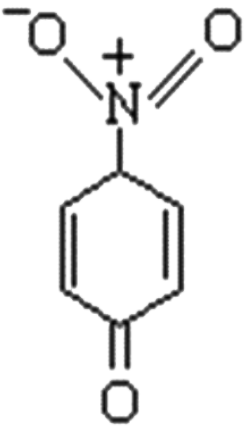


B.



C.





D.

Answer: C

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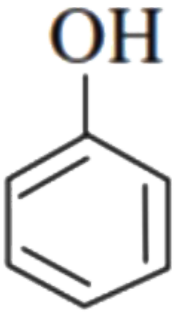
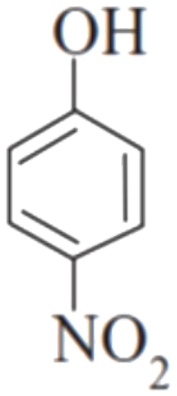
19. Which one is the most acidic compound?

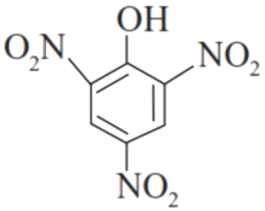


A.

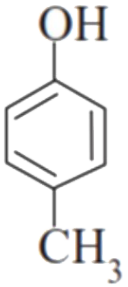
B.



C.



D.



Answer: C

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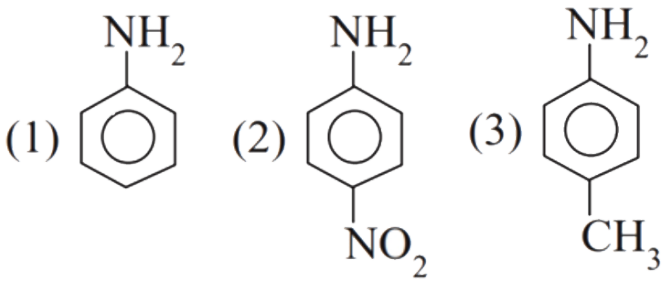
20. The correct increasing order of basic strength for the following compounds is



A. $3 < 1 < 2$

B. $3 < 2 < 1$

C. $2 < 1 < 3$

D. $2 < 3 < 1$

Answer: C

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21. In the following sequence of reactions the products D is

$C \equiv CH \xrightarrow{HBr} A \xrightarrow{HBr} B \xrightarrow{alcKOH} C \xrightarrow{NaNH_2} D$. D is

A. Ethanol

B. Ethyne

C. Ethanal

D. Ethene

Answer: B

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22. The order of reactivities of the following alky halides for an S_N2 reaction is .

A. $RF > RCl > RBr > Rl$

B. $RF > RBr > RCl > RI$

C. $RCl > RBr > RF > RI$

D. $RI > RBr > RCl > RF$

Answer: D

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23. Identify the correct order of boiling points of the following compounds

(I) $CH_3CH_2CH_2CH_2OH$

(II) $CH_3CH_2CH_2CHO$

(III) $CH_3CH_2CH_2COOH$

A. $I > II > III$

B. $III > I > II$

C. $I > III > II$

D. $III > II > I$

Answer: B

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24. $HgCl_2$ and I_2 both when dissolved in water containing I^- ions the pair of species formed is:

A. $H_gI_4^{2-}, I_3^-$

B. HgI_4^{2-}, I_3^-

C. Hg_2I_2, I^-

D. HgI_2, I_3^-

Answer: B

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25. When benzene sulphonic acid and P-nitrophenol are treated with $NaHCO_3$, the gases released, respectively, are :

A. SO_2, NO_2

B. SO_2, NO

C. SO_2, CO_2

D. CO_2, CO_2

Answer: D

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26. Benzoyl chloride is prepared from benzoic acid by :

A. Cl_2, hv

B. SO_2, Cl_2

C. $SOCl_2$

D. Cl_2, H_2O

Answer: C

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27. Atomic radii of fluorine and neon in Angstrom units are respectively given by

A. 1.60,1.60

B. 0.72 ,0.72

C. 0.72 , 1.60

D. None of these

Answer: C

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28. An example of a sigma bonded organometallic compound is:

A. Grignard's reagent

B. Ferrocene

C. Cobaltocene

D. Ruthenocene

Answer: A

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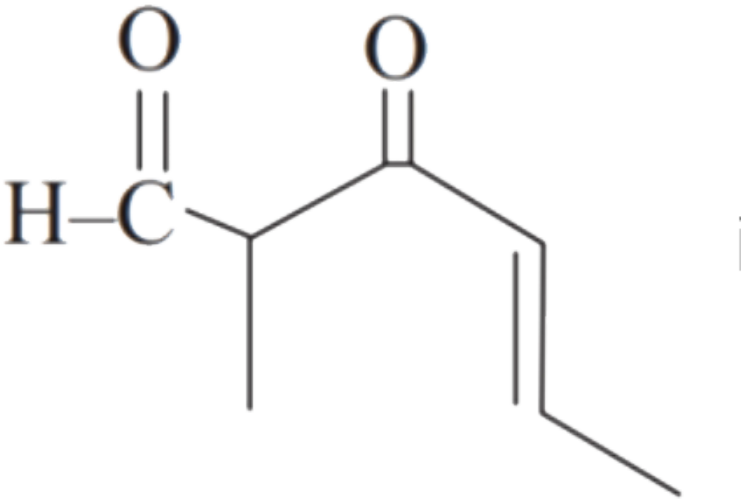
29. The IUPAC name of the compound



A. 5- formylhex -2 - en - 3 - one

B. 5 - methyl - 4 - oxohex - 2 - en - 5 -al

C. 3 - keto -2 - methylhex - 5 - enal

D. 3 - keto -2 - methylhex - 4 - enal

Answer: D

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30. Highly pure dilute solution of sodium in liquid ammonia

A. 1,2

B. 1,2,3

C. 1,4

D. 1,2,3,4

Answer: A

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31. The species present in solution when CO_2 is dissolved in water

A. $CO_2, H_2CO_3, HCO_3^-, CO_3^{2-}$

B. H_2CO_3, CO_3^{2-}

C. CO_3^{2-}, HCO_3^-

D. CO_2, H_2CO_3

Answer: A

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32. Hydrolysis of one mole of peroxodisulphuric acid produces

A. two moles of sulphuric acid

B. two moles of peroxomonosulphuric acid

C. one mole of sulphuric acid and one mole of peroxomonosulphuric acid

D. one mole of sulphuric acid, one mole of peroxomonosulphuric acid and one mole of hydrogen peroxide

Answer: C

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33. For a given reaction, $\Delta H = 35.5 KJ \text{mol}^{-1}$ and $\Delta S = 83.6 JK^{-1} \text{mol}^{-1}$. The reaction is spontaneous at: (Assume that ΔH and ΔS so not vary with temperature)

A. $T > 425K$

B. All temperatures

C. $T > 298K$

D. $T < 424K$

Answer: A

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34. The chelating ligand used to remove excess of copper and iron in chelate therapy is

A. D - penicillamine

B. oxalate ion

C. EDTA

D. ethylenediamine

Answer: A

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35. For which of the following reaction , $K_p = K_c$?

A. $2NOCl(g) \Leftrightarrow 2NO(g) + Cl_2(g)$

B. $N_2(g) + 3H_2(g) \Leftrightarrow 2NH_3(g)$

C. $H_2(g) + Cl_2(g) \Leftrightarrow 2HCl(g)$

D. $PCl_3(g) + Cl_2(g) \Leftrightarrow PCl_5(g)$

Answer: C

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36. Be^{2+} is isoelectronic with which of the following ions ?

A. Na^{+}

B. Li^{+}

C. Mg^{2+}

D. H^{+}

Answer: B

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37. The correct order of the stoichiometries of $AgCl$ formed when $AgNO_3$ in excess is treated with the complexes: $CoCl_3.6NH_3$, $CoCl_3.5NH_3$, $CoCl_3.4NH_3$ respectively is:

A. 3AgCl , 1AgCl , 2AgCl

B. 3AgCl , 2AgCl , 1AgCl

C. 2AgCl , 3AgCl , 1AgCl

D. 1AgCl , 3AgCl , 2AgCl

Answer: B

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38. The rms velocity of hydrogen is $\sqrt{7}$ times the rms velocity of nitrogen. If T is the temperature of the gas, then

A. $T_{(H_2)} = T(N_2)$

B. $T_{(H_2)} > T(N_2)$

C. $T_{(H_2)} < T(N_2)$

D. $T_{(H_2)} = \sqrt{7}T(N_2)$

Answer: C

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39. When mercuric iodide is added to the aqueous solution of potassium iodide, then:

A. freezing point is raised

B. freezing point does not change

C. freezing point is lowered

D. boiling point does not change

Answer: A

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40. The rate law for the reaction

$RCl + NaOH(aq) \rightarrow ROH + NaCl$ is given by

Rate $= k[RCl]$. The rate of the reaction will be

A. Doubled on doubling the concentration of sodium hydroxide

B. Halved on reducing the concentration of alkyl halide to one half

C. Decreased on increasing the temperature of reaction

D. Unaffected by increasing the temperature of the reaction.

Answer: B

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41. Which of the following reactions is appropriate for converting acetamide to methamine?

A. Hoffmamn bromamide reaction

B. Stephens reaction

C. Gabriels phthalimide synthesis

D. Carbylamine reaction

Answer: A

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42. If the magnetic moment of a dioxygen species is 1.73 B.M, it may be:

A. $O_2 \text{or } O_2^-$

B. $O_2, O_2^- \text{ or } O_2^-$

C. O_2, O_2^+

D. $O_2^- \text{ or } O_2^+$

Answer: D

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43. The electronic configuration of bivalent Europium and trivalent cerium respectively is: (Atomic Number: Xe = 54, Ce = 58, Eu = 63)

A. $[Xe]4f^26s^2 \text{ and } [Xe]4f^26s^2$

B. $[Xe]4f^7 \text{ and } [Xe]4f^1$

C. $[Xe]4f^4 \text{ and } [Xe]4f^9$

D. $[Xe]4f^2 \text{ and } [Xe]4f^7$

Answer: B

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44. 'X' melts at low temperature and is a bad conductor of electricity in both liquid and solid state. X is:

A. Zinc sulphide

B. Mercury

C. Silicon carbide

D. Carbon tetrachloride

Answer: D

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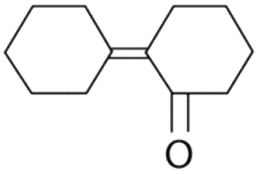
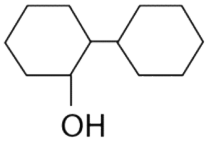
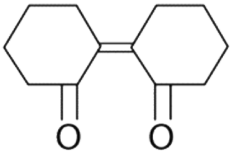
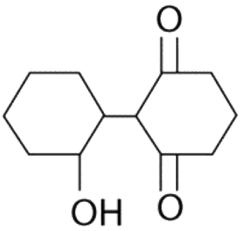
45. Of the following which is the product formed when cyclohexanone undergoes aldol condensation followed by heating?

A. 

B. 

C. 

D. 

Answer: A

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