CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA NEET SET 110

Chemistry

1. If pK_b for fluoride ion at $25^\circ C$ is 10.83, the ionisation constant of hydrofluoric acid in water at this temperature is

A. 1.74×10^{-5}

B. 3.52×10^{-3}

C. 6.75×10^{-4}

D. 5.38×10^{-2}

Answer: C

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2. Which of the following species has polar and non-polar bonds but molecule as a whole is non-ploar?

A. $S_2O_3^{2-}$

B. $(SCN)_2$

C. Be_2Cl_4

D. Si_2H_6

Answer: D

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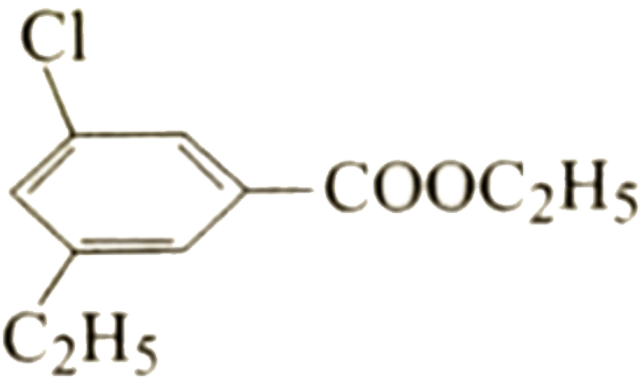
3. According to IUPAC convention, name of the following compound is



A. 3-chloro-5-ethyl ethybenzene

B. ethyl-3-chloro-5-ethylbenzoate

C. metachloro-metaethyl ethylbenzoate

D. both B and C are correct

Answer: B

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4. A solution contains $410.3g\ H_2SO_4$ per litre of the solution at $20^\circ C$. If the density $= 1.243gmL^{-1}$, what will be its molality and molarity?

A. 4.187 M , 5.03 m

B. 41.87 M, 50.3 m

C. 0.4187 M, 0.503m

D. 14.87M, 50.3 m

Answer: A

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5. Molten sodium chloride conducts electricity due to the presence of

A. Free electrons

B. Free ions

C. Free molecules

D. Atoms of sodium and chlorine

Answer: B

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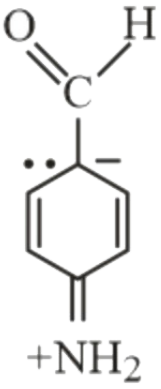
6. Which of the following is not a resonance form of para-amino-benzaldehyde ?

A. 

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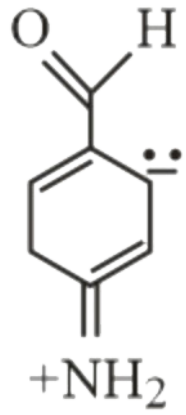

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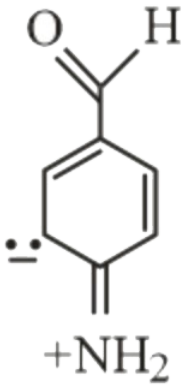

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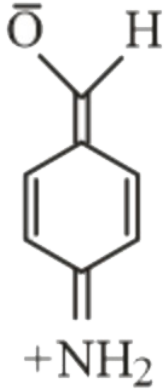

Answer: B

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7. When the temperature is increased, surface tension of water:

A. increases

B. decreases

C. Remain constant

D. Shows irregular behaviour

Answer: B

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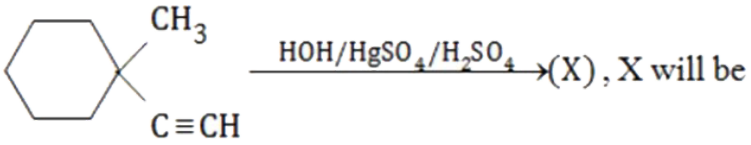
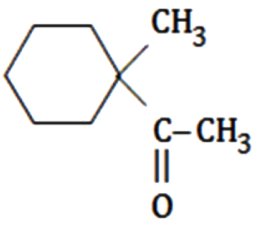
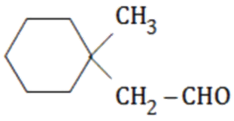
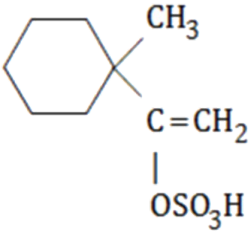
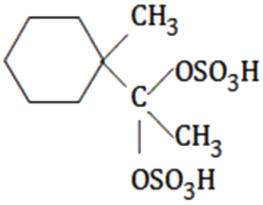
8. In the reaction sequence



A. 

B. 

C. 

D. 

Answer: A

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9. $A + NaNO_2 \rightarrow N_2O + NaCl + 2H_2O$ in this reaction A can be

A. H_2SO_4.dil

B. H_3PO_4

C. $NH_2OH.HCl$

D. $dil.HCl$

Answer: C

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10. 8:8 coordination of CsCl is found to change into 6:6 coordination :

A. Applying pressure

B. Increasing temperature

C. Both A and B

D. None of these

Answer: B

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11. The compounds formed by the reaction of ammonia with chlorine and iodine are respectively

A. NCl_3 and NI_3

B. NCl_3 and NH_4I

C. NH_4Cl and NH_4I

D. NCl_3 and $(NI_3.NH_3)$

Answer: D

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12. In the given reaction ,

$$\overset{Br}{\underset{|}{C}}H_2-(CH_2)_3-CH_2-OH \xrightarrow[\text{Toluene}140^\circ C]{NaOH} (X)$$

X will be

A. $\overset{OH}{\underset{|}{C}}H_2 - (CH_2)_4 - CH_2OH$

B. $CH_2 = CH - (CH_2)_3 - CH_2OH$

C. $CH_3 - \overset{OH}{\underset{|}{C}}H - (CH_3)_3 - CH_2OH$

D. 

Answer: D

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13. Which of the following nitrate gives off different nitrogen oxide then rest of the other nitrates here?

A. Lithium nitrate

B. Lead nitrate

C. Barium nitrate

D. Ammonium nitrate

Answer: D

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14. The pair in which phosphorus atoms have a formed oxidation state of $+3$ is

A. Pyrophosphorus and hypophosphoric acids

B. Orthophosphorus and hypophosphoric acids

C. Pyrophosphorus and pyrophosphoric acids

D. Orthophosphorus and pyrophosphorus acids.

Answer: D

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15. For the following cell,

$Zn(s)|ZnSO_4(aq)||CuSO_4(aq)|\ |\ Cu(s)$

When the concentration of Zn^{2+} is 10 times the concentration of Cu^{2+}, the expression for ΔG

(in J mol^{-1})

[F is Faraday constant, R is gas constant] T is temperature, $E^{\circ}(\mathrm{cell}) = 1.1V$

A. $2.303RT - 2.2F$

B. $-2.2F$

C. $2.303RT + 1.1F$

D. $1.1F$

Answer: A

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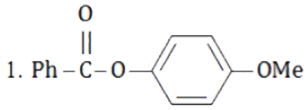
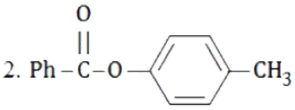
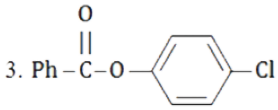
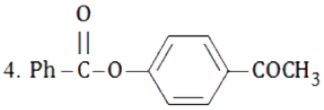
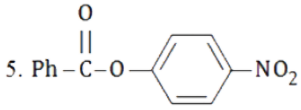
16. Which arrangement of the following esters correctly, indicates the decreasing rate of the hydrolysis?

1. 

2. 

3. 

4. 

5. 

A. 1,2,3,4,5

B. 5,3,4,2,1

C. 1,2,3,5,4

D. 5,43,2,1

Answer: D

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17. For an octahedral complex, which of the following d electron configuration will give maximum crystal-field stabilisation energy?

A. High spin with d^6 configuration

B. Low spin with d^4 configuration

C. Low spin with d^5 configuration

D. High spin with d^7 configuration

Answer: C

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18. In the reaction sequence

$$CH \equiv CH + CH \equiv CH \xrightarrow{Cu_2Cl_2} (A), \ 'B' \xrightarrow{HCl} (B)$$

Will be

A. $CH_3 - \overset{Cl}{\overset{|}{C}}H - C \equiv CH$

B. $CH_2 = \overset{Cl}{\overset{|}{C}} - CH = CH_2$

C. $CH_2 = CH - C \equiv C - Cl$

D. $CH_3 - CH_2 - C \equiv C - Cl$

Answer: B

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19. Calcualate $\Delta_f G^\circ$ for (NH_4Cl, s) at 310 K.

Given : $\Delta_f H^\circ (NH_4Cl, s) = -314.5 KJ/\text{mol}, \Delta_r C_p = 0$

$S^\circ_{N_2(g)} = 192 JK^{-1}, \quad S^\circ_{H_2(g)} = 130.5 JK^{-1} mol^{-1},$

$S^\circ_{Cl_2}(g) = 233 JK^{-1}\text{mol}^{-1}, \quad S^\circ NH_4Cl(s) = 99.5 JK_1\text{mol}^{-1}$

All given data are at 300K.

A. $-198.56 kJ/mol$

B. $-426.7 kJ/mol$

C. $-202.3 kJ/mol$

D. None of these

Answer: A

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20. Among $[Ni(CO)_4], [NiBr_4]^{2-}, [Co(NH_3)_4Cl_2]Cl, Na_3[CoF_6], BaO_2$ and CsO_2, the total number of diamagnetic compounds is

A. 5

B. 3

C. 4

D. 2

Answer: B

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21. Which of the following can produce a colour change from yellowish brown to light green in acidified aqueous solution of iron (III) chloride?

A. H_2 gas

B. O_2

C. Addition of zinc and HCI

D. Simple addition of HCI

Answer: C

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22. The number of waves made by a Bohr electron in an orbit of maximum magnetic quantum number + 2 is

A. 3

B. 0

C. 2

D. 1

Answer: A

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23. Which of the following combination of reagents does not undergo redox reaction in aqueous medium?

A. $SnCl_2 + HgCl_2$

B. $CuSO_4 + KCN$

C. $Pb(CH_3COO)_2 + KI$

D. $Ag_2O + SO_2$

Answer: C

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24. For an ideal binary liquid solution with $p_A^\circ > p_B^\circ$, which is a relation between X_A (mole fraction of A in liquid phase) and Y_A (mole fraction of A in vapour phase) is correct, X_B and Y_B are mole fractions of B in liquid and vapour phase respectively?

A. $X_A = Y_A$

B. $X_A > Y_A$

C. $\frac{X_A}{X_B} < \frac{Y_A}{Y_B}$

D. X_A, Y_A, X_B and Y_B cannot be correlated

Answer: C

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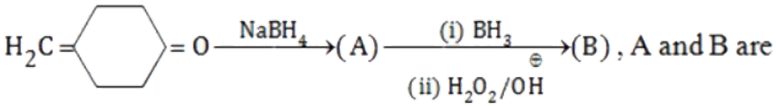
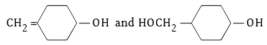
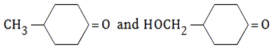
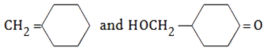
25. In the given reaction ,

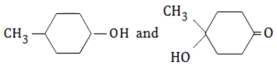


, A and B are

A. 

B. 

C. 

D. 

Answer: A

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26. Identify the reagents A and B respectively in the following reactions

$$CH_3COOH \xrightarrow{A} CH_3COCl \xrightarrow{B} CH_3CHO$$

A. $SOCl_2, H_2/pd - BaSO_4$

B. $H_2/pd - BaSO_4. SOCl_2$

C. $SOCl_2, H_2O_2$

D. $SOCl_2, OsO_4$

Answer: A

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27. Which of the reactions defined $\Delta_f H^\circ$?

A. $C_{\text{diamond}} + O_2(g) \rightarrow CO_2(g)$

B. $\frac{1}{2}H_2(g) + \frac{1}{2}F_2(g) \rightarrow HF(g)$

C. $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$

D. $CO(g) + \frac{1}{2}O_2(g) \rightarrow CO_2(g)$

Answer: B

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28. $H_2O_2 + Ti^{4+} + 2H_2O \rightarrow$ orange colour. The orange colour is due to formation of

A. TiO_2

B. Titanic acid

C. Titanium peroxide

D. Pertitanic acid

Answer: D

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29. Blocks of magnesium metal are often strapped to the steel hulls of ocean going ships in order to:

A. Provide cathodic properties

B. Protect oxidation of steel

C. Both A and B are correct

D. Neither A nor B is correct

Answer: C

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30. According to Bronsted Lowry concept, the correct order of strength of bases follows the order:

A. $CH_3COO^- > OH^- > Cl^-$

B. $OH^- > CH_3COO^- > Cl^-$

C. $CH_3COO^- > Cl^- > OH^-$

D. $OH^- > Cl^- > CH_3COO^-$

Answer: B

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31. Cellulose has very high degree of hydrophilicity because of

A. Its amorphous nature

B. Crystalline nature

C. Presence of excessive voids in solid state

D. Presence of many hydroxy groups on the polymer backbone

Answer: D

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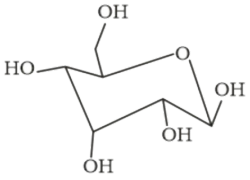
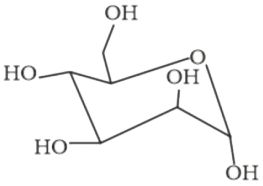
32. D-mannose is epimeric wtih D-glucose at C_2. Which of the following structure represents β - D - mannopyranose?

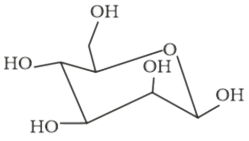
A.



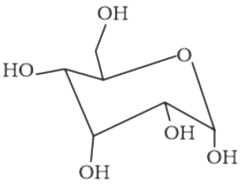
B.



C.



D.



Answer: C

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33. For adsorption of gas on solid surface. The plots of $\log x/m$ versus $\log P$ is linear with a slope equal to

A. K

B. log K

C. 1/nk

D. 1/n (n being integer)

Answer: D

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34. The rate of certain hypothetical reaction

$A + B + C \rightarrow$ Products, is given by

$$r = -\frac{dA}{dt} = k[A]^{1/2}[B]^{1/3}[C]^{1/4}$$

The order of a reaction is given by

A. 1

B. $1/2$

C. 2

D. $5/4$

Answer: D

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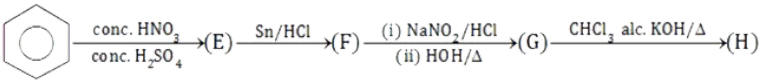
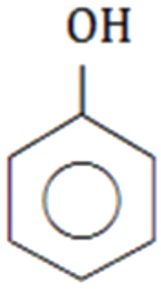
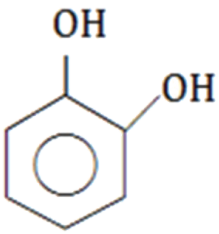
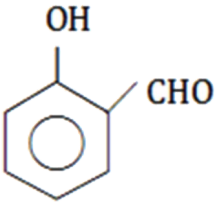
35. Identify the final product 'H' in the given reaction sequence here

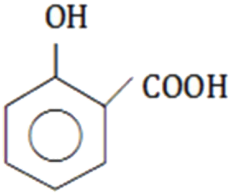


A.



B. 

C. 

D. 

Answer: C

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36. Free radical chlorination of hexane produces how many of monochloro derivatives? (including stereoisomer)

A. 5

B. 7

C. 8

D. 3

Answer: A

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37. Which of the following pairs of complexes are isomeric with each their but their aqueous solutions exhibit different molar conductivities ?

A. $\left[PtCl_2(NH_3)_4\right]Br_2$ and $\left[PtBr_2(NH_3)_4\right]Cl_2$

B. $\left[Pt(OH)_2(NH_3)_4\right]SO_4$ and $\left[PtSO_4(NH_3)_4\right](OH)_2$

C. $K_3\left[Fe(CN)_2\right]$ and $K_4\left[Fe(CN)_6\right]$

D. $\left[Co(NH_3)_5Br\right]SO_4$ and $\left[Co(NH_3)_5SO_4\right]Br$

Answer: D

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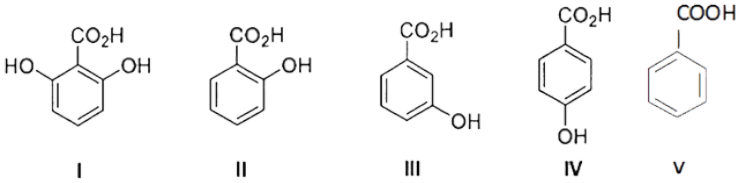
38. The correct order of acidity for the following compounds is



A. $I > III > IV > II > V$

B. $III > IV > II > I > V$

C. $III > I > II > IV > V$

D. $I > II > III > V > IV$

Answer: D

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39. How many milli gram of iron $\left(Fe^{2+}\right)$ are equal to 1 mL of $0.1055NK_2Cr_2O_7$ equivalent?

A. 5.9 mg

B. 0.59 mg

C. 59 mg

D. $5.9 \times 10^{-3} mg$

Answer: A

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40. Which of the following processes involves smelting?

A. $ZnCO_3 \xrightarrow{\text{Heat}} ZnO + CO_2$

B. $Fe_2O_3 + 3C \xrightarrow{\text{Heat}} 2Fe + 3CO$

C. $2PbS + 3O_2 \xrightarrow{\text{Heat}} 2PbO + 2SO_2$

D. $Al_2O_3.2H_2O \xrightarrow{\text{Heat}} Al_2O_3 + 2H_2O$

Answer: B

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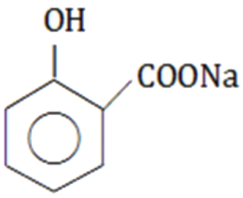
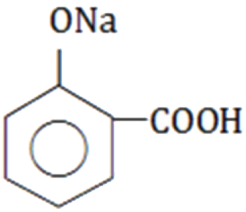
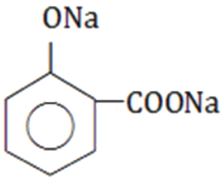
41. Sodium bicarbonate reacts with salicylic acid to form

A. C_6H_5ONa

B. 

C. 

D. 

Answer: B

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42. The unit cell of aluminium is a cube with an edge length of 405 pm. The density of aluminium is $2.70gcm^{-3}$. What type of unit cell of aluminium is ?

A. fcc

B. simple cubic

C. bcc

D. None of these

Answer: A

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43. Cyanohydrin of which compound on hydrolysis will give lactic acid?

A. C_6H_5CHO

B. $HCHO$

C. CH_3CHO

D. $CH_3 - CH_2 - CHO$

Answer: C

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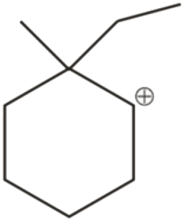
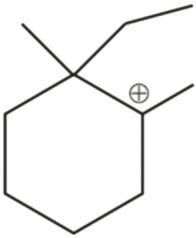
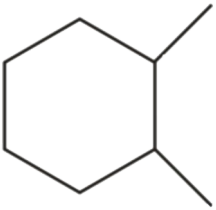
44. Which of these carbocation will undergo favourable rearrangement?

A. 

B. 

C. 

D. 

Answer: B

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45. An inorganic compounds gives off O_2 on heating. It also makes the colourless solution of potassium iodide to acquire purple tinge. The compound can be

A. SO_3

B. K_2CO_3

C. H_2O_2

D. H_2O

Answer: C

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