PAPER SOLUTION

From Meerut

JEE MAIN

2025

JAN	SHIFT
29	2nd

Aryan Agarwal
Founder and CEO
CVPS INTEGRATED STAR COURSE

#Q. The most stable carbocation is formed from.

A $(Ph)_3C–Br$

B $C_6H_5CH_2Br$

C $C_6H_5CH(Br)CH_3$

D CH_3CH_2Br

Ans. (A)

#Q. Number of σ and π in hex–1–en–4–yne are respectively.

(A) 13, 3

(B) 3, 14

(C) 14, 3

(D) 14, 13

Ans. (A)

#Q. 0.41 g of $BaSO_4$ is obtained from 0.2 g of organic compound in Carius method. What is the percentage of sulphur present in organic compound?

Ans. 28

#Q. Which element in group 15 has lowest Ionisation Energy?

(A) Bi

(B) As

(C) P

(D) Sb

Ans. (A)

#Q. The number of benzenoid structural isomers having molecular formula C_9H_{12} which do not give Baeyer's reagent test is–

Ans. 8

#Q. Consider the following thermochemical reactions and choose the correct option.

$$C(diamond) \longrightarrow C(graphite) + x\ kJ$$

$$C(diamond) + O_2 \longrightarrow CO_2 + y\ kJ$$

$$C(graphite) + O_2 \longrightarrow CO_2 + z\ kJ$$

(A) x = y + z

(B) x + y = z

(C) x = y – z

(D) x + y = –z

Ans. (C)

#Q. Azo dye test is given by–

(A) Aniline

(B) Benzene

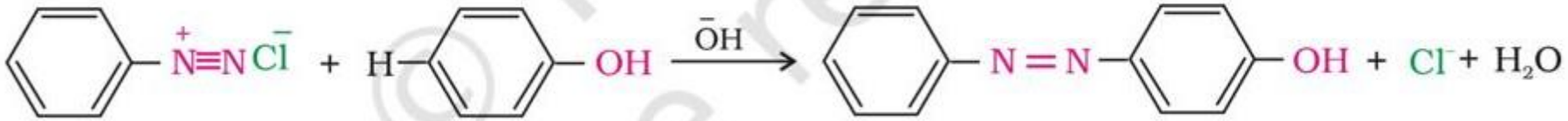
(C) Anisole

(D) Benzaldehyde

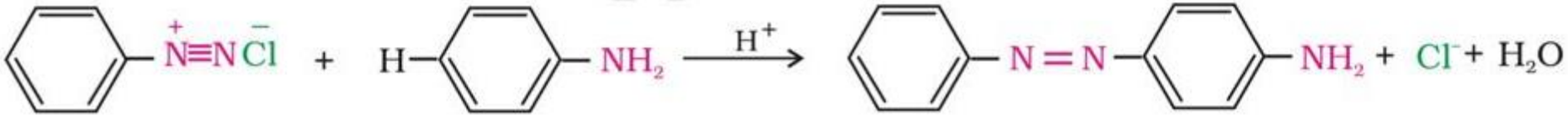
Ans. (A)

B. Reactions involving retention of diazo group coupling reactions

The azo products obtained have an extended conjugate system having both the aromatic rings joined through the –N=N– bond. These compounds are often coloured and are used as dyes. Benzene diazonium chloride reacts with phenol in which the phenol molecule at its para position is coupled with the diazonium salt to form *p*-hydroxyazobenzene. This type of reaction is known as coupling reaction. Similarly the reaction of diazonium salt with aniline yields *p*-aminoazobenzene. This is an example of electrophilic substitution reaction.



p-Hydroxyazobenzene (orange dye)



p-Aminoazobenzene
(yellow dye)

#Q. Identify the essential amino acid among the following–

(A) Alanine

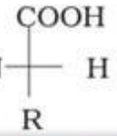
(B) Valine

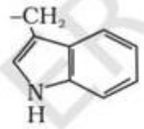
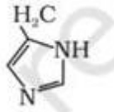
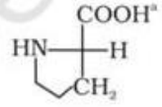
(C) Glycine

(D) Aspartic acid

Ans. (B)

Table 10.2: Natural Amino Acids

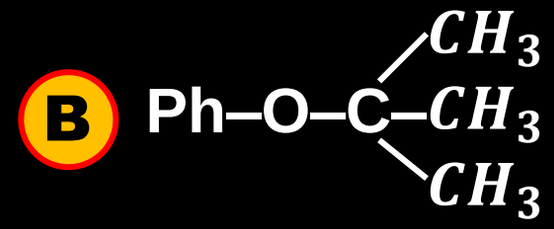


Name of the amino acids	Characteristic feature of side chain, R	Three letter symbol	One letter code
1. Glycine	H	Gly	G
2. Alanine	$-CH_3$	Ala	A
3. Valine*	$(H_3C)_2CH-$	Val	V
4. Leucine*	$(H_3C)_2CH-CH_2-$	Leu	L
5. Isoleucine*	$H_3C-CH_2-CH(CH_3)-$	Ile	I
6. Arginine*	$HN=C(NH_2)-NH-(CH_2)_3-$	Arg	R
7. Lysine*	$H_2N-(CH_2)_4-$	Lys	K
8. Glutamic acid	$HOOC-CH_2-CH_2-$	Glu	E
9. Aspartic acid	$HOOC-CH_2-$	Asp	D
10. Glutamine	$H_2N-C(=O)-CH_2-CH_2-$	Gln	Q
11. Asparagine	$H_2N-C(=O)-CH_2-$	Asn	N
12. Threonine*	$H_3C-CHOH-$	Thr	T
13. Serine	$HO-CH_2-$	Ser	S
14. Cysteine	$HS-CH_2-$	Cys	C
15. Methionine*	$H_3C-S-CH_2-CH_2-$	Met	M
16. Phenylalanine*	$C_6H_5-CH_2-$	Phe	F
17. Tyrosine	$(p)HO-C_6H_4-CH_2-$	Tyr	Y
18. Tryptophan*		Trp	W
19. Histidine*		His	H
20. Proline		Pro	P

* *essential amino acid, a = entire structure*

#Q. Which of the following ether react with HBr to form phenol?

(A) $Ph–CH_2–O–CH_2–CH_3$

(B) 

(C) $Ph–CH_2–OCH_3$

(D) $Ph–CH_2–O–CH_2–Ph$

Ans. (B)

JEE MAIN 2025 LIVE PAPER DISCUSSION

#Q. A drug becomes ineffective when it decomposes to 50% its concentration. If 16 mg of said drug becomes 4 mg in 12 months, find the time in which drug becomes ineffective given that decomposition of drug follows first order kinetics.

(A) 2 Months

(B) 3 Months

(C) 6 Months

(D) 12 Months

Ans. (C)

JEE MAIN 2025 LIVE PAPER DISCUSSION

#Q. Which gives predominantly O_2 on electrolysis among the following?

(A) aq. $AgNO_3$ (Pt electrodes)

(B) aq. $AgNO_3$ (Ag electrodes)

(C) Conc. H_2SO_4 (Pt electrodes)

(D) Dilute H_2SO_4 (Ag electrodes)

A AB

B AD

C BC

D ABC

Ans. (B)

#Q. The type of oxide formed by an element (A) having smallest size among the following–
Li, Be, B, Na, Mg, K

(A) AO

(B) AO_2

(C) A_2O_3

(D) A_2O_2

Ans. (C)

JEE MAIN 2025 LIVE PAPER DISCUSSION

#Q. Statement – 1 : In partition chromatography a thin film of liquid acts as stationary phase.
Statement – 2 : Paper chromatography is not a type of partition chromatography.

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

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

(C) Statement I is correct but statement II is incorrect.

(D) Statement I is incorrect but statement II is correct.

Ans. (C)

#Q. 7.3 g Benzalacetone is synthesized from 10.6 g of benzaldehyde using acetone as other reactant. Percentage yield of Benzalacetone is:

A 27%

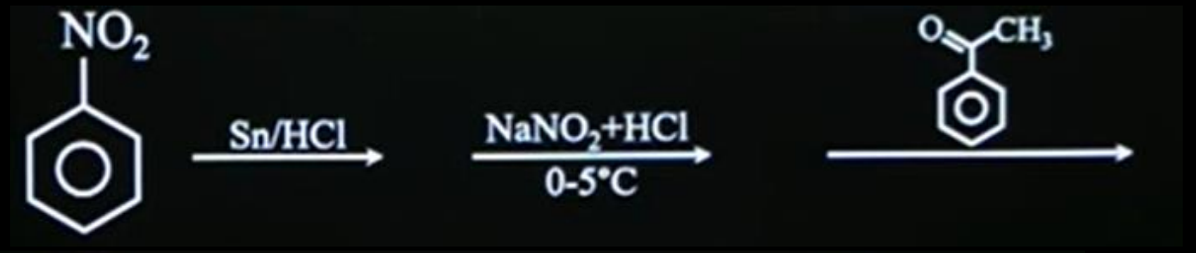
B 50%

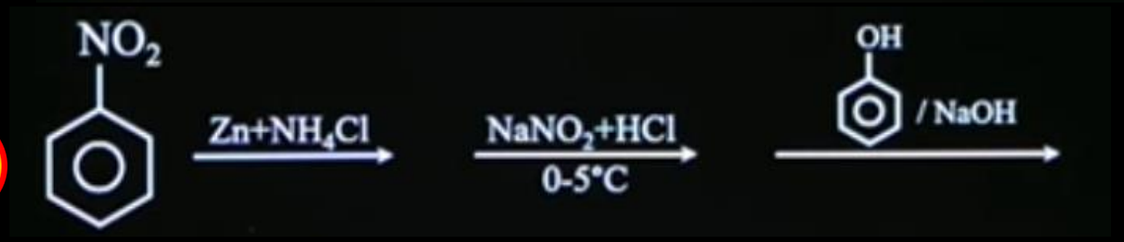
C 40%

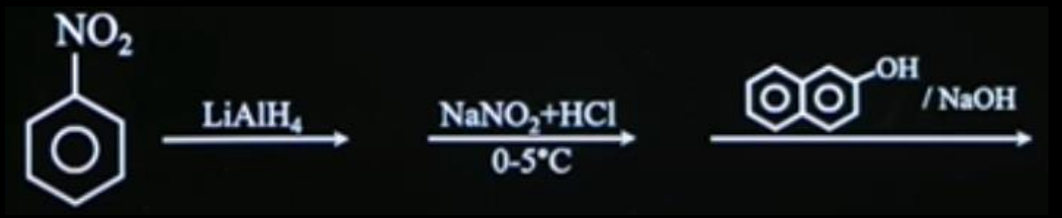
D 90%

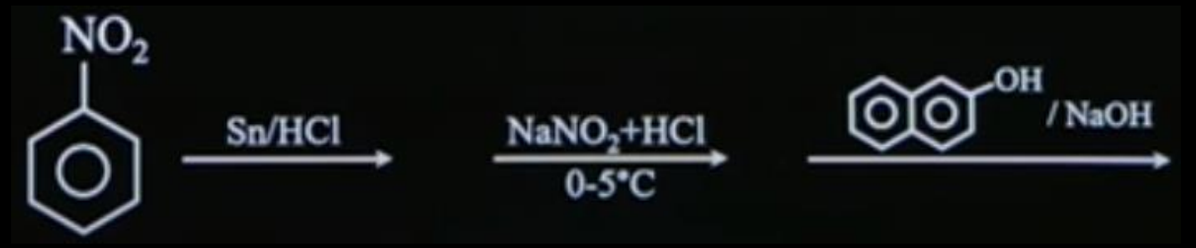
Ans. (B)

#Q. Which of the following reacting sequence azodye is formed.

A 

B 

C 

D 

Ans. (D)

#Q. How many maximum spectral lines are observed when a sample of hydrogen atoms de excited form n = 4 to n = 1.

Ans. 6

#Q. Find number of non–bonding electron in NO_2^- ion is_____.

Ans. 12

#Q. Find spin only magnetic moment of yellow coloured complex compound–
$K_3[Co(NO_2)_6]$, $Cu_2[Fe(CN)_6]$, $Zn_2[Fe(CN)_6]$, $Cu_3[Fe(CN)_6]_2$

Ans. 0