CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 92

Chemistry

1. If $\lambda = c_2\left[\frac{n^2}{n^2 - 2^2}\right]$ for Balmer series, what is the value of c_2?

A. $\frac{4}{R_H}$

B. $\frac{2}{R_H}$

C. $2R_H$

D. $4R_H$

Answer: A

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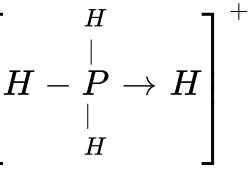
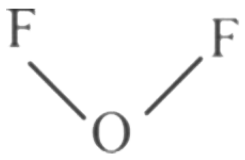
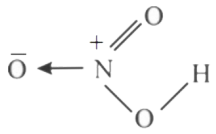
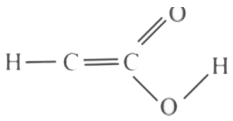
2. Which formula does not correctly represent the bonding capacity of the central atom involved?

A. 

B. 

C. 

D. 

Answer: D

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3. Each of the compounmds $Pt(NH_3)_6Cl_4, Cr(NH_3)_6Cl_3$ and $K_2PtCl_6Co(NH_3)_4Cl_3$ were dissolved in water to make its 0.01 M solution. The correct order of their increasing conductivity in solution is

A.

$$K_2\{TCl_6 < Co(NH_3)_4.l_3 < Cr(NH_3)_6Cl_3 < Pt(NH_3)_6Cl_4$$

B.

$$Cr(NH_3)_6Clk_3 < Co(NH_3)_4.Cl_3 < K_2PtCl_6 < Pt(NH_3)_6Cl_4$$

C.

$$Co(NH_3)_4.Cl_3 < K_2PtCl_6 < Cr(NH_3)_6Cl_3 < Pt(NH_3)_6Cl_4$$

D.

$$Pt(NH_3)_6Cl_4 < Co(NH_3)_6.Cl_3 < Cr(NH_3)_6Cl_3 < K_2PtCl_6$$

Answer: C

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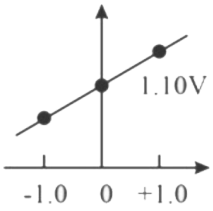
4. Which graph correctly correlates E_{cell} as a function of concentration for the cell (for different values of M nad M'

$Zn(s) + Cu^{2+}(M) \rightarrow Zn^{2+}(M') + Cu(s)$, $E^{\circ}_{\text{cell}} = 1.10V$

X - axis : $\log_{10}\dfrac{[Zn^{2+}]}{[Cu^{2+}]}$, Y - axis : E_{cell}

A.



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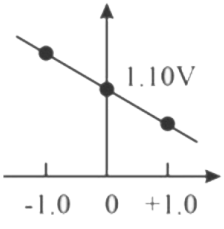
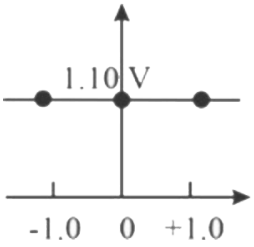
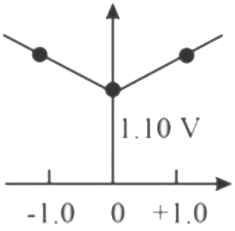


C.



D.



Answer: B

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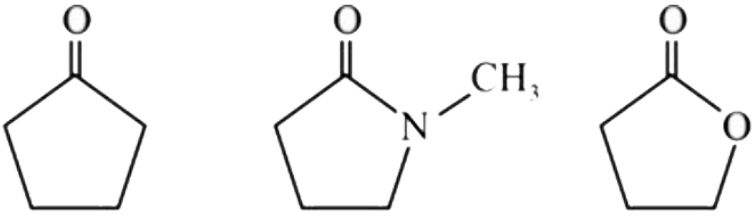
5. Arrange the following compounds in order of their reactivity towards $LiAlH_4$



(i) (ii) (iii)

A. $I < II < III$

B. $I < III < II$

C. $II < I < III$

D. $II < III < I$

Answer: D

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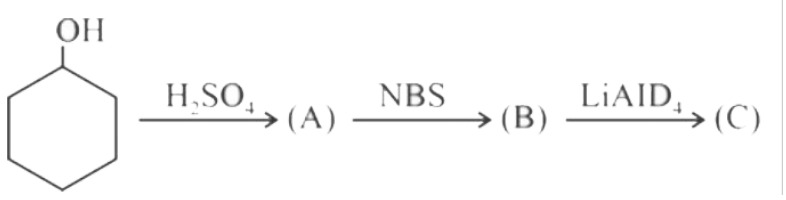
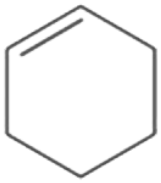
6.

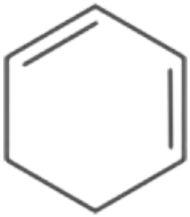


Compound (C) is

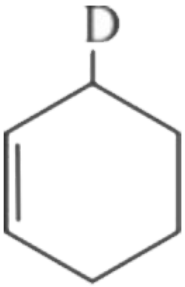
A.



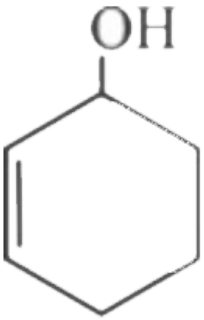
B.



C.



D.



Answer: C

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7. The elevation in boiling point of a solution dT_b is related with molality of solution (m) by the reaction:

$dT_b = \left[\frac{RT_b^2}{\Delta H_{vap}}\right]\left[\frac{M_1}{1+mM_1}\right]$, where M_1 is moalr mass of solvent and ΔH_{vap} is heat of vaporisation of solvent. For a dilute solution, the relation $\left(\frac{\partial T_b}{\partial T_n}\right)_{m\to 0}$ gives:

A. Molal ebullioscopic constant

B. Elevation in boiling point

C. Boiling point of solvent

D. Elevation in boiling point (ΔT_b) becomes more predominant

Answer: A

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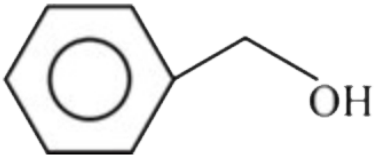
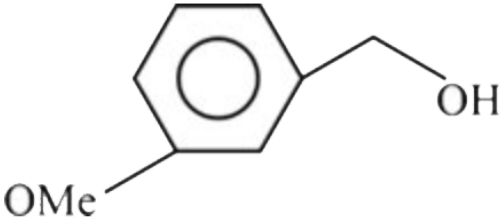
8. Given the decreasing order of reactivity of the following compounds with HBr.

(I) 

(II) 

(III) 

(IV) 

A. $III > IV > II > I$

B. $III > II > IV > I$

C. $III > II > I > IV$

D. $II > III > IV > I$

Answer: C

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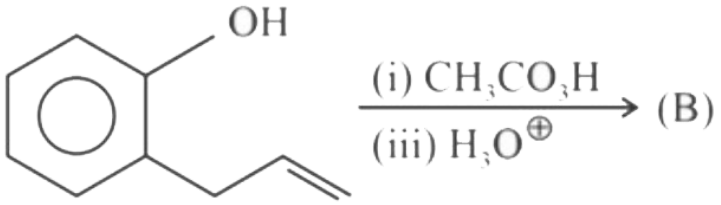
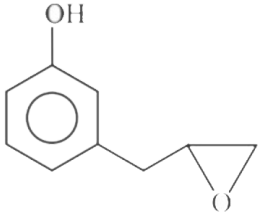
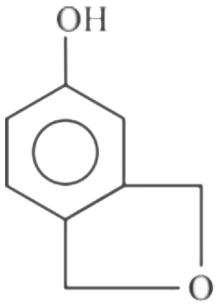
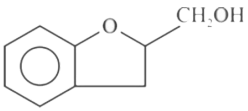
9. Consider the following reaction and Identify (B)

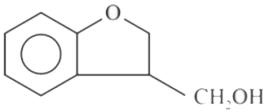


A.



B. 

C. 

D. 

Answer: C

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10. What is the equation form of Langmuir adsorption isotherm undre high pressure?

A. It is valid for chemisorption

B. $\ln. \frac{X}{m} = -\frac{\Delta H^{\circ}}{RT} + \frac{\Delta S^{\circ}}{R}\backslash$

C. $\frac{X}{m} = \frac{a}{b}$

D. At very high pressure rate of adsorption $>$ rate of desorption

Answer: D

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11. Which is the correct order of decreasing boiling point of azeotropic mixtures $X - H_2O$?

A. $HI > HBr > HF > HCl$

B. $HI > HCl > HBr > HF$

C. $HF > HCl > HBr > HI$

D. $HCl > HF > HBr > HI$

Answer: B

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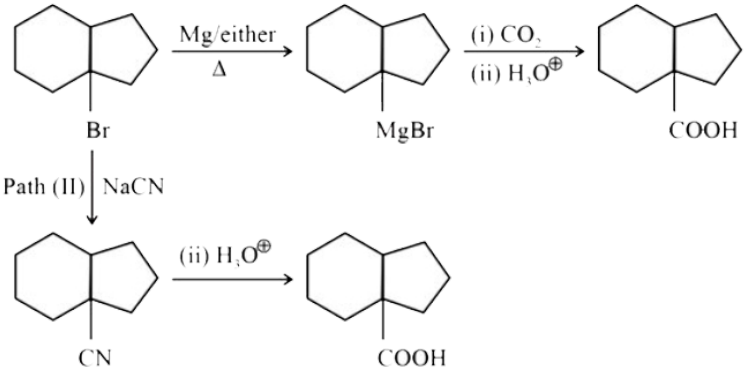
12. In the following reaction, the final product can be prepared by two paths (I) and (II). Which of the following statements is correct?



A. Path (I) is feasible

B. Path (II) is feasible

C. Both paths are feasible

D. Neither of the two paths is feasible

Answer: A

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13. Point out the incorrect statement among the following?

A. The oxidation state of oxygen is $+2$ in OF_2.

B. Acidic character follows the order $H_2O < H_2S < H_2Se < H_2Te$.

C. The tendency to form multiple bonds increases in moving down the group from sulphur to tellurium (towards C and N)

D. Sulphur has a strong tendency to catenate while oxygen shows this tendency to a limited extent.

Answer: C

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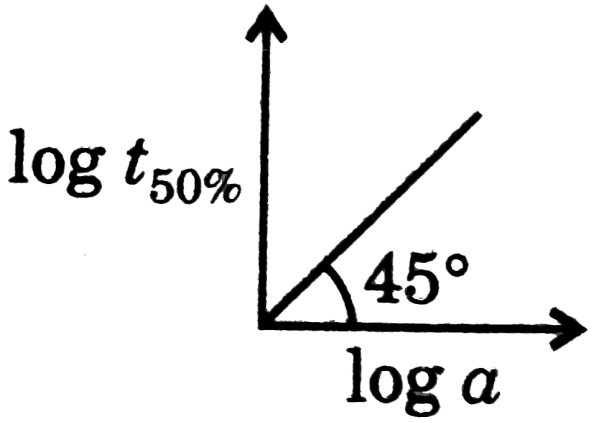
14. What will be the order of reaction and rate constant for a chemical change having log $t_{50\%}$ vs log concentration of (a) curves as:



A. 0,1

B. 1, 1

C. 2, 2

D. 1, 0

Answer: A

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15. In the Hoope's process for refining of aluminium, the fused materials form three different layers and they remain separated during electrolysis also. This is because –

A. There is special arrangement in the cell to keep the layers separate

B. The three layers have different dinsities

C. The three layers are maintained at different temperatures.

D. The upper layer is kept attracted by the cathode and the lower layer is kept attracted by the anode.

Answer: B

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16. The oxidation number is changed in which of the following case?

A. SO_2 gas is passed into $Cr_2O_7^{2-}/H^+$

B. Aqueous solution of CrO_4^{2-} is acidified

C. CrO_2Cl_2 is dissolved in $NaOH$

D. $Cr_2O_7^{2-}$ solution is made alkaline.

Answer: A

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17. The temperature coefficient of e.m.f of a cell can be given by :

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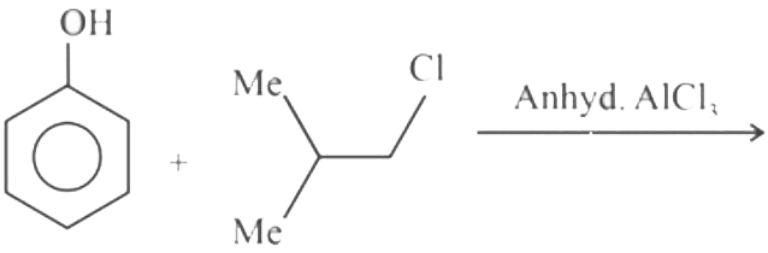
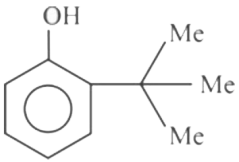
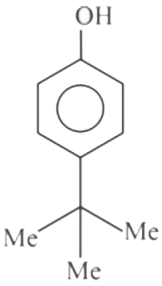
18. Given the major product of the following reaction.



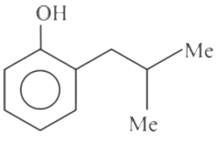
A.

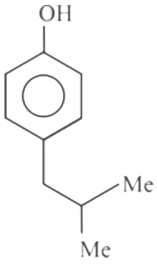


B.



C.



D. 

Answer: B

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19. How many unit cell are present in a cubic-shaped ideal crystal of $NaCl$ of mass $1.0g$?

A. 2.57×10^{21}

B. 5.14×10^{21}

C. 1.28×10^{21}

D. 1.71×10^{21}

Answer: A

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20. Which of the following pairs of compounds are more stable?

A. $K_2[NiCl_6]$, $\left[Pt(CN)_4\right]^{2-}$

B. $NiCl_4$, $PtCl_4$

C. $\left[Ni(CN)_4\right]^{2-}$, $K_2[PtCl_6]$

D. $PtCl_2$, $NiCl_2$

Answer: C

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21. A spherical ballon of 21 cm diameter is to be filled with H_2 at NTP from a cylinder containing the gas at 20 atm at $27^\circ C$ .If the cylinder can hold 2.80 L of water , calculate the number of ballons that can be filled up .

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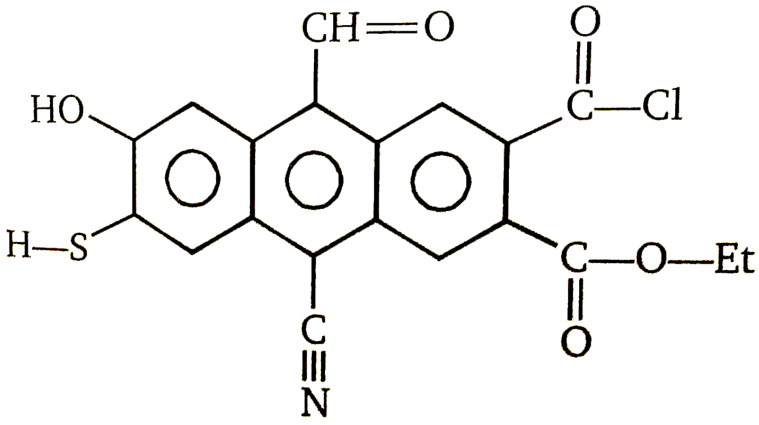
22. How many moles of Grignard reagent will consume when it reacts with following compounds?



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23. $0.56g$ of lime stone was treated with oxalic acid to give CaC_2O_4. The precipitate decolorized $45ml$ of $0.2NKMnO_4$ in acid medium. Calculate $\%$ of CaO in lime stone.

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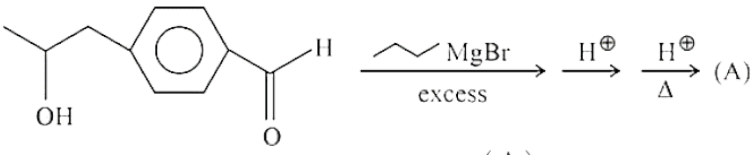
24.



How many geometrical isomer of (A) is possible?

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25. How many of these elements have more first ionization energy then boron Li, Be, C, N, O, F, Ne

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