PAPER SOLUTION

From Meerut

JEE MAIN

2025

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23	1st

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#Q. Which of the following react with Hinsberg reagent?

(a) Aniline, (b) N,N–Dimethyl aniline

(c) Methyl amine, (d) $C_6H_5NHC_6H_5$

A a and c only

B a only

C a, c and d

D a and b only

Ans. (C)

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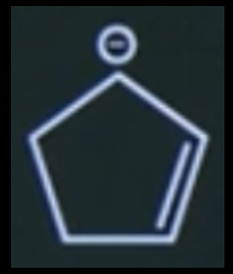
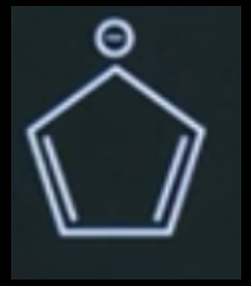
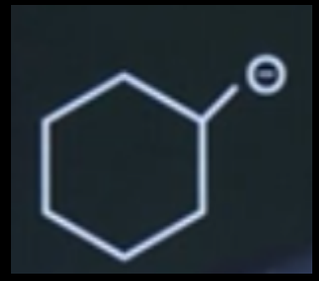
#Q. Among the following, the most stable carbanion is:

A 

B 

C 

D 

Ans. (C)

#Q. Which of the following compound can show fac–mer isomerism?

A $[Co(NH_3)_6]Cl_3$

B $[Co(NH_3)_3Cl_3]$

C $[Co(en)_2(NH_3)_2]Cl_2$

D $[Co(H_2O)_6]Cl_3$

Ans. (B)

#Q. Which of the following pair of ions are same coloured?

A Ti^{4+}, V^{3+}

B Cr^{2+}, Cu^{2+}

C Cr^{3+}, Ni^{2+}

D Mn^{3+}, Fe^{2+}

Ans. (B)

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#Q. Which of the following does not belong to the same period in the modern periodic table?

(A) Pd

(B) Ir

(C) Pt

(D) Os

Ans. (A)

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#Q. If 2 gm phenol is allowed to react with Br_2/H_2O. How much Br_2 will be required to produce 2, 4, 6 Tribromophenol (Rounded off to nearest integer).

(NCERT Page No. – 212 Class – XII)

Ans. 10

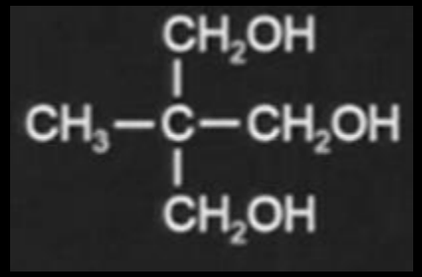
#Q. If 10^{21} molecules are removed from x mg of $CO_2(g)$, then 2.4×10^{-3} moles are left. Calculate the value of x.

Ans. 179

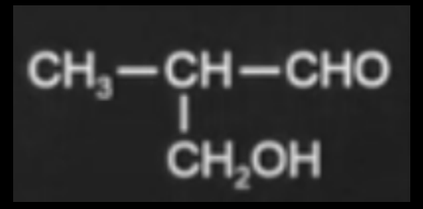
#Q. Identify the product formed in the following reaction:

$$CH_3-CH_2-CHO + \underset{Excess}{HCHO} \xrightarrow[\text{Re } flux]{OH^-}$$

A



B



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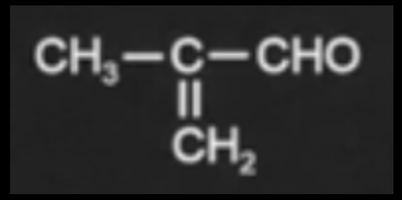
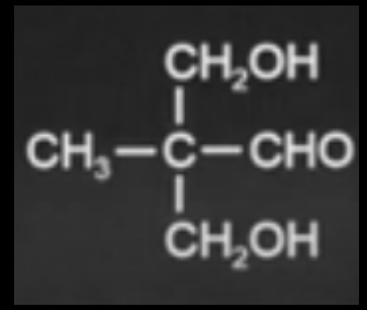


D



Ans. (A)

#Q. Incorrect statement among the following is:

(A) SO_2 act as oxidising agent but not reducing agent

(B) NO_2 exists as dimer

(C) PH_3 has lower proton affinity than NH_3

(D) PF_5 exists but NF_5 does not

Ans. (A)

#Q. In estimation of sulphur by Carius method, 160 gm of organic compound gives 466 gm of Barium Sulphate. % of sulphur in the organic compound is _____.

Ans. 40

#Q. Match the column and choose the correct option.

Column – I		Column –II	
A.	BF_3	1.	Odd e^- species
B.	CCl_4, CO_2	2.	Expanded octet
C.	PCl_5, BrF_5	3.	Complete octet
D.	NO	4.	Electron deficient

(A) $A-3, B-4, C-1, D-2$

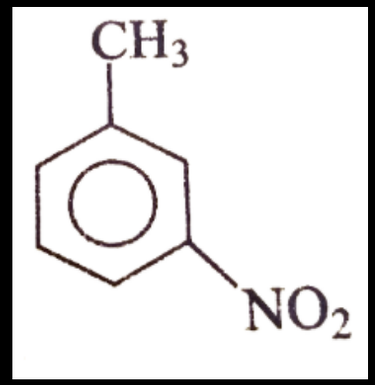
(B) $A-4, B-2, C-3, D-1$

(C) $A-4, B-3, C-2, D-1$

(D) $A-1, B-2, C-3, D-4$

Ans. (C)

#Q. Consider the following sequence of reactions and find the molecular mass of the find product (A) formed in g mol^{-1}.



$$\xrightarrow[(iii)\ NaNO_2/HCl]{(i)\ Br_2/FeBr_3 \\ (ii)\ Sn/HCl} \xrightarrow[(0-5^oC)]{(iv)\ H_3PO_2}$$

A 108

B 216

C 171

D 186

Ans. (C)

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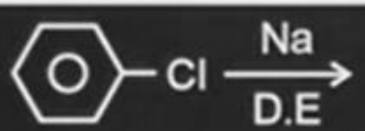
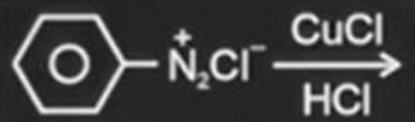
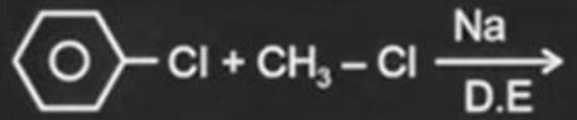
#Q. Match the column and choose the correct option:

	Column-I		Column-II
(A)		(P)	Sandmeyer reaction
(B)		(Q)	Fittig reaction
(C)		(R)	Wurtz-Fittig reaction
(D)	$CH_3 - Cl + AgF \rightarrow$	(S)	Swart's reaction

A $A - Q, B - P, C - R, D - S$

B $A - Q, B - P, C - S, D - R$

C $A - Q, B - R, C - S, D - P$

D $A - P, B - Q, C - R, D - S$

Ans. (A)

#Q. Co^{2+} is forming an octahedral complex with spin only magnetic moment 3.83 BM. Which of the following is correct crystal field electronic configuration?

A $t_{2g}^5 e_g^2$

B $t_{2g}^6 e_g^1$

C $t_{2g}^4 e_g^3$

D $e^4 t_{2g}^3$

Ans. (A)

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#Q. Given are two statements:

Statements I : During Lassaigne's test, covalent compound is converted to ionic compound.

Statements II : $Na_4[Fe(CN)_6]$ gives prussian blue colour on reaction with $Fe_2(SO_4)_3$.

(A) Both statements I & statements II are correct.

(B) Both statements I & statements II are incorrect.

(C) statements I is correct but statements II is incorrect.

(D) statements I is incorrect but statements II is correct.

Ans. (A)

#Q. Consider the following:

$$FeO_4^{2-} \xrightarrow{2.0V} Fe^{3+} \xrightarrow{0.8V} Fe^{2+} \xrightarrow{-0.5V} Fe^{0}$$

$$Find\ E^{0}_{FeO_4^{2-}/Fe^{2+}}$$

Ans. 2

#Q. Consider the given values:

$\Delta H = 55\ kj\ mol^{-1}$

$\Delta S = 175\ J\ mol^{-1}\ K^{-1}$

T = 25 ℃

Calculate the value of Gibbs free energy charge (ΔG) in J mol^{-1}.

Ans. 2850

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#Q. Consider the following statements and choose the correct option.

Statement 1 : Fructose does not contain aldehyde group but it gives Tollen's test .

Statement 2 : In disaccharides, if the reducing groups are bonded, these are non–reducing e.g. sucrose. If these functional groups are free then they are reducing e.g. maltose and Lactose.

A Both statements I & statements II are correct.

B Both statements I & statements II are incorrect.

C statements I is correct but statements II is incorrect.

D statements I is incorrect but statements II is correct.

Ans. (A)

#Q. $A(g) \longrightarrow 2B(g)$

For the given reaction initial pressure was 0.6 atm and rate constant is 4.606×10^{-2} sec^{-1}. Find the pressure at 100 sec.

A 0.6 atm

B 1.194 atm

C 0.594 atm

D 0.006 atm

Ans. (B)

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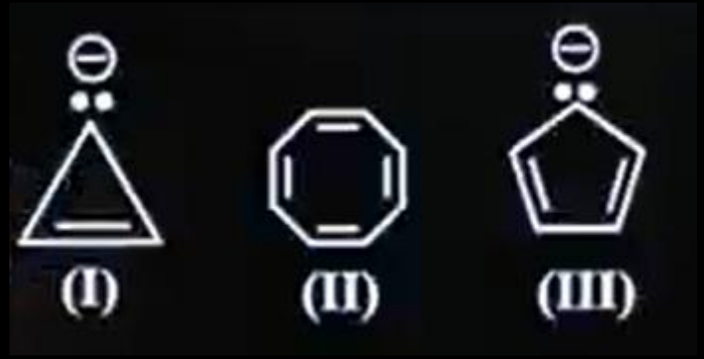
#Q. The stability order of following species is–



A. II > I > III

B. I > II > III

C. III > II > I

D. III > I > II

Ans. (C)

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#Q. For a sample of hydrogen atom, the wavelength observed is 656 nm during a transition. The transition and series of wavelength will be:

(A) $3 \rightarrow 2$, Balmer

(B) $4 \rightarrow 1$, Lyman

(C) $5 \rightarrow 2$, Balmer

(D) $4 \rightarrow 3$, Paschen

Ans. (A)

#Q. In a solution 1M A^{+2} and 1M B^{+3} are present and NH_4OH solution is added solwly into it then which will get precipitate first?

$(K_{sp})_{A(OH)_2} = 9\times10^{-10}$

$(K_{sp})_{(OH)_2} = 27\times10^{-18}$

A Both Precipitate simultaneously

B $A(OH)_2$ Precipitate first but $B(OH)_3$ does not precipitate

C $B(OH)_3$ Precipitate first but $A(OH)_2$ does not precipitate

D Both are not Precipitate

Ans. (C)

#Q. 1 millimolar aq. Solution of ethylamine has pH = 9, its $K_b = 10^{-x}$. Value of x is?

Ans. 7