CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA NEET SET 34

Chemistry

1. In an atom, an electron is moving with a speed of $600m/s$ with an accuracy of $0.005\ \%$. Certainty with which the position of the electron can be localized is :

$\left(h = 6.6 \times 10^{-34} kgm^2 s^{-1}\right.$,

mass of electron $\left.(e_m) = 9.1 \times 10^{-31} kg\right)$.

A. $5.10 \times 10^{-3} m$

B. $1.92 \times 10^{-3} m$

C. $3.84 \times 10^{-3} m$

D. $1.52 \times 10^{-3} m$

Answer: B

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2. Two liquids X and Y form an ideal solution. At 300K, vapour pressure of the solution containing 1 mol of X and 3 mol of Y is 550 mm Hg. At the same temperature, if 1 mol of Y is further added to this solution, vapour pressure of the solution increases by 10 mm Hg. Vapour pressure (in mmHg) of X and Y in their pure states will be, respectively

A. 300 and 400

B. 400 and 600

C. 500 and 600

D. 200 and 300

Answer: B

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3. Derive the relation between elevation of boiling point and molar mass of the solute .

A. $M_2 = \frac{K_b \times W_2 \times 1000}{\Delta T_b \times W_1}$

B. $M_2 = \frac{K_b \times W_1 \times 1000}{\Delta T_b \times W_2}$

C. $M_2 = \frac{\Delta T_b \times K_b \times 1000}{W_1 \times W_2}$

D. $M_2 = \dfrac{\Delta T_b \times W_1 \times 1000}{K_b \times W_2}$

Answer: A

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4. $B(OH)_3 + NaOH \Leftrightarrow Na\left[B(OH)_4\right]$ How this reaction can is made to proceed in forward direction ?

A. Addition of cis 1,2 diol

B. Addition of borax

C. Addition of trans 1,2 diol

D. Addition of $NaHPO_4$

Answer: A

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5. Solid $Ba(NO_3)_2$ is gradually dissolven in 1.0×10^{-4} M Na_2CO_3 solution. At what concentration of Ba^{2+} will a precipitate begin to form?

(K_{sp} for $BaCO_3 = 5.1 \times 10^{-9}$)

A. $5.1 \times 10^{-5} M$

B. $8.1 \times 10^{-8} M$

C. $5.1 \times 10^{-7} M$

D. $4.1 \times 10^{-5} M$

Answer: A

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6. In which of the following processes, fused sodium hydroxide is electrolysed at a $333^{\circ}C$ temperature for extraction of sodium

A. Cyanide process

B. Castner's process

C. Down's process

D. Both (a) and (c)

Answer: B

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7. Number of acyclic structural isomers of the compound having the molecular formula $C_4H_{10}O$ is

A. 4

B. 5

C. 6

D. 7

Answer: D

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8. The half-life period of a first-order chemical reaction is $6.93\ \min$. The time required for the completion of $99\ \%$ of the chemical reaction will be $(\log 2 = 0.301)$

A. 23.03 minutes

B. 46.06 minutes

C. 460.6 minutes

D. 230.3 minutes

Answer: B

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9. Which of the following statements is incorrect regarding physiosorptions ?

A. More easily liquefiable gases are adsorbed readily .

B. Under high pressure it results into multi molecular layer on absorbent surface.

C. Enthalpy of adsorption $[\Delta H_{\text{adsorption}}]$ is low and positive

D. It occurs because of van der Waal's forces.

Answer: C

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10. The set representing the correct order of ionic radius is

A. $Na^+ > Li^+ > Mg^{2+} > Be^{2+}$

B. $Li > Na^+ > Mg^{2+} > Be^{2+}$

C. $Mg^{2+} > Be^{2+} > Li^+ > Na^+$

D. $Li^+ > Be^{2+} > Na^+ Mg^{2+}$

Answer: A

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11. The chemical formula of Prussian blue is formed by the reaction of ferric ion and ferrocyanide is

A. $K_4\left[Fe(CN)_6\right]$

B. $Na_4\left[Fe(CN)_6\right]$

C. $Fe_4\left[Fe(CN)_6\right]_3$

D. None of these

Answer: C

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12. Oxalic acid on treatment with conc. H_2SO_4 gives

A. $CO_2 + H_2O$

B. $CO + CO_2 + H_2O$

C. CO only

D. CO_2 only

Answer: B

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13. Which one of the following reactions of Xenon compound is not feasible ?

A. $3X_eF_4 + 6H_2O \rightarrow 2X_e + XeO_3 + 12HF + 1.5O_2$

B. $2X_eF_2 + 2H_2O \rightarrow 2X_e + 2XeF + 4HF + O_2$

C. $XeF_6 + RbF \rightarrow Rb^+[XeF_7]^-$

D. $XeO_3 + \rightarrow 6HF \rightarrow XeF6 + 2H_2O$

Answer: D

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14. An element forms an oxide, in which the oxygen is $20\ \%$ of the oxide by weight, the equivalent weight of the given element will be

A. 14

B. 32

C. 2

D. 54

Answer: B

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15. For which reaction change of entropy be positive ?

A. $H_2(g) + I(g) \Leftrightarrow 2HI(g)$

B. $MgO(s) + H_2(g) \Leftrightarrow Mg(g) + H_2O(l)$

C. $NH_4NO_3(s) \Leftrightarrow N_2O(g) + 2H_2O(g)$

D. $HCl(g) + NH_3(g) \Leftrightarrow NH_4Cl(s)$

Answer: C

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16. In which of the following arrangements, the sequence is not strictly according to the property written against it ?

A. $HF < HCl < HBr < HI$: increasing acid strength

B. $NH_3 < PH_3 < AsH_3 < SbH_3$: increasing basic strength

C. $B < C < O < N$: increasing first ionization enthalpy

D. $CO_2 < SiO_2 < SnO_2 < PbO_2$: increasing oxidising power.

Answer: B

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17. In context with the transition elements, which of the following statements is incorrect ?

A. In the highest oxidation states , the transition metals show basic character and from cationic complexes.

B. In the highest oxidation states of the first five transition element [Sc to Mn] , all the 4s and 3d electrons are used for bonding

C. Once the d^5 configuration is exceeded the tendency to involve all the 3d electrons in bonding decreases.

D. In addition to the normal oxidation states , the zero - oxidation state is also shown by these elements in complex.

Answer:

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18. Knowing that the chemistry of lanthanoids (Ln) is dominated by its $+3$ oxidation state, which of the following statement is incorrect?

A. The ionic size of Ln - III decrease in general with increasing atomic number.

B. Ln - III compounds are generally colourless

C. Ln - III hydroxides are mainly basic in character.

D. Because of the large size of the Ln - III ions the bonding in its compounds is predominantly ionic in

character.

Answer: B

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19. The brown gas prepared by the action of concentrated nitric acid on copper is an equilibrium mixture of dinitrogen tetraoxide and nitrogen dioxide :

$$N_2O_{4(g)} \overset{Enhermic}{\rightleftharpoons} 2NO_{2(g)}$$

Which one of the following changes would result in a darkening of the colour?

A. Increase in temperature

B. Increase in pressure

C. Addition of a catalyst

D. Removal of dinitrogen tetra oxide by liquefaction

Answer: A

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20. Which of the following has an optical isomer?

A. $\left[Co(en)(NH_3)_2\right]^{2+}$

B. $\left[Co(H_2O)_4(en)\right]^{3+}$

C. $\left[Co(en)_2(NH_3)_2\right]^{3+}$

D. $\left[Co(NH_3)_3Cl\right]^{+}$

Answer: C

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21. A liquid was mixed with ethanol and a drop of concentrated H_2SO_4 was added. A compound with a fruity smell was formed. The liquid was

A. HCHO

B. CH_3COCH_3

C. CH_3COOH

D. CH_3OH

Answer: C

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22. The wavelength of the radiation emitted , when in a hydrogen atom electron falls from infinity to stationary state 1 , would be :

(Rydberg constant = $1.097 \times 10^{7} m^{-1}$)

A. 192 nm

B. $4.6nm$

C. 9.1×10^{-8} nm

D. 91 nm

Answer: D

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23. The bond order in NO is 2.5 while that in $NO^{\oplus}$ is 3 Which of the following statement is true for these two species ? .

A. Bond length in NO^{+} is equal to that in NO

B. Bond length in NO^{+} is greater that in NO

C. Bond length in NO is greater that in NO NO^{+}

D. Bond length is unpredictable

Answer: C

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24. Which of the following has the regular tetrahedral structure?

A. BF_4^-

B. SF_4

C. $\left[Ni(CN)_4\right]^{2-}$

D. XeF_4

Answer: A

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25. The limiting molar conductivities A° for $NaCl$, KBr nd KCl are 126,152 and 150 S $cm^2 \mathrm{mol}^{-1}$ respectively. The A° for NaBr is:

A. 278 Scm^2mol^{-1}

B. 178 Scm^2mol^{-1}

C. 128 Scm^2mol^{-1}

D. 306 Scm^2mol^{-1}

Answer: C

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26. Which of the following materials exhibits sublimation ?

A. Ice

B. Ethyl alcohol

C. Wax

D. Camphor

Answer: D

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27. Which one of the following statements regarding helium is incorrect?

A. It is used to produce and sustain powerful superconducting magnets

B. It is used to fill gas balloons instead of hydrogen because it is lighter and non - inflammable

C. It is used as a cryogenic agent for carrying out experiments at low temperatures

D. It is used in gas - cooled nuclear reactors.

Answer: A

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28. One mole of calcium nitride on the reaction with an excess of water gives

A. two moles of ammonia

B. two moles of nitric acid

C. one mole of ammonia

D. one mole of nitric acid

Answer: A

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29. The $E_{M^{3+}/M^{2+}}$ values for Cr, Mn, Fe and Co are $0.41V$, $+1.57V$, $+0.77V$ and $+1,97V$ respectively. For which one of these metals the change in oxidation state from $+2$ to $+3$ is easiest :

A. Cr

B. Mn

C. Fe

D. Co

Answer: A

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30. Mach the following

	Polymer		Monomer
i	Nylon-6	$a.$	Ethene
ii	Nylon-6,6	$b.$	Caprolactum
iii	Polythene	$c.$	Hexamethylene diamine and adipic acid

A. (i)-(a),(ii)-(b),(iii)-(c)

B. (i)-(a),(ii)-(c),(iii)-(b)

C. (i)-(c),(ii)-(b),(iii)-(a)

D. (i)-(b),(ii)-(c),(iii)-(a)

Answer: D

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31. Very pure hydrogen $(99.9\,\%)$ can be made by which of the following processes ?

A. Reaction of methane with steam

B. Reaction of salt like hydrides with water

C. Electrolysis of water

D. Mixing natural hydrocarbons of high molecular weight

Answer: B

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32. In which one of the following ways would the pH value of aqueous ammonia be effected by dissolving solid ammonium chloride in it ?

A. Decreases

B. Increases

C. No effect

D. Impossible to predict

Answer: A

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33. One gas bleaches the colour of flowers by reduction, while the other by oxidation, the two gases respectively are:

A. H_2S and Br_2

B. CO and Cl_2

C. NH_2 and SO_3

D. SO_2 and Cl_2

Answer: D

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34. Which of the following processes is used for the separation of colloidal particles from particles of molecular dimensions ?

A. Dialysis

B. Coagulation

C. Plasmolysis

D. None of these

Answer: A

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35. Which of the following is used for distinguishing primary , secondary and tertiary alcohols ?

A. Victor Meyer test

B. Beilstein test

C. Hoffmann test

D. Fehling's solution : test

Answer: A

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36. Match the following :

(i)	Riboflavin	(a)	Beriberi
(ii)	Thiamine	(b)	Scurvy
(iii)	Pyridoxine	(c)	Glossitis
(iv)	Ascorbic acid	(d)	Dermatitis

A. $(i)-(a),(ii)-(d),(iii)-(c),(iv)-(b)$

B. $(i)-(d),(ii)-(b),(iii)-(a),(iv)-(c)$

C. $(i)-(c),(ii)-(a),(iii)-(d),(iv)-(b)$

D. $(i)-(c),(ii)-(d),(iii)-(a),(iv)-(b)$

Answer: C

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37. Which of the following organic compounds polymerize to form the polyester Dacron?

A. Propylene and para $HO-(C_6H_4)-OH$

B. Benzoic acid and para $HO-(C_6H_4)-OH$

C. Terephthalic acid and ethylene glycol

D. Benzoic acid an ethanol

Answer: C

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38. The major product (Y) in the following reaction is

$$CH_3-\overset{\overset{CH_3}{|}}{CH}-C\equiv CH \xrightarrow{HgSO_4,\,H_2SO_4} X \xrightarrow[(ii)\,\text{Conc.}\,H_2SO_4]{(i)\,C_2H_5MgBr,\,H_2O} Y$$

A. $CH_3-\overset{\overset{CH_3}{|}}{C}=\underset{\underset{C_2H_5}{|}}{C}-CH_3$

B. $CH_3-\overset{\overset{CH_3}{|}}{C}=\underset{\underset{CH_3}{|}}{C}-CH_3$

C. $H_3C-\overset{\overset{CH_2}{||}}{C}=\underset{\underset{C_2H_5}{|}}{CH}-CH_3$

D. $CH_3-\overset{\overset{CH_3}{|}}{CH}=\underset{\underset{CH_3}{|}}{C}=CH-CH_3$

Answer: A

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39. The correct match between ItemI and ItemII is

ItemI (drug)	ItemII (test)
(1) chloroxylenol	(P) Carbylamine test
(2) Norethindrone	(Q) Sodium Hydrogen carbonate test
(3) Sulphapyridine	(R) Ferric chloride test
(4)Penicillin	(S) Bayer's test

A. 1 - Q , 2 - P, 3 - S , 4 - R

B. 1 - R , 2 - P, 3 - S , 4 - R

C. 1 - R , 2 - S, 3 - P , 4 - Q

D. 1 - Q , 2 - S, 3 - P, 4 - R

Answer: C

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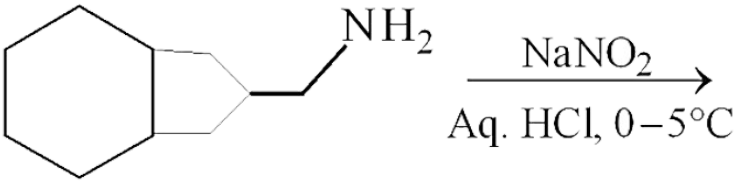
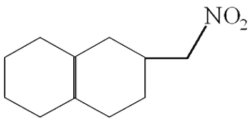
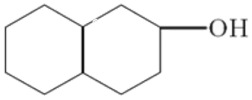
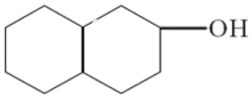
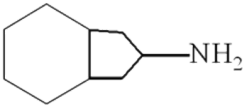
40. The major product formed in the reaction given below will be :



A. 

B. 

C. 

D. 

Answer: B

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41. The major product of following reaction is :

$$R - C \equiv N \xrightarrow[(2)\, H_2O]{(1)\, AlH\,(i - Bu_2)} ?$$

A. RCHO

B. RCOOH

C. RCH_2NH_2

D. $RCONH_2$

Answer: A

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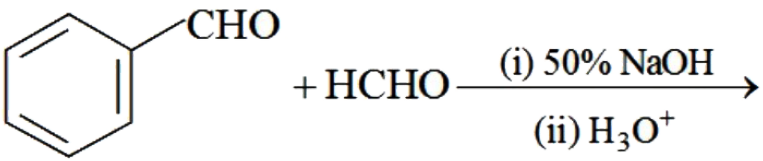
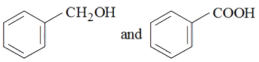
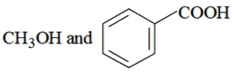
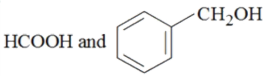
42. Major products of the following reaction are



A. CH_3OH and HCO_2H

B. 

C. 

D. 

Answer: D

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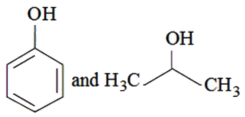
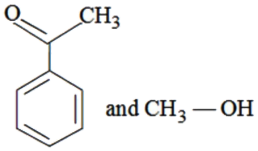
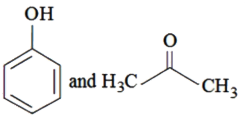
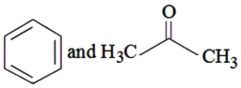
43. The product formed in the reaction of Cumene with O_2 followed by treatment with dil . H_2SO_4 are

A. 

B. 

C. 

D. 

Answer: C

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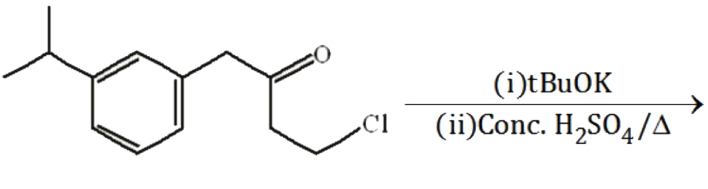
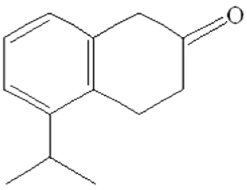
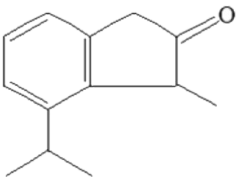
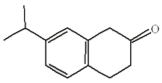
44. The major product or following reaction is



A.

B. 

C. 

D. 

Answer: D

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45. $CH_3CH_2-\overset{\overset{OH}{|}}{\underset{\underset{Ph}{|}}{C}}-CH_3$ cannnot be prepared by:

A. $HCHO+PhCH(CH_3)CH_2MgX$

B. $PhCOCH_2CH_3+CH_3MgX$

C. $PhCOCH_3+CH_3CH_2MgX$

D. $CH_3CH_2COCH_3+PhMgX$

Answer: A

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