

ULTIMATE KCET

CRASH COURSE 2026

Chemistry

Lecture - 01

Biomolecules

By – Sreeja Ma'am



Physics Wallah



Recap *of previous lecture*

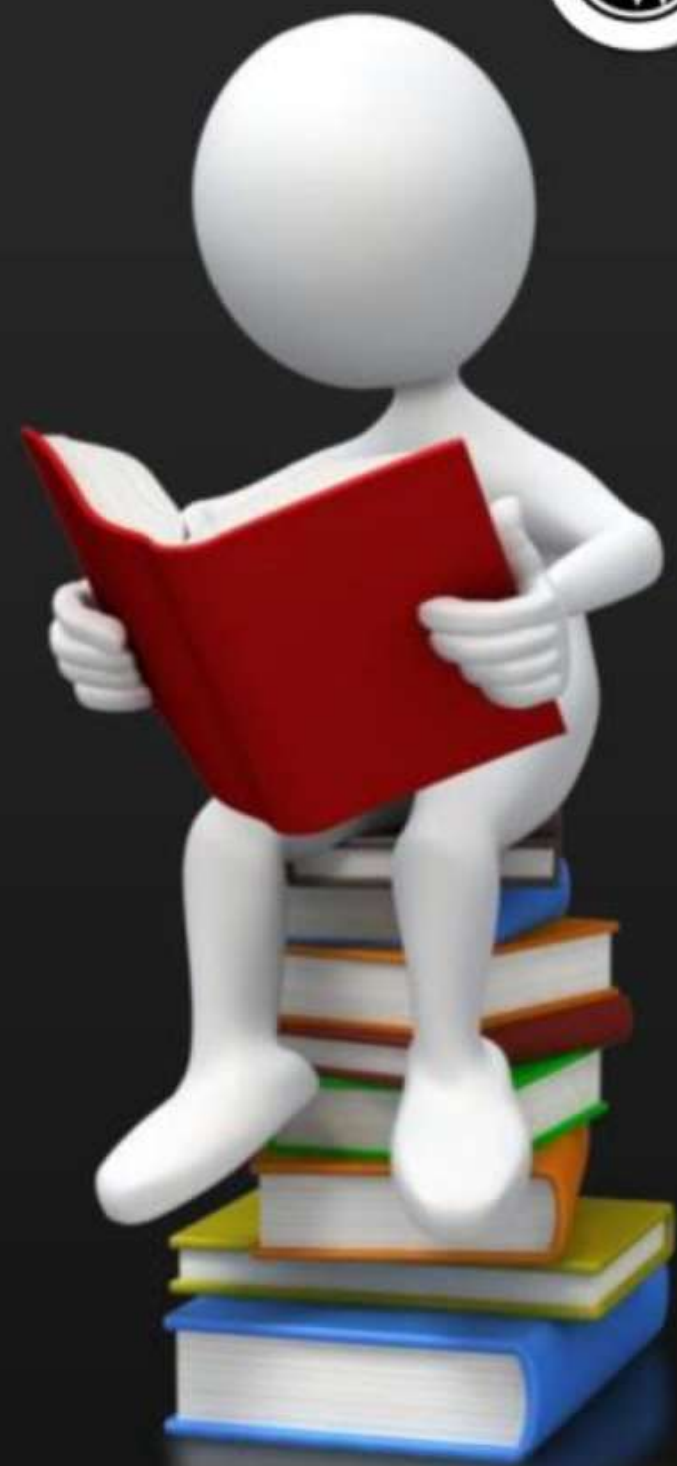
- 1** Aldehydes, ketones and carboxylic acids – Synopsis and mcq – continuation
- 2** Amines – Synopsis

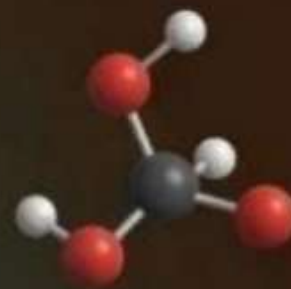
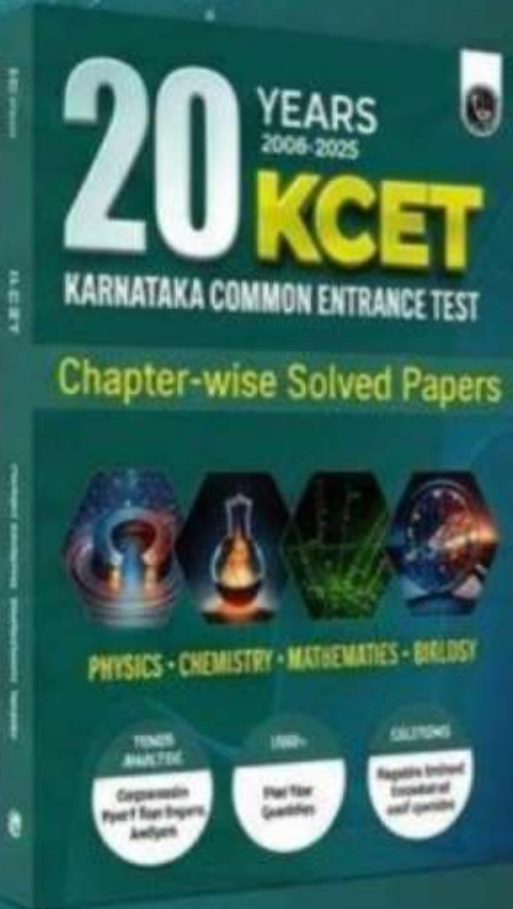
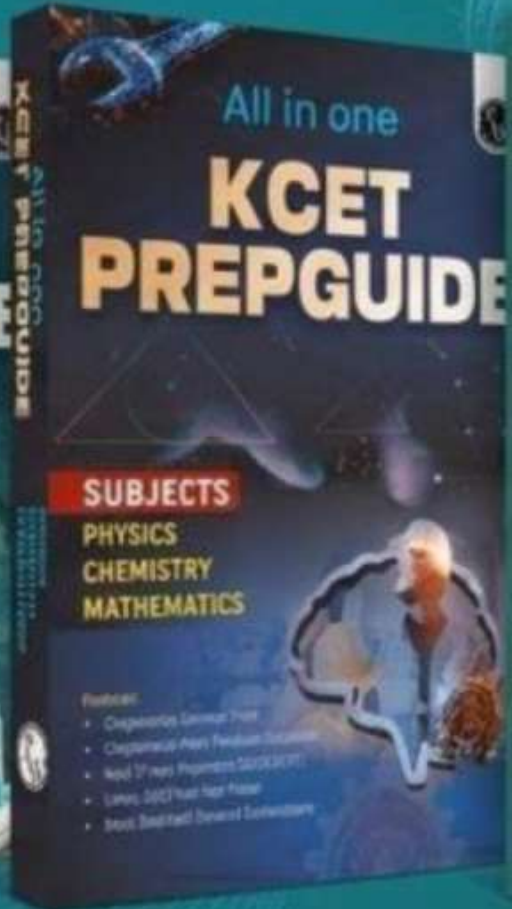
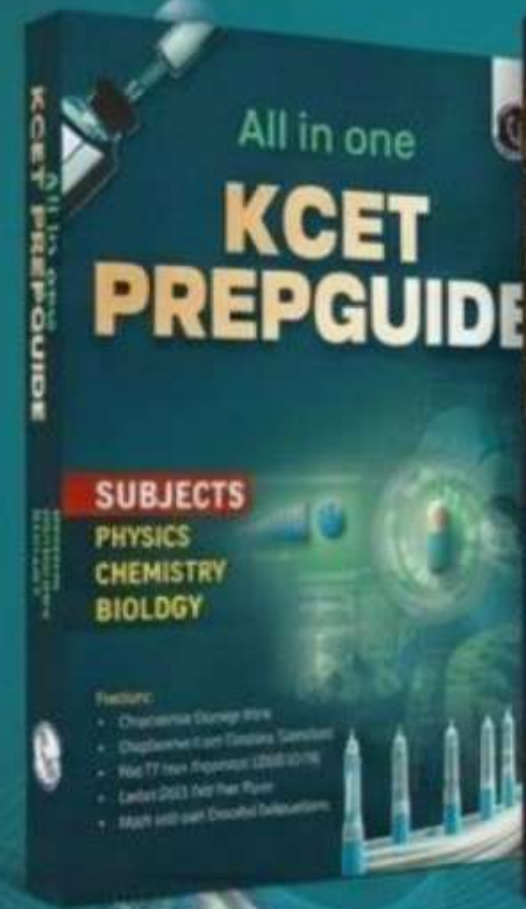


Topics *to be covered*








- 1** Amines – Continuation – Synopsis and McQ , PYQS
- 2** Biomolecules – Synopsis





All-in-One + PYQ Power = Your Path to KCET Success!

-  **Class-wise Distribution of Questions**
-  **Chapterwise Most Probable Questions**
-  **Latest 2025 Past Year Paper**
-  **3500+ Previous Year Questions**
-  **Comprehensive Coverage of 4 Subjects**

****BUY NOW!** 



High weightage Chapters - 2025 Kcet paper analysis

KCET SYLLABUS - 1 ST PU	KCET SYLLABUS - 2 ND PU
Some basic concepts of chemistry - 02 ✓	Solution - 04
Structure of atom - 02 <u>easy</u>	Electrochemistry - 03
Classification of elements and periodicity in properties - 01 <u>easy</u>	Chemical kinetics - 04
Chemical bonding and molecular structure - 03	d and f block elements - 04
Thermodynamics - 03	Coordination compounds - 04
Equilibrium - 03	Haloalkanes and haloarenes - 02
Redox reaction - 02	Alcohols, phenols and ethers - 04
Some basic principles and Techniques - 03	Aldehydes, ketones and carboxylic acids - 04
Hydrocarbon - 1	Amines - 03
Practical chemistry - 1	Biomolecules - 03

12-15

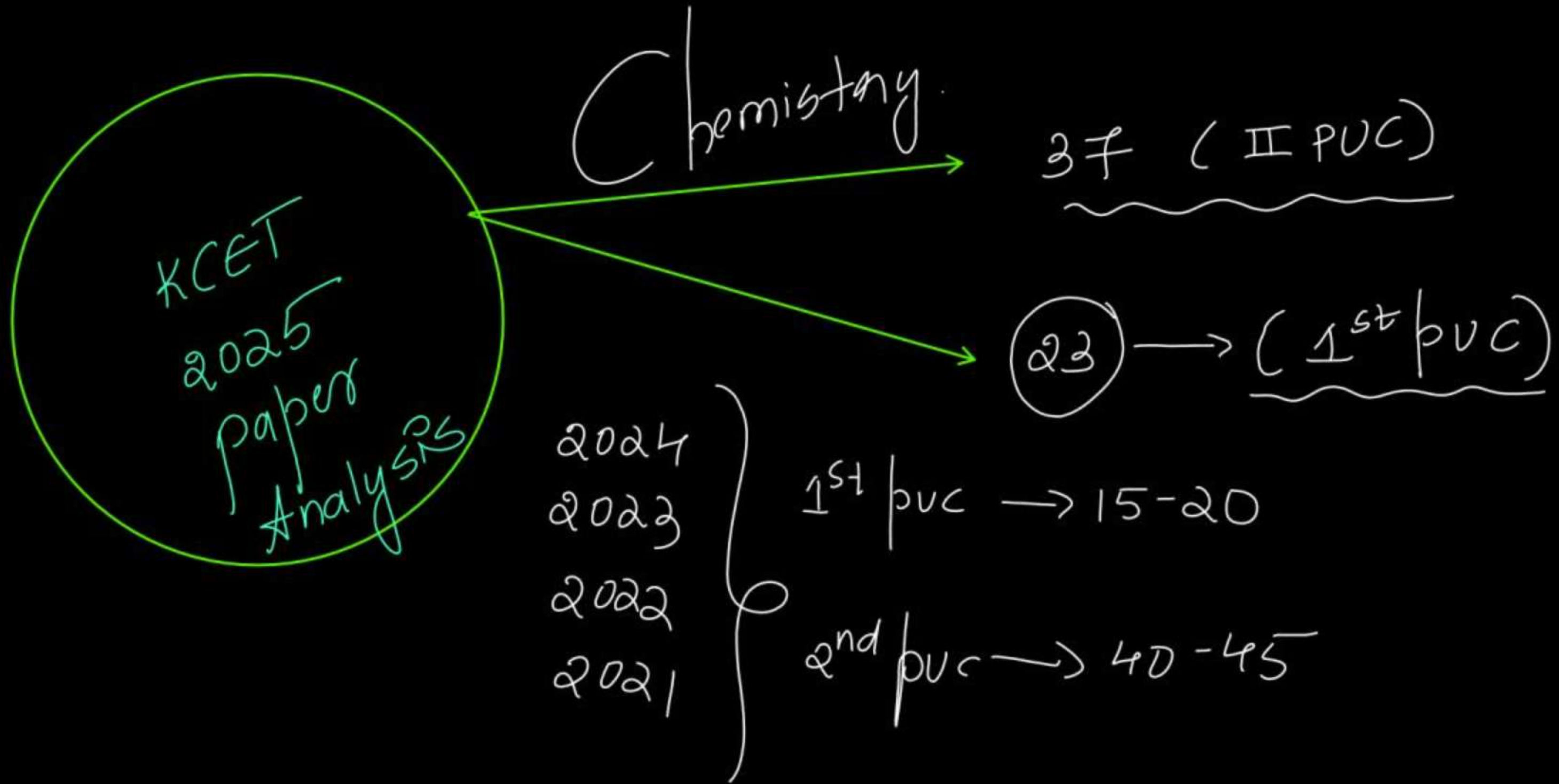
11 Qs

8 Qs

10

18 Qs

18-20



Aldehydes, ketones and carboxylic acids



Year	Topics	Number of Questions
2025	Etard reaction + DiBAL reduction of ester + Acidic strength + Acidic hydrohen	04
2024	Functional isomers, decarboxylation reaction	02
2023	RCHO+ RMgBR + conc H₂SO₄ +B₂H₆ - Functional isomers	02
2022	Reagent to oxidise primary alcohols to aldehydes, IUPAC name, Aldehydes + alcohols = reactionn , Aldehyde preparation HVZ reaction	04
2021	Iodoform test, reaction of acetone undergoing aldol condensation reaction, Choosing reducing reagents which reduced carboxylic acids to alcohol, Sequence based reaction,	03
2020	Aldol condensation reaction,	02
2019	HVZ reaction, Rosenmund reduction reaction + Cannizaro reaction	02
2018	Haloform reaction, Cumene process – acetone , Wolf kishner reduction reaction, Étard reaction	04
2017	Decarboxylation reaction, Cannizaro reaction , Solubility of carboxylic acids, Reagent to reduce ketones	04
2016	Cannizaro reaction, sequence based reaction,	02

Amines



Year	Topic	No. of Questions
2025	Aniline v/s N-methyl aniline differentiating reagents + Methods of preparation + Benzene diazonium chloride and reagents	03
2024	Coupling reaction	1
2023	Why aniline does not undergo Friedel Craft's reaction, Reagents in the conversion of aniline to nitrobenzene	2
2022	Carbylamine reaction, About secondary amine	2
2021	The method by which aniline can not be prepared , Product name in ammonolysis, IUPAC name of the compound	3
2020	Conversion from Nitrobenzene to Meta bromo aniline, Hinsberg's reagent	2
2019	Solubility of amines, Nitration of aniline	2
2018	Coupling reaction – Yellow dye	1
2017	Increasing order of basic nature of amines in aqueous solutions	1

Biomolecules



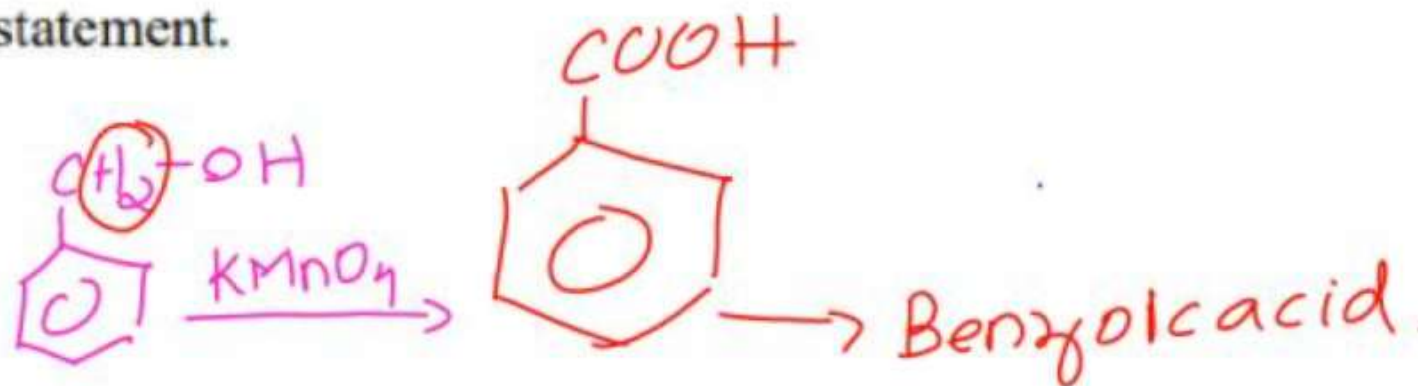
Year	Topics	Number of Questions
2025	Glycosidic linkage+Example based for [amino acids+ hormones+Vitamins+carbohydrates] + Glucose reaction	03
2024	Anomers and Nucleotides, hormones – 2 qsn	04
2023	Receptors position in cell, Sucrose hydrolysis, Thyroxine V/s amino acids, Vitamins V/s deficiency	04
2022	Drug controller general of India	01
2021	Complementary base pair	01
2020	Glycosidic bond, Hypothyroidism V/s Thyroxine, Fat soluble vitamin	03
2019	Phosphodiester bond, water insoluble bio compound,	02
2018	Glycosidic bond , anomers, Base which is present in DNA	03
2017	Hormones, Glycosidic bond , Vitamins	03
2016	Fehling solution test , Complementary base pair	02

Statement – I : Reduction of ester by DIABL-H followed by hydrolysis gives aldehyde. ✓

Statement – II : Oxidation of benzyl alcohol with aqueous $KMnO_4$ leads to the formation to Benzaldehyde. ✗

Among the above statements, identify the correct statement.

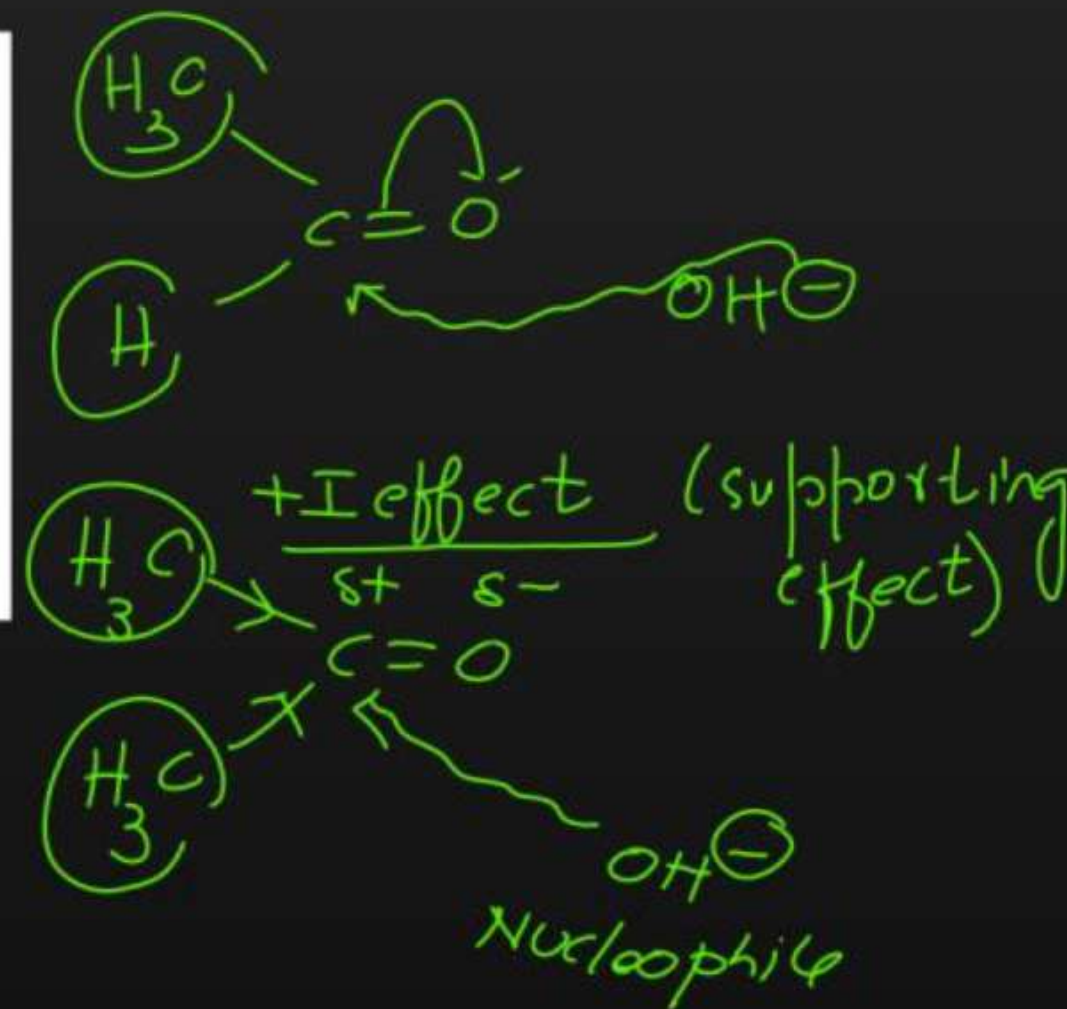
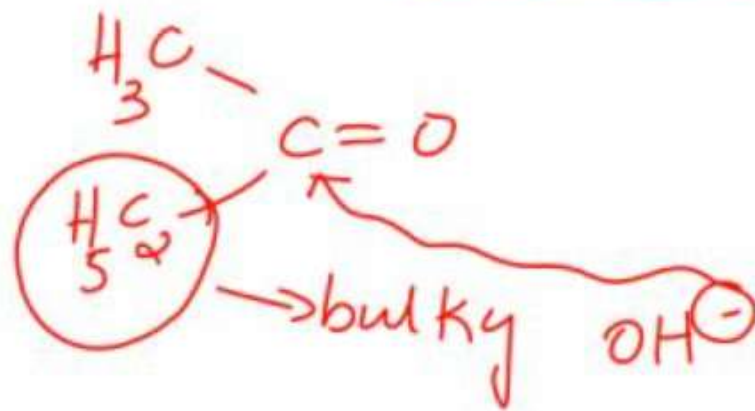
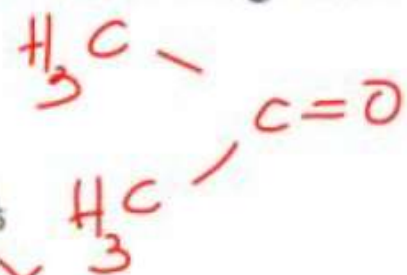
- (1) Both statements – I and II are false
- (2) Statement – I is true but statement – II is false
- (3) Statement – I is false but statement – II is true
- (4) Both statements – I and II are true.



Arrange the following compounds in their decreasing order of reactivity towards Nucleop addition reaction.



- (1) $CH_3CHO > CH_3COCH_3 > CH_3COC_2H_5$
- (2) $CH_3COCH_3 > CH_3CHO > CH_3COC_2H_5$ ✗
- (3) $CH_3COC_2H_5 > CH_3COCH_3 > CH_3CHO$ ✗
- (4) $CH_3CHO > CH_3COC_2H_5 > CH_3COCH_3$



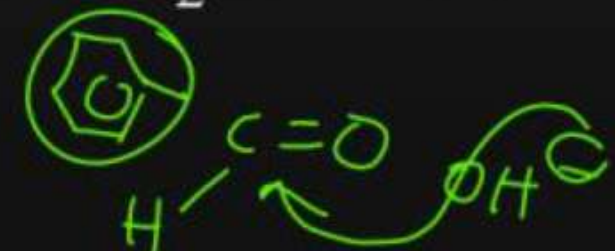
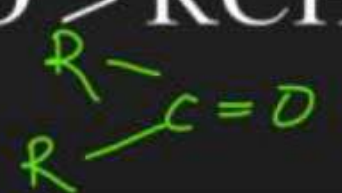
#Q. In nucleophilic addition reactions the reactivity of carbonyl compounds follows order

P418

IMP



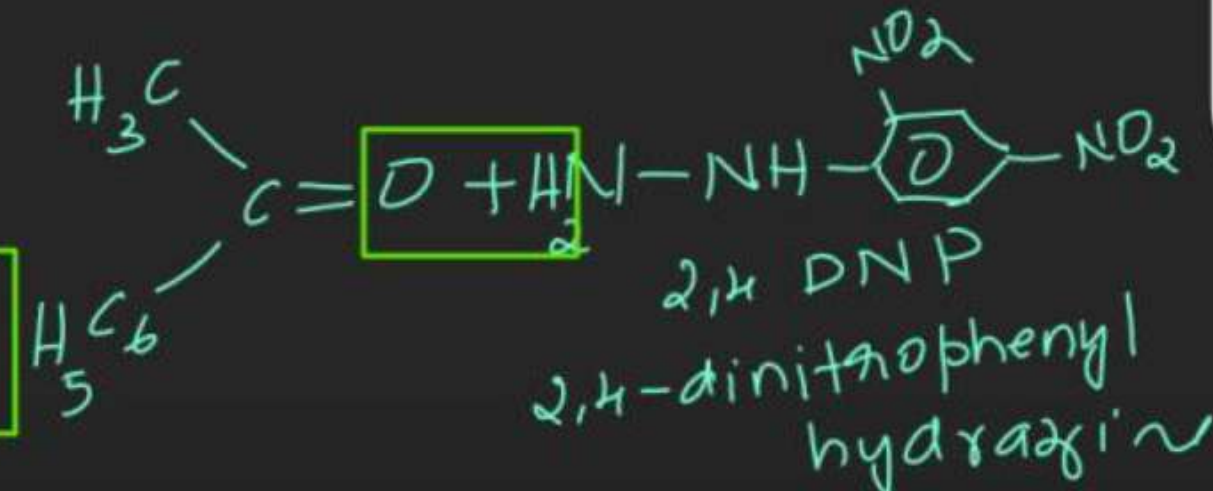
formaldehyde



QUESTION



#Q. Which is not true about acetophenone?



A Reacts to form 2,4-dinitrophenylhydrazone

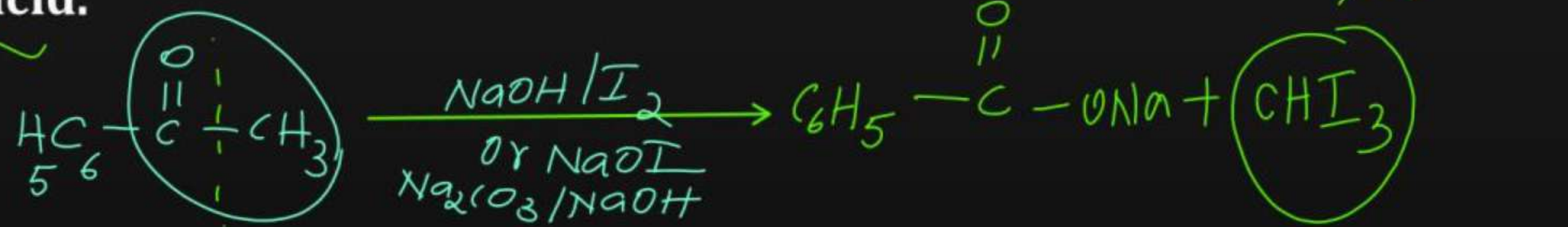
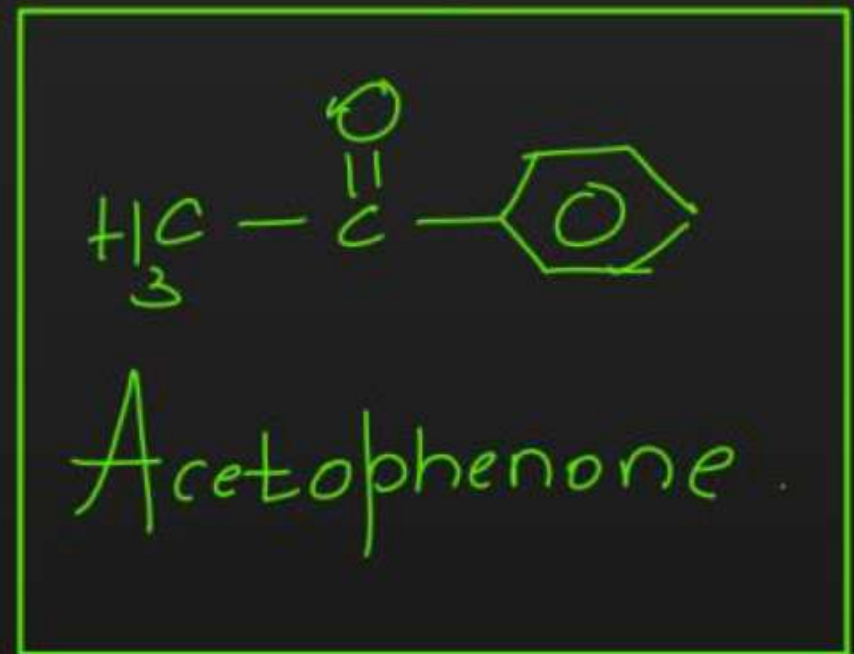
B Reacts with Tollen's reagent to form silver mirror

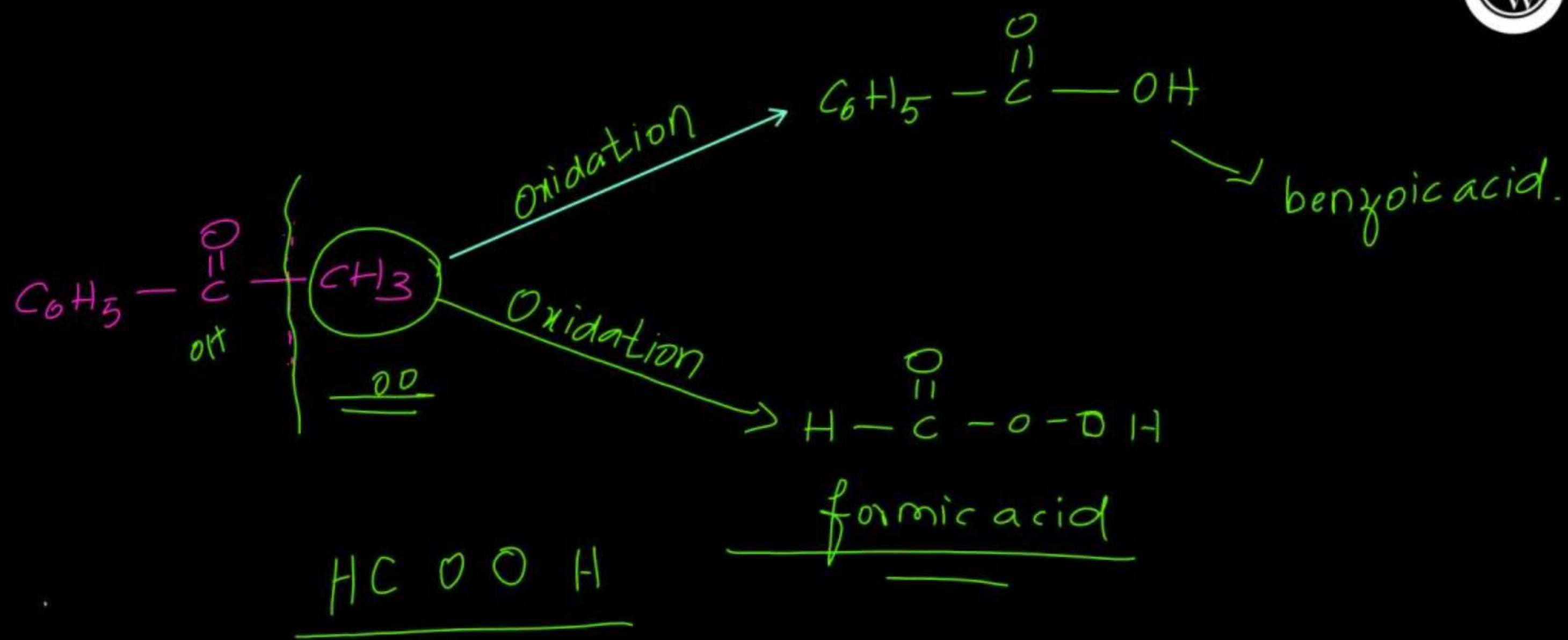
↳ ketones do not react

C Reacts with I_2 / NaOH to form iodoform.

↳ Halof orm reaction

D On oxidation with alkaline KMnO_4 followed by hydrolysis gives benzoic acid.

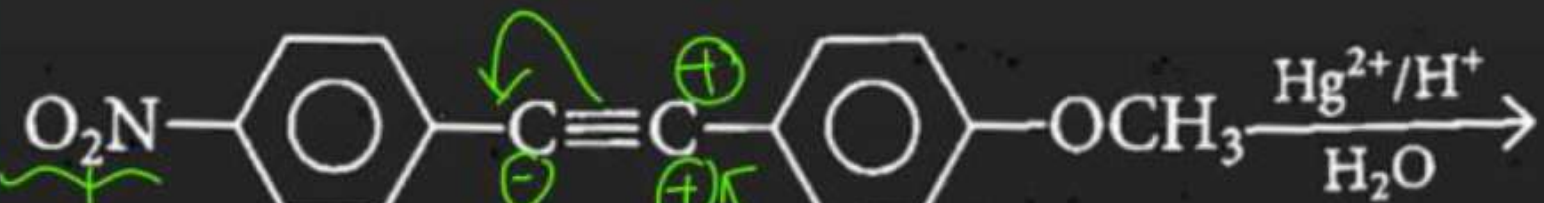




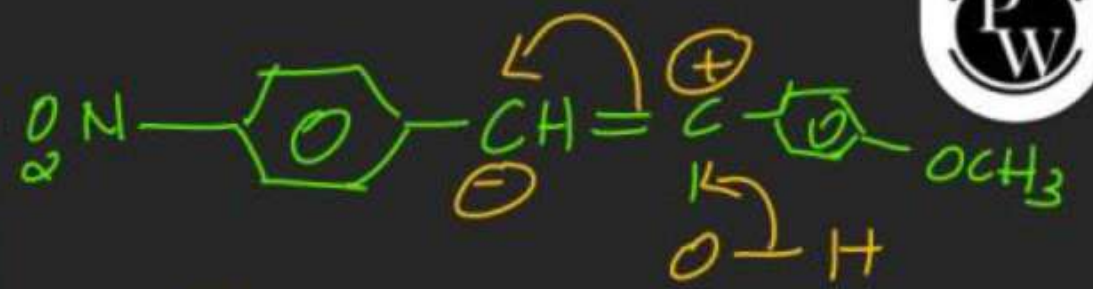
Question



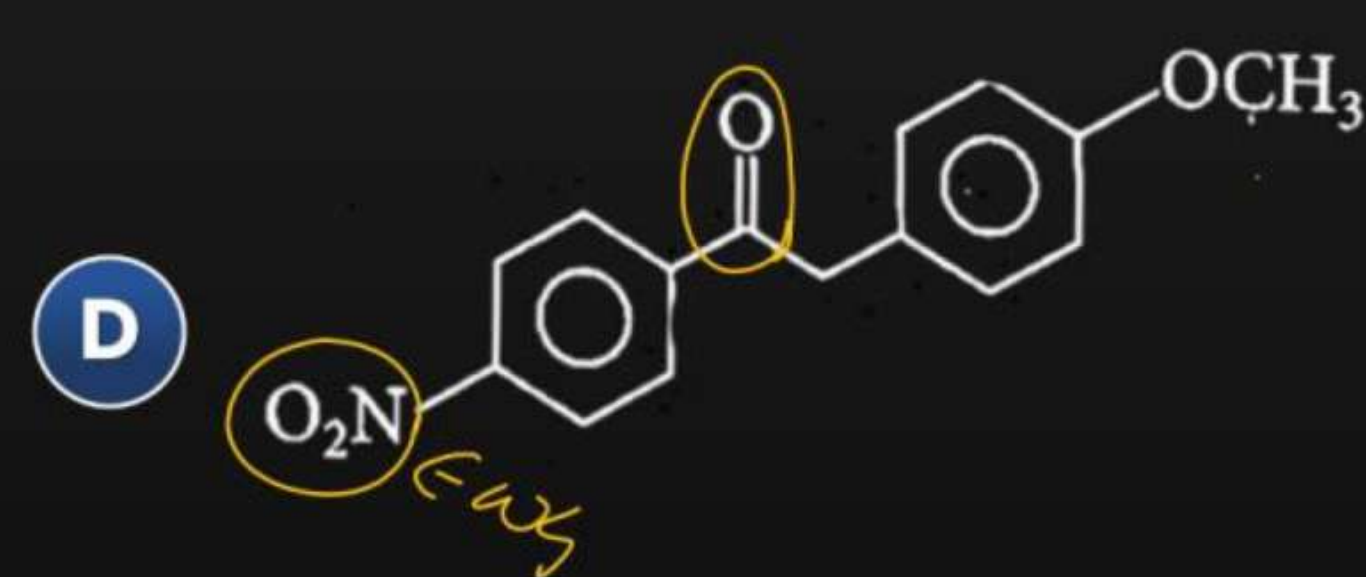
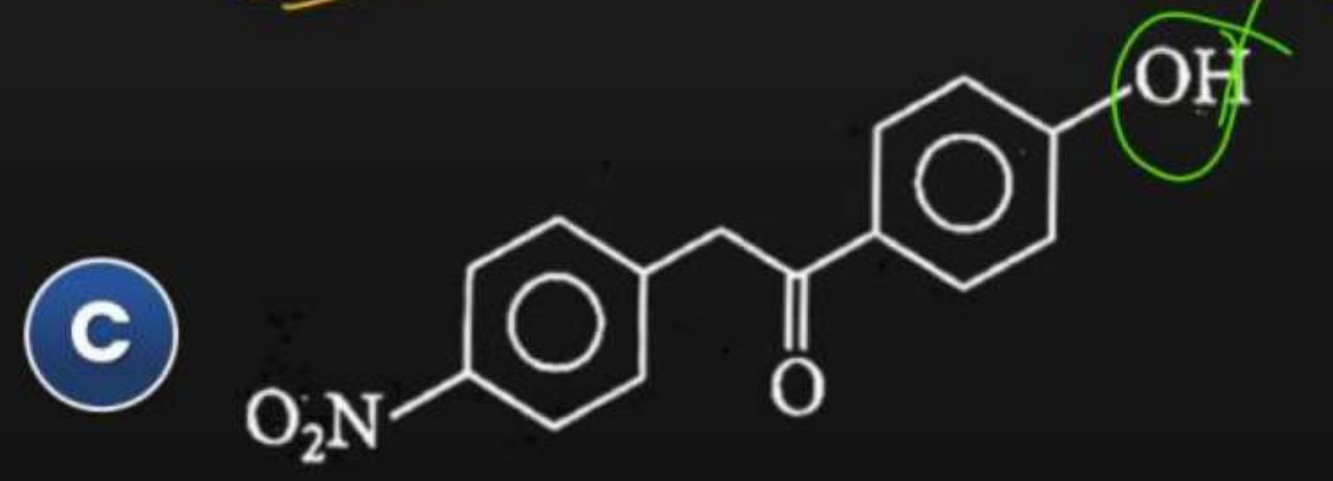
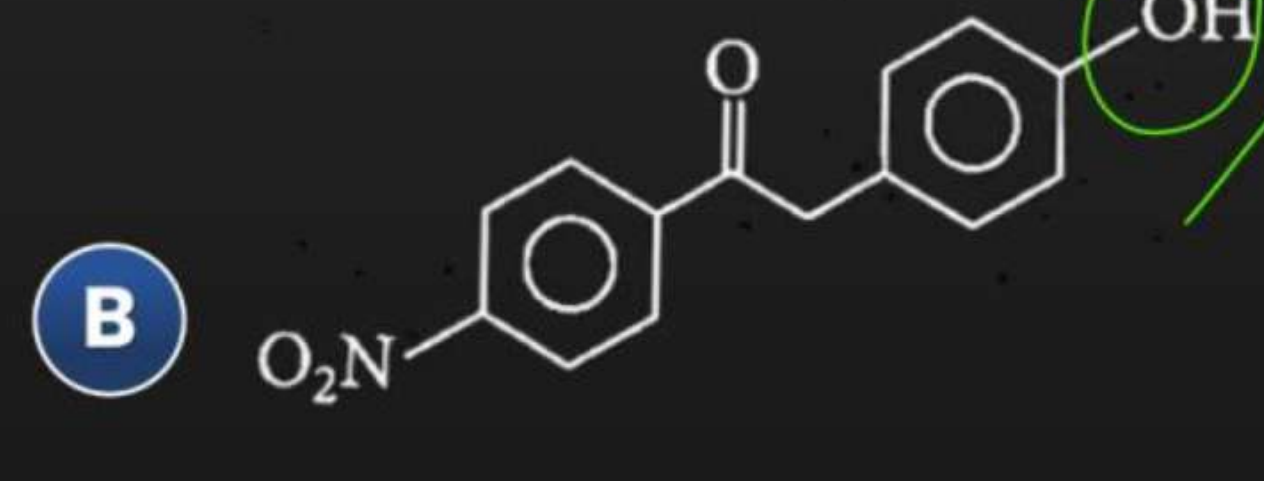
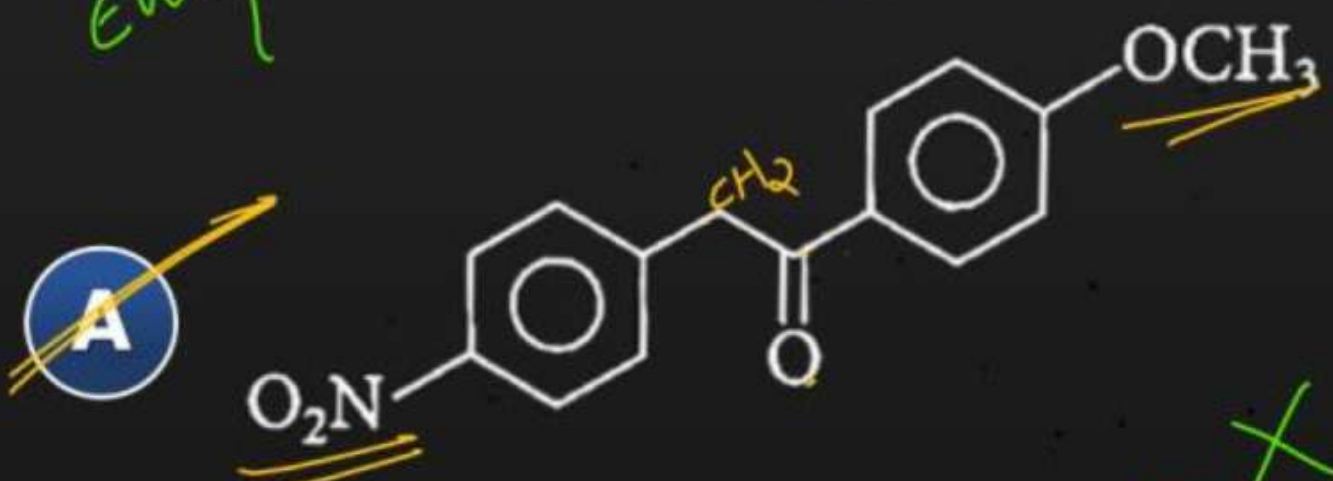
The major product obtained from the following reaction is



HI → $\delta \pi$ cells



EWG



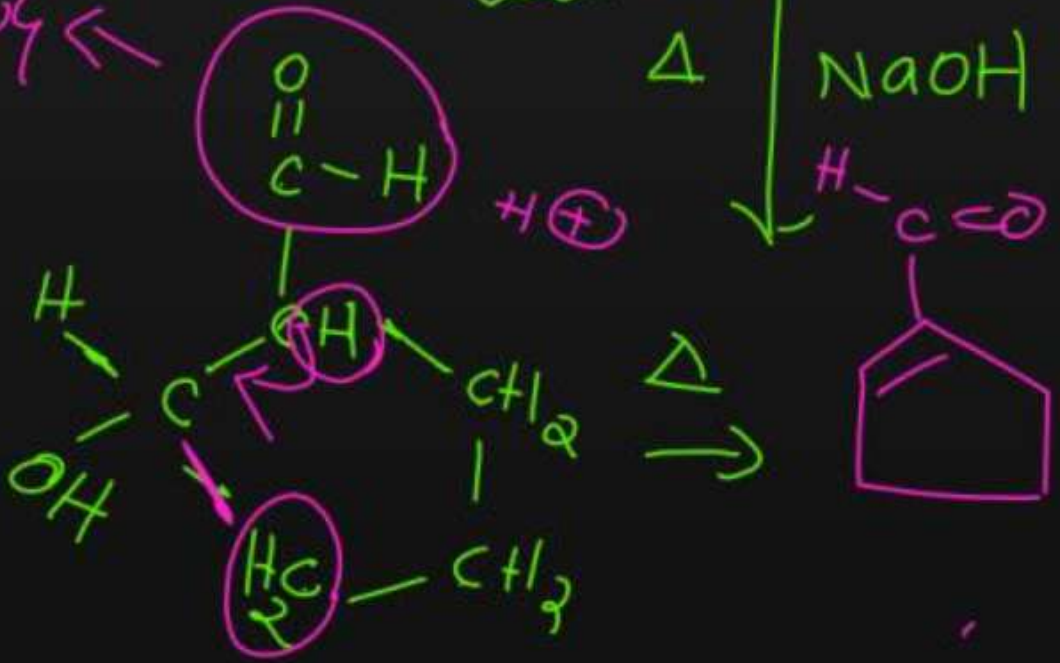
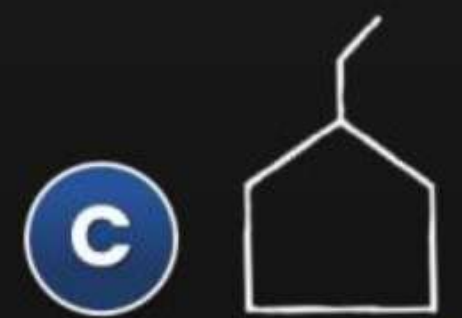
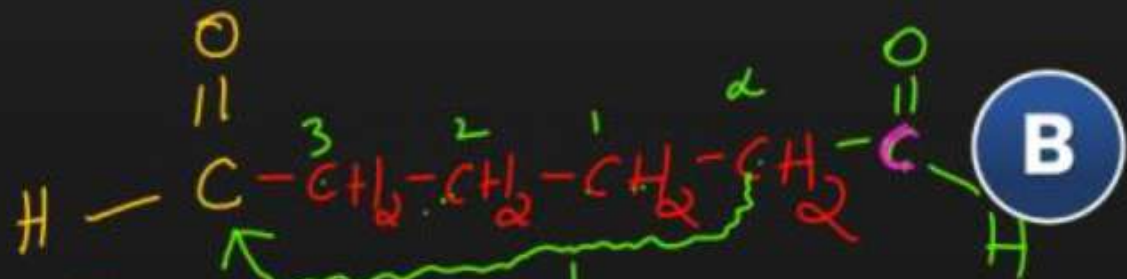
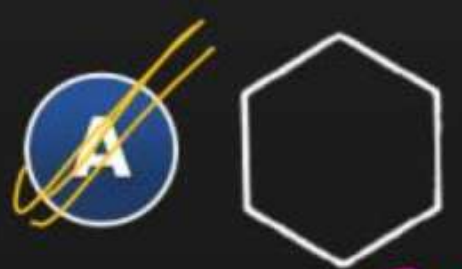
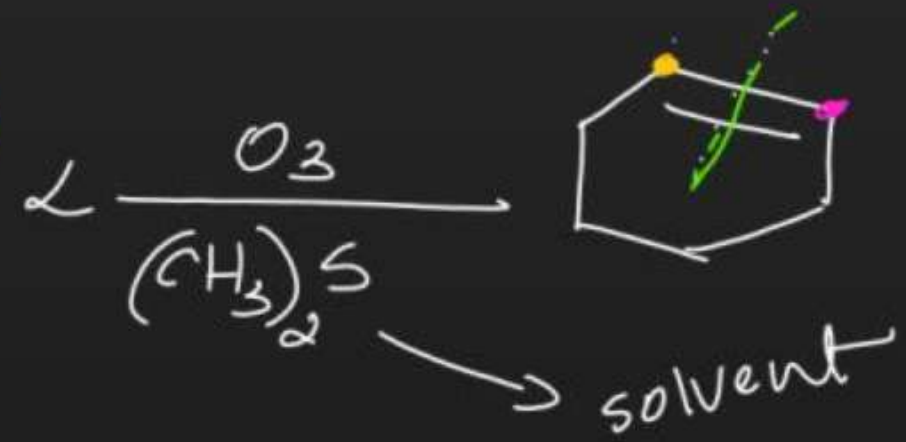
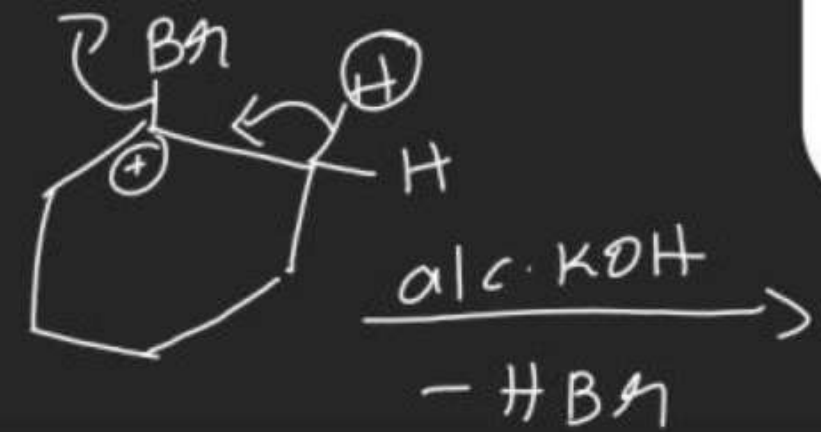
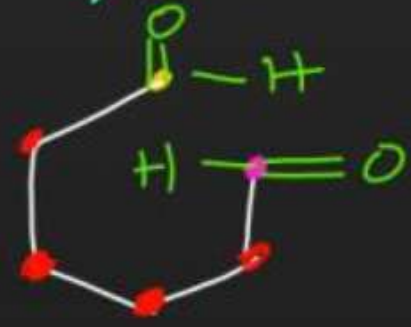
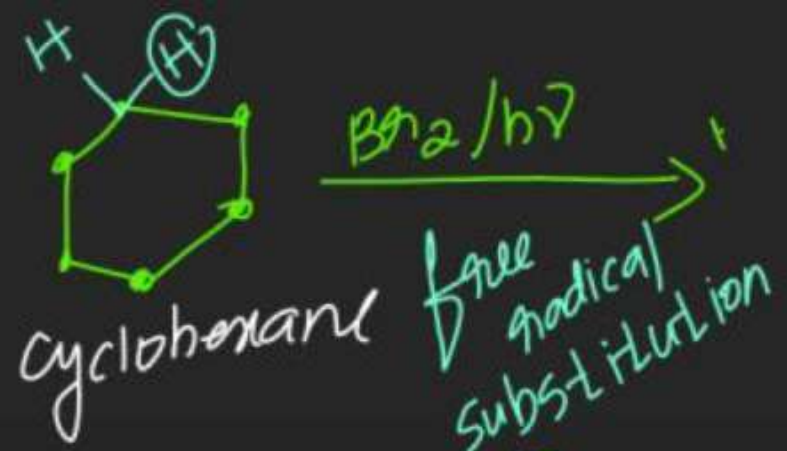
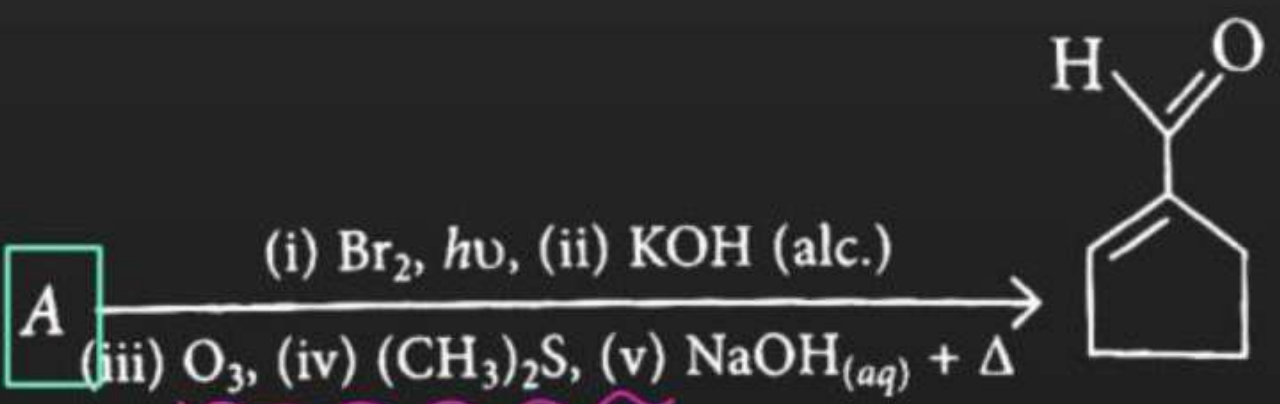
Question

level-2

BH → BH



In the following reaction A is

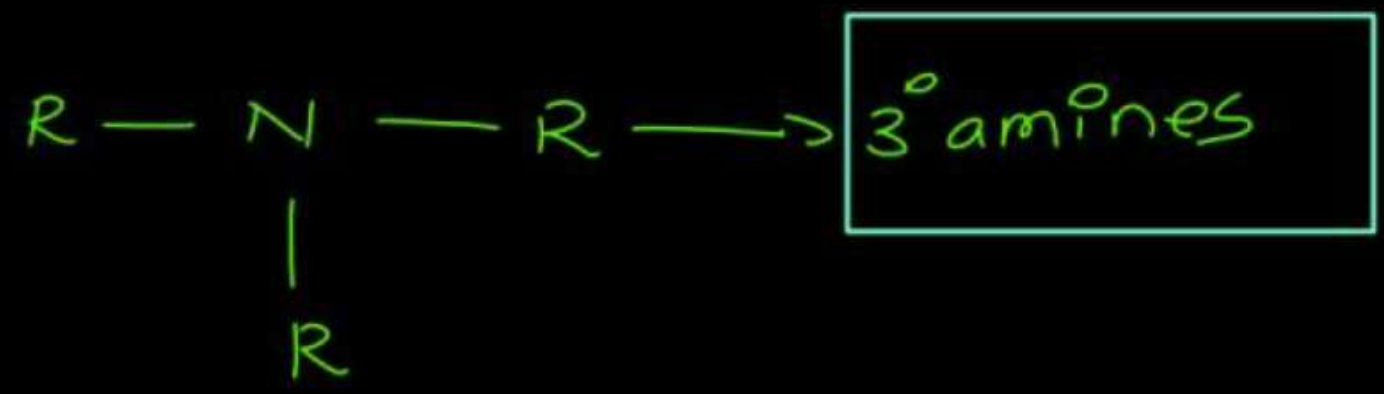
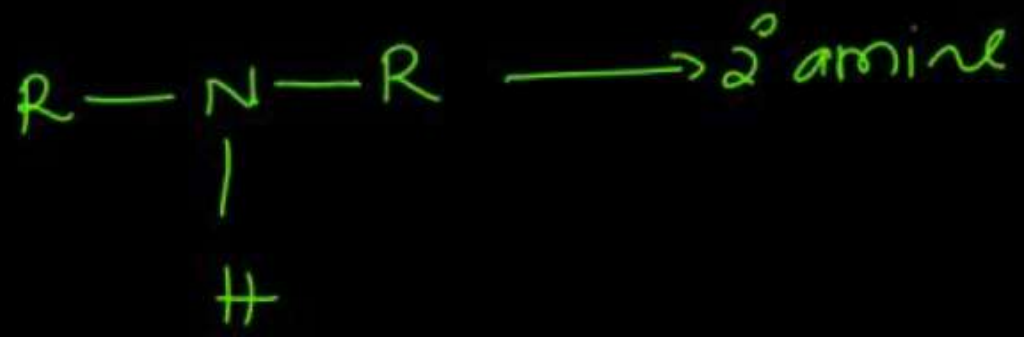


50%

Amines



Classification of Amines.



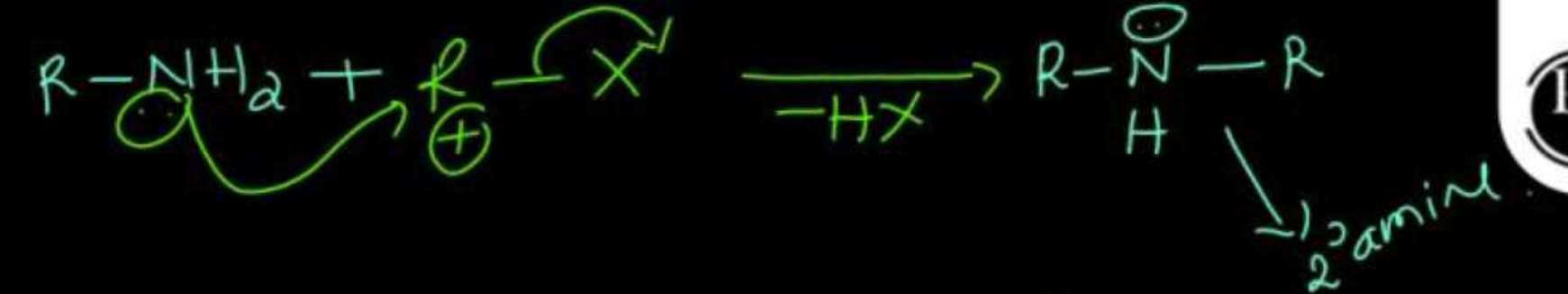
Quaternary ammonium salt



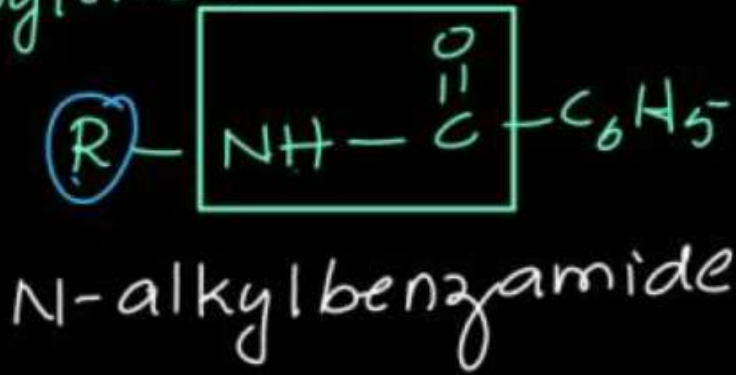
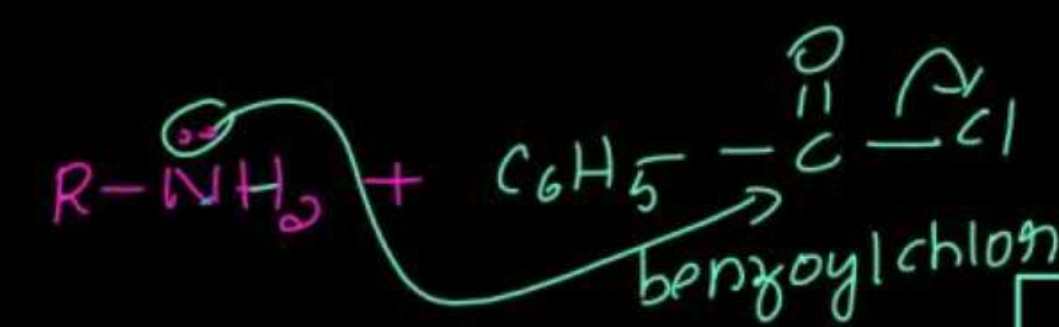
Amines

Chemical properties

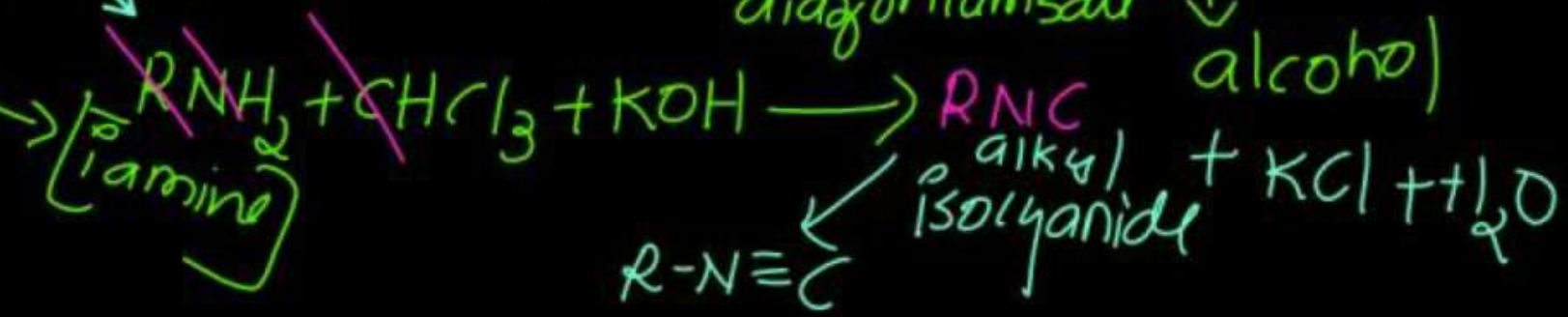
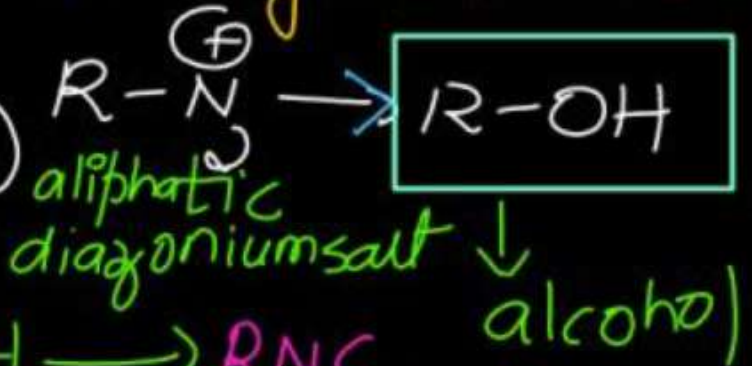
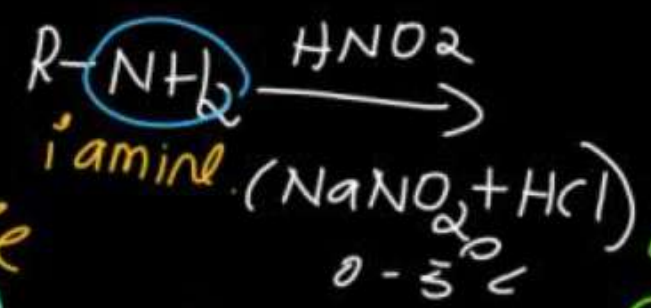
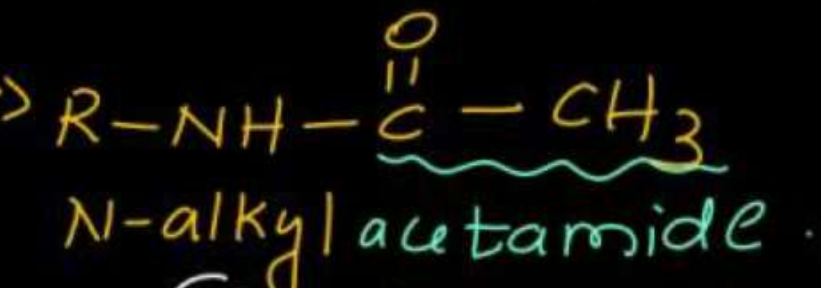
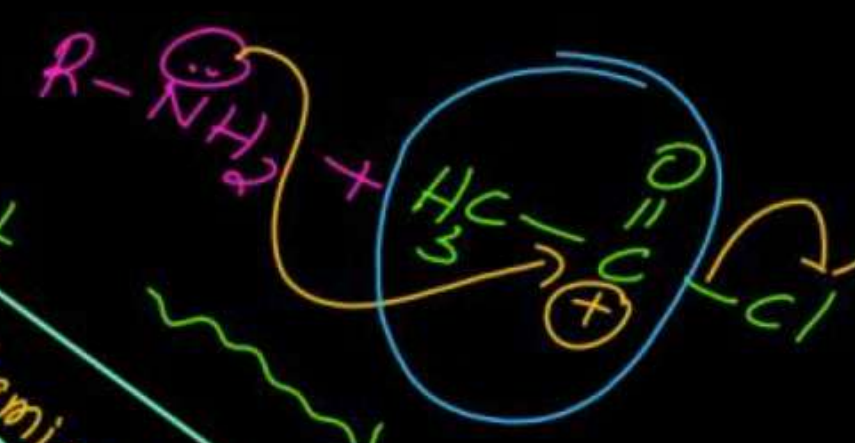
Reaction with RX

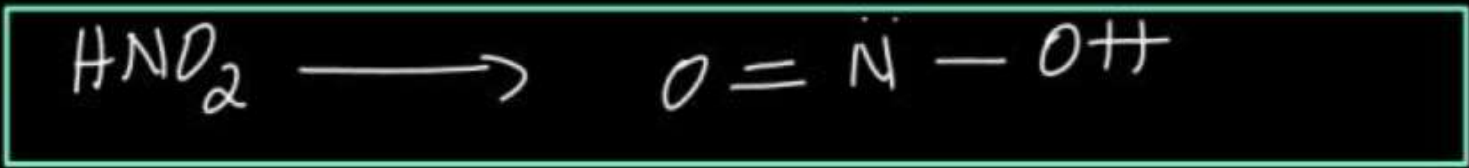


Acetylchloride / Benzoyl chloride
Acylation



HNO_2 test
Carbylamine / isocyanide



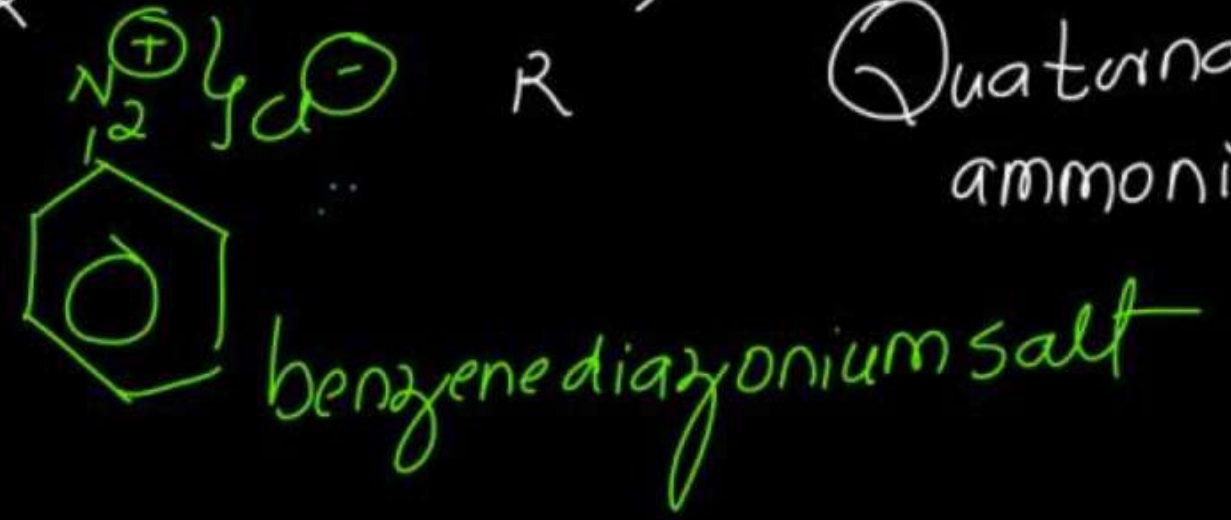
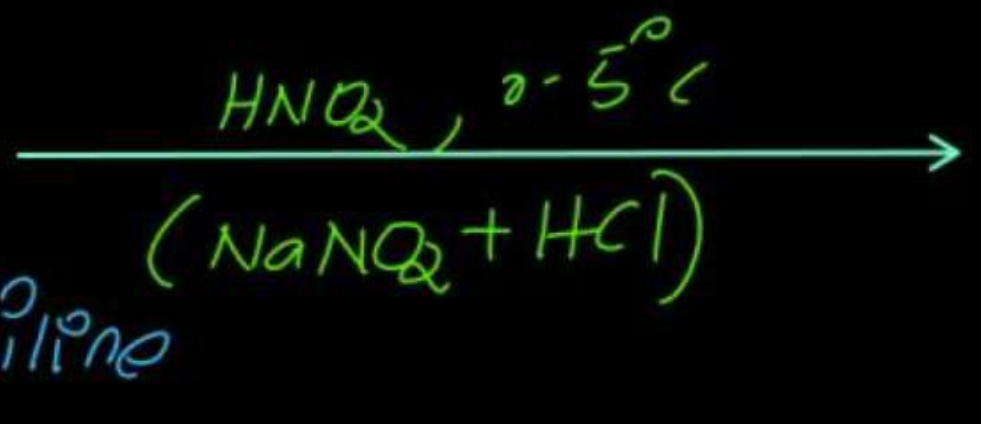
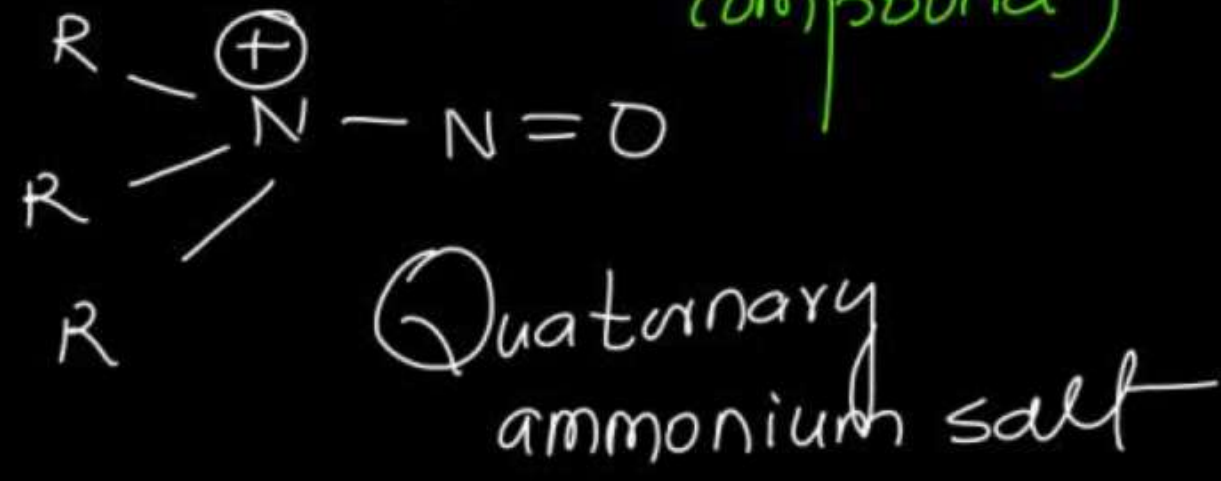
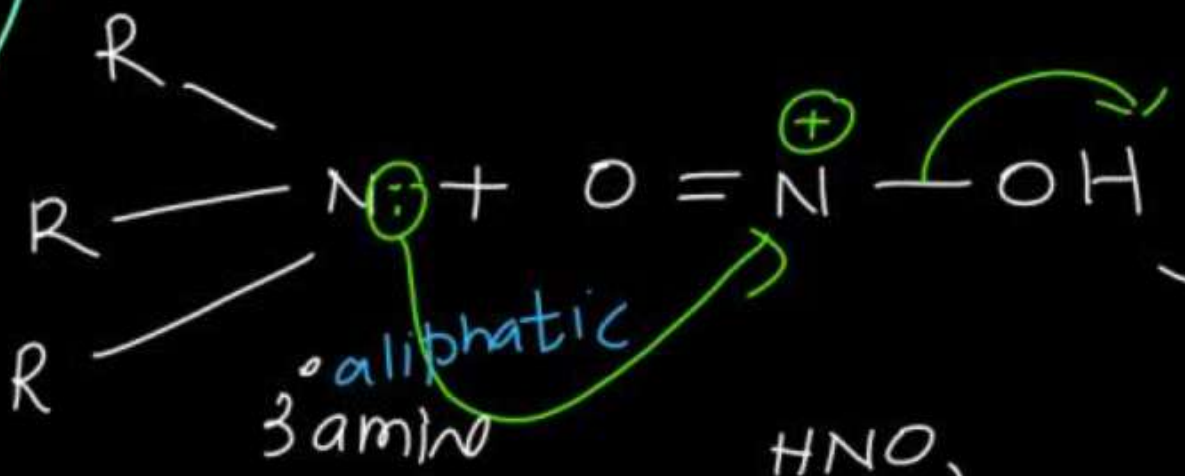
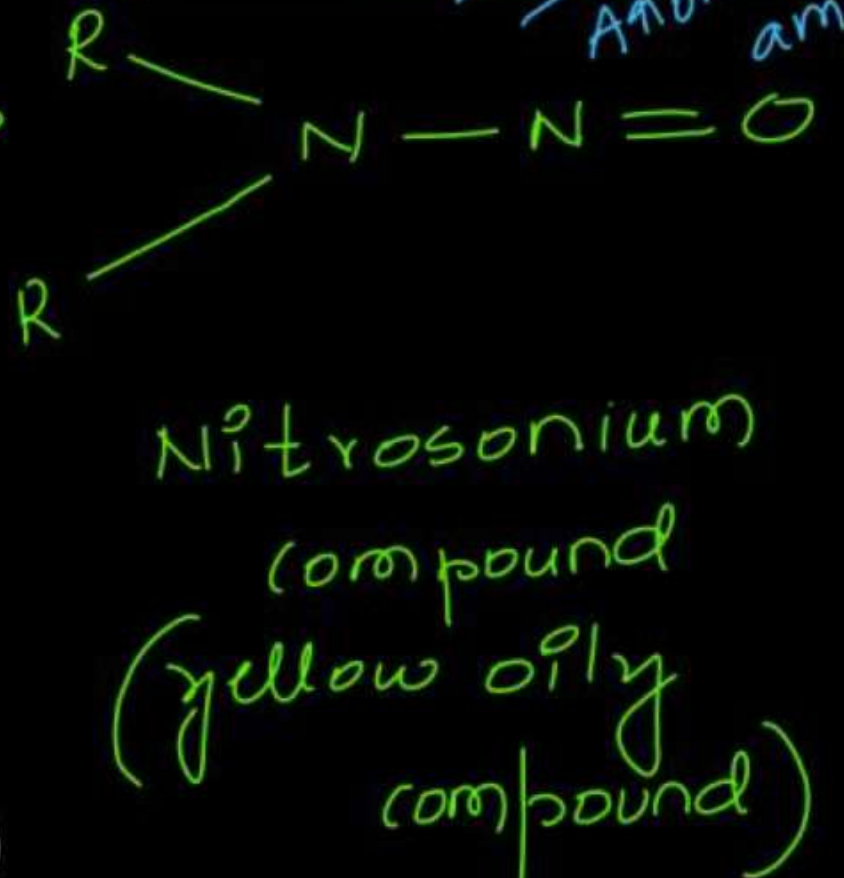
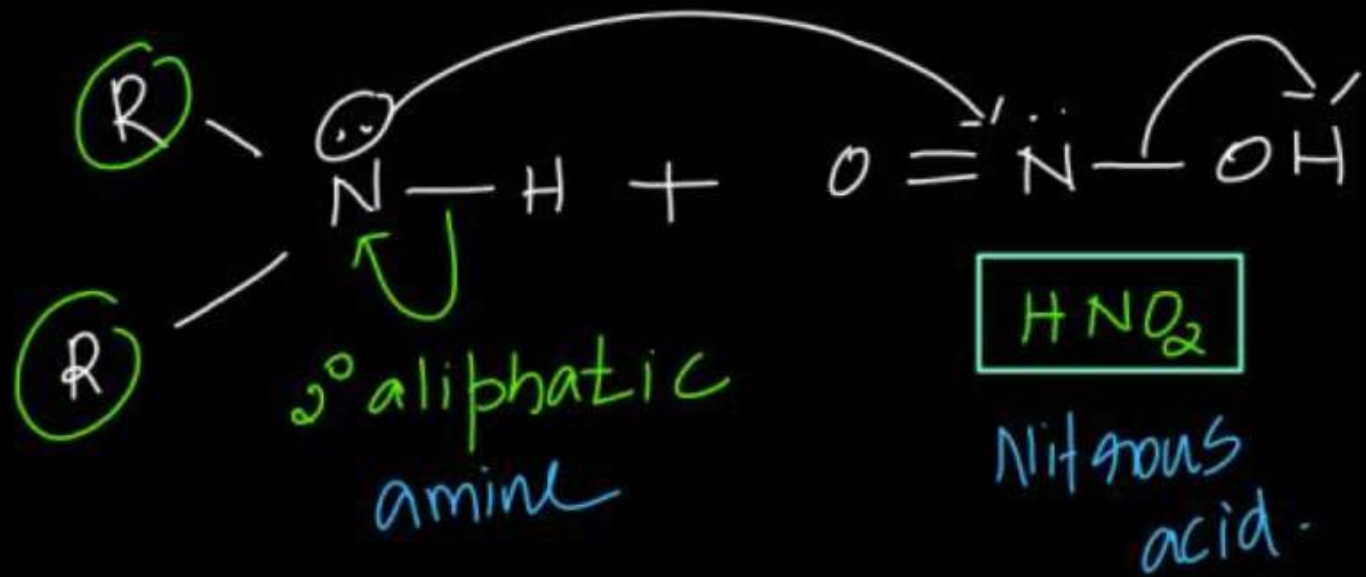


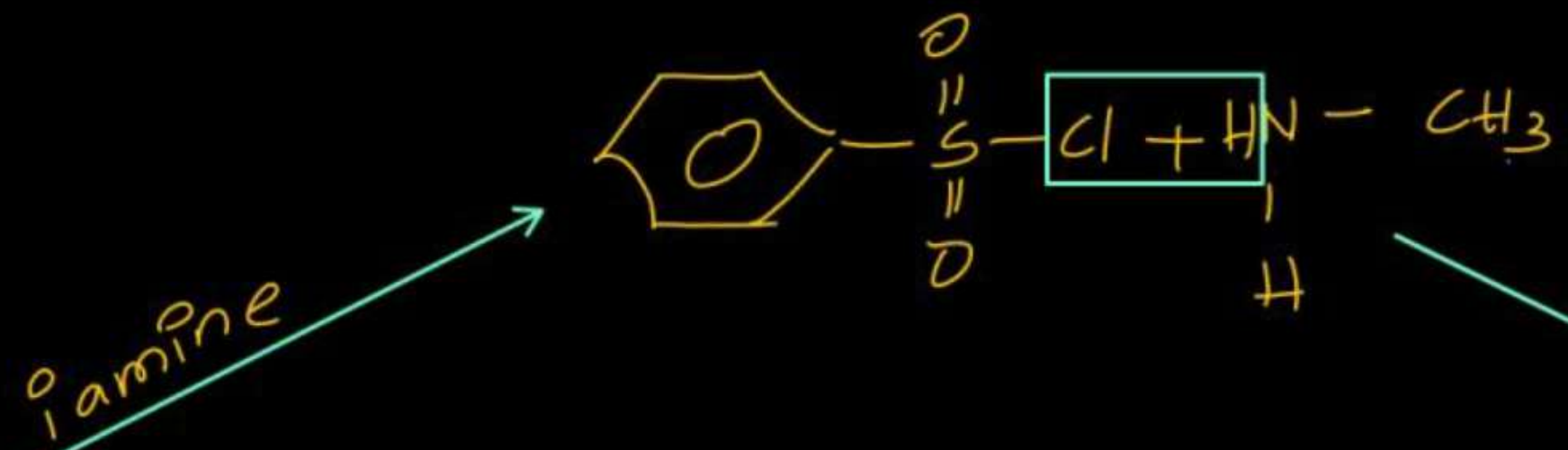
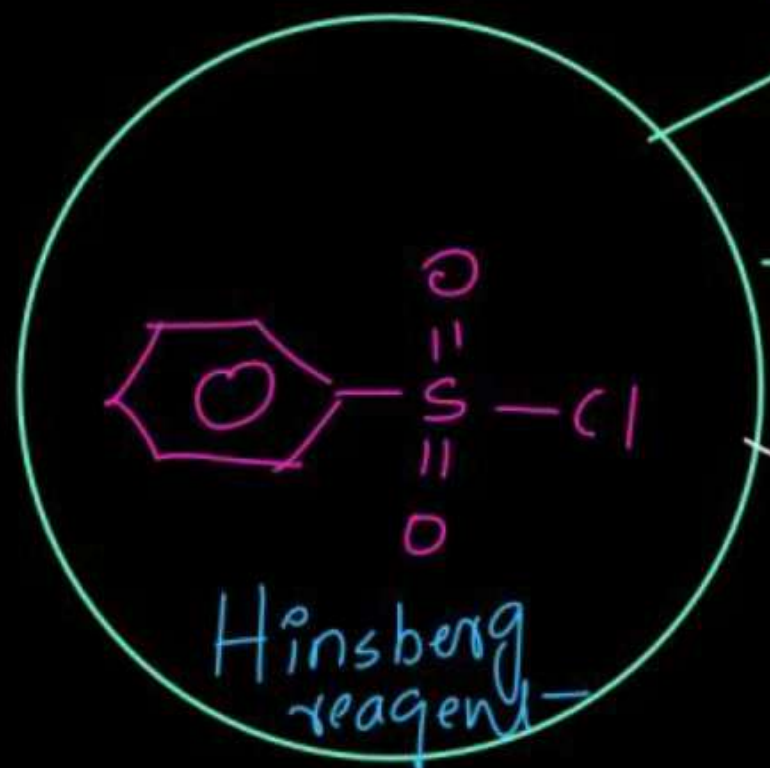
2°, 3°, & aromatic.

HNO₂ Test
 1°, 2°, 3° / Aliphatic
~~Aromatic amines.~~

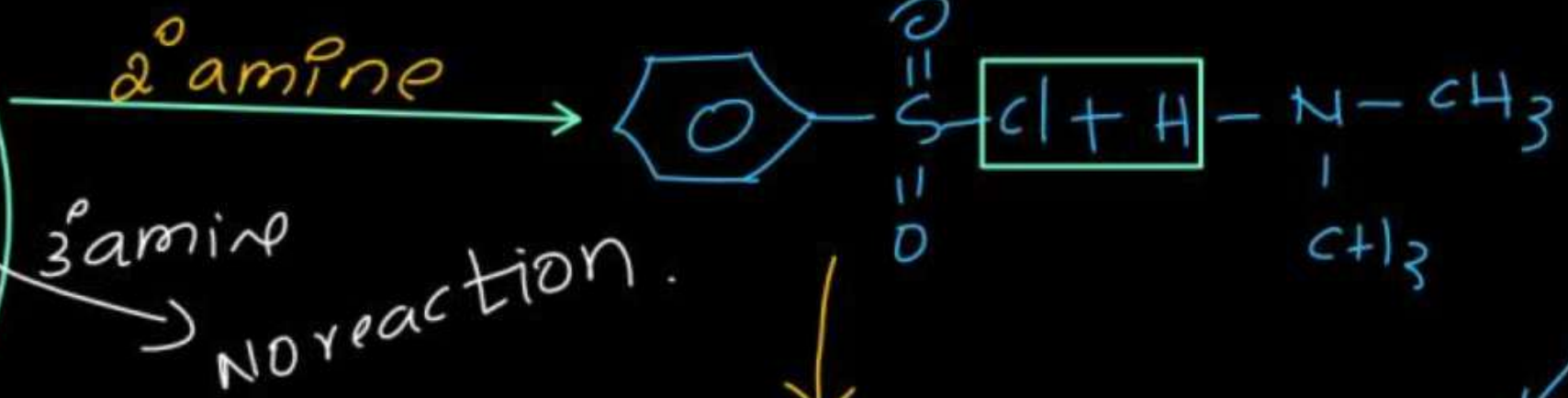
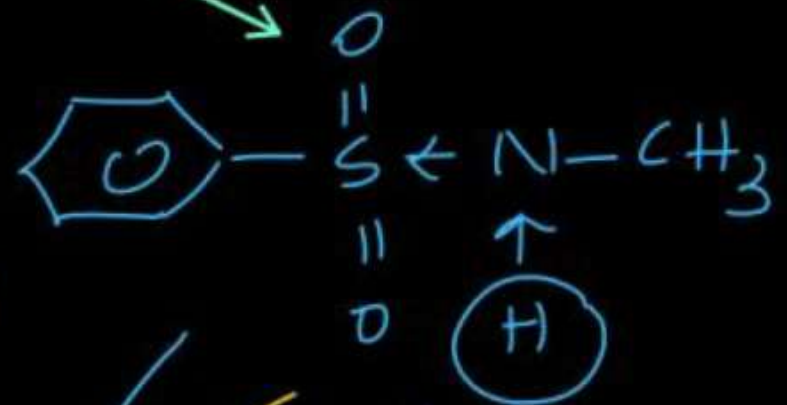


Chemical Properties
 (Central Points)

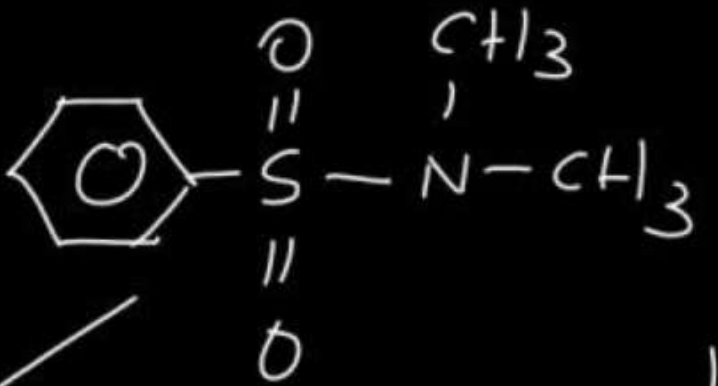




-HCl



$\xrightarrow{3^{\circ} \text{ amine}}$
 NO reaction



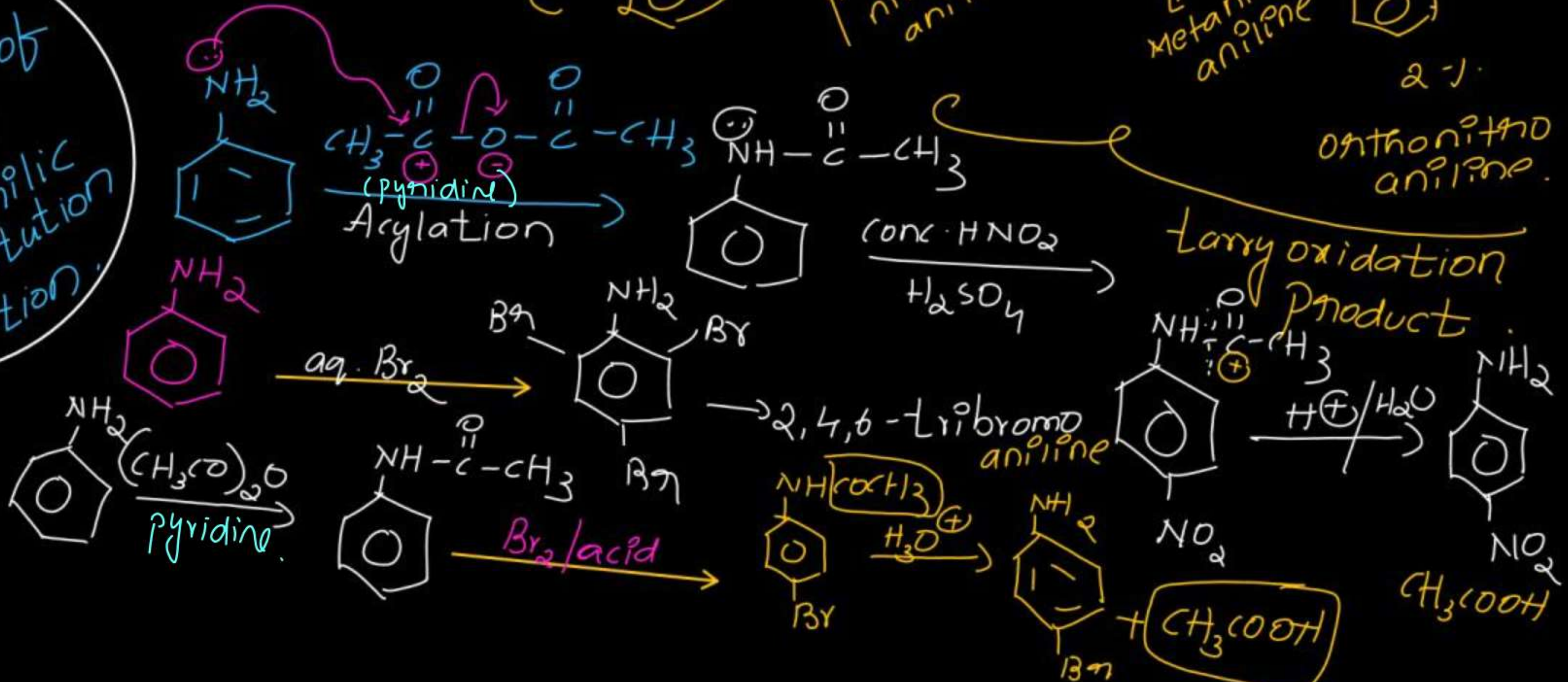
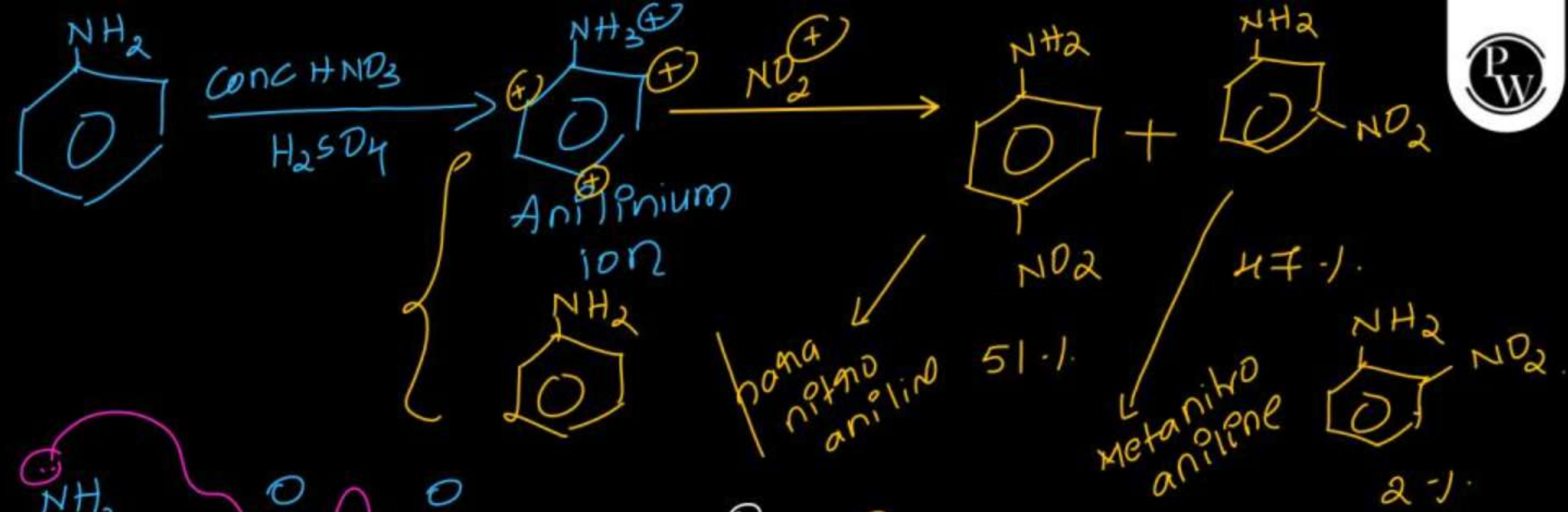
Soluble in NaOH

N,N-dimethyl benzene Sulphonamide

$\left. \begin{array}{l} \text{acidic hydrogen} \\ \text{N-Methyl benzene sulphonamide} \end{array} \right\} \text{soluble in alkali}$

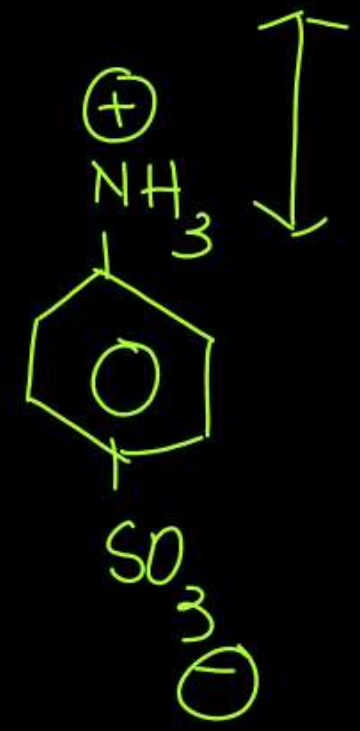
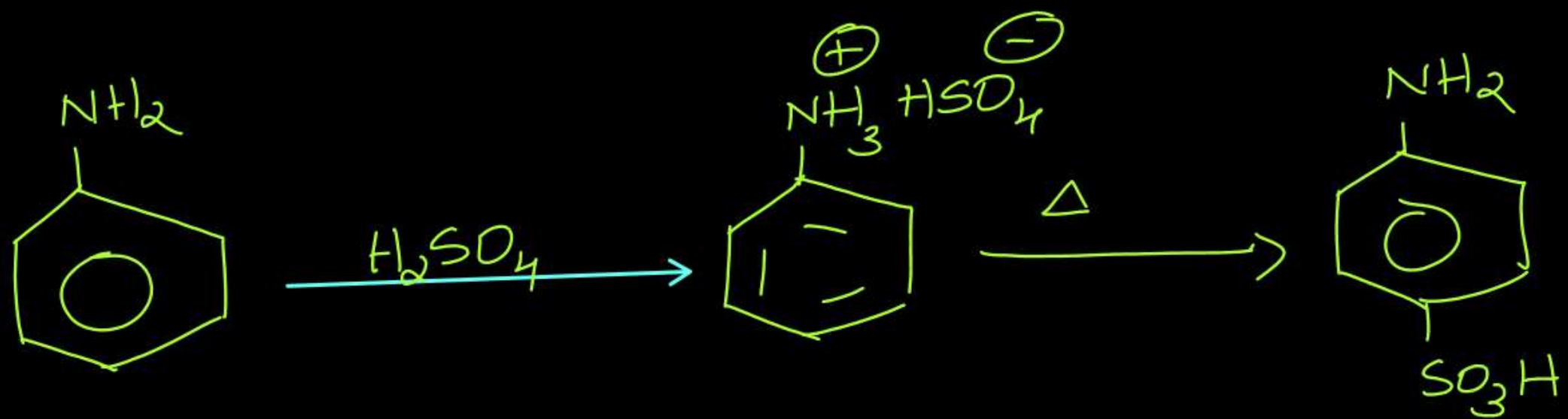


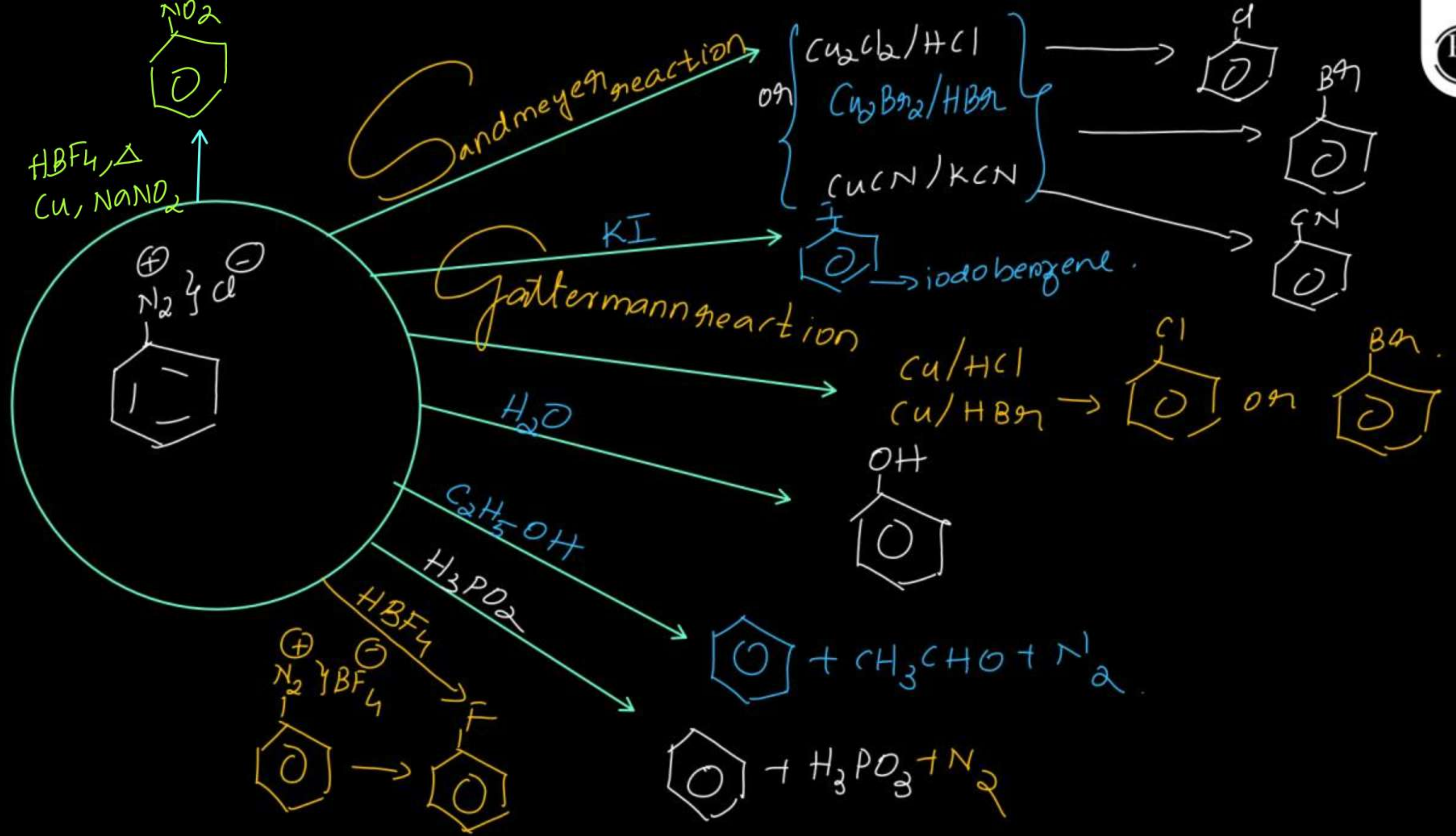
Chemical Properties of aniline
 → Electrophilic Substitution reaction.



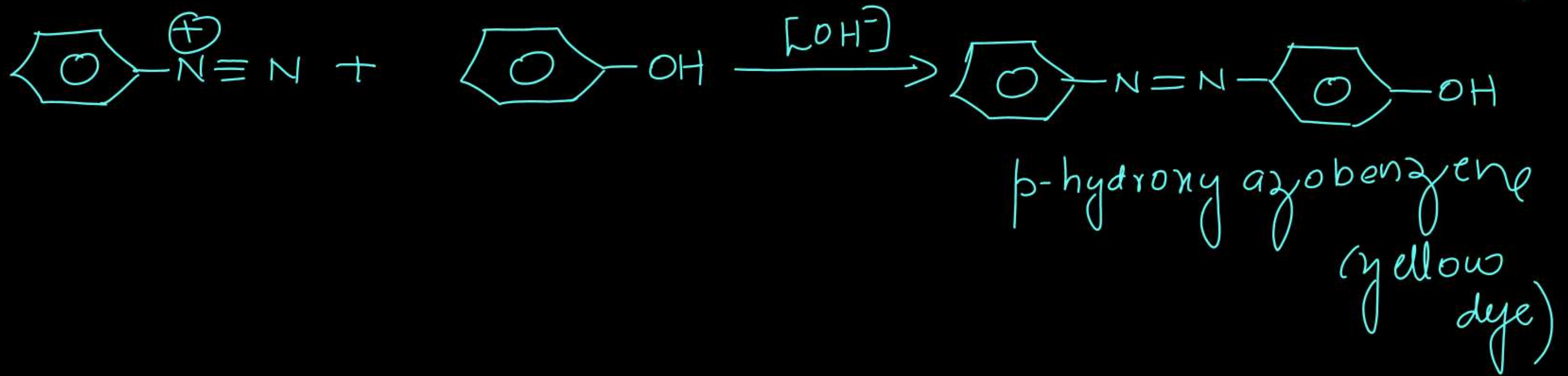
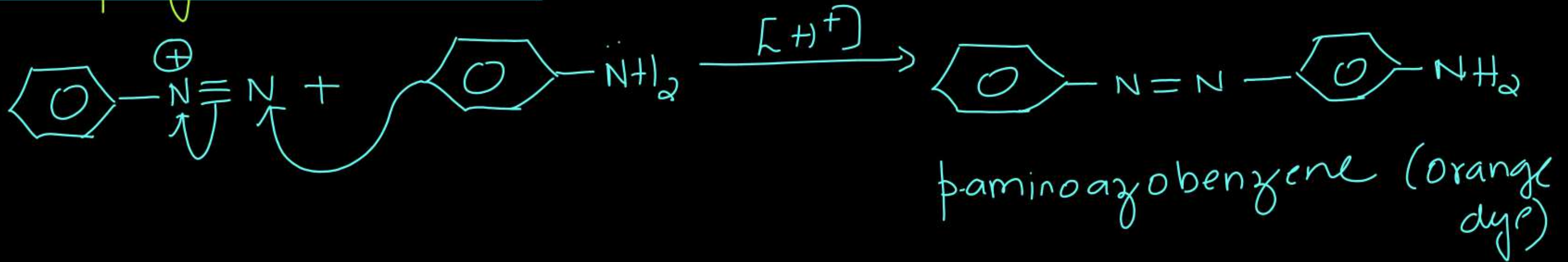
Sulphonation

Electrophilic Substitution of Aniline





Coupling reaction

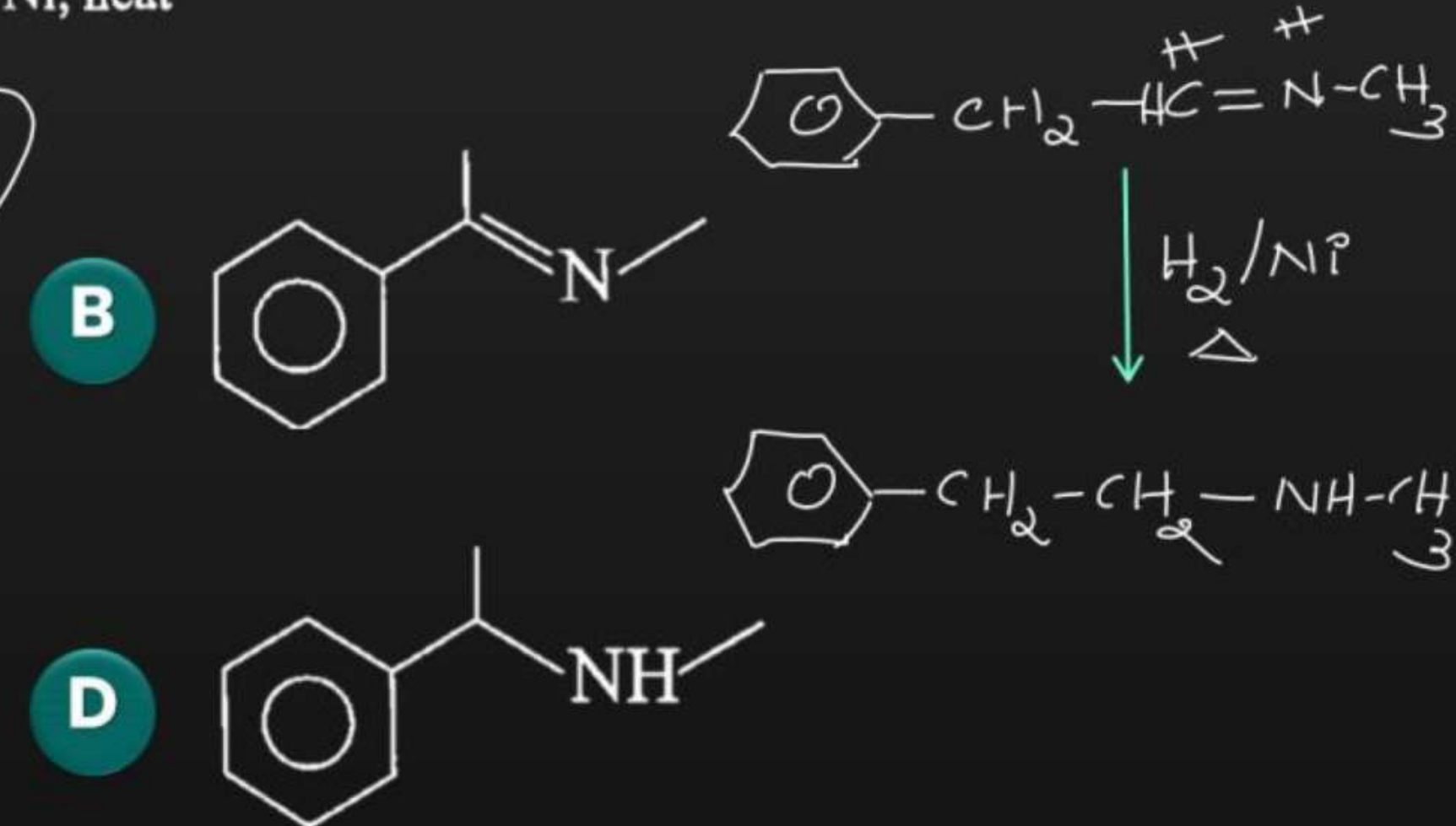
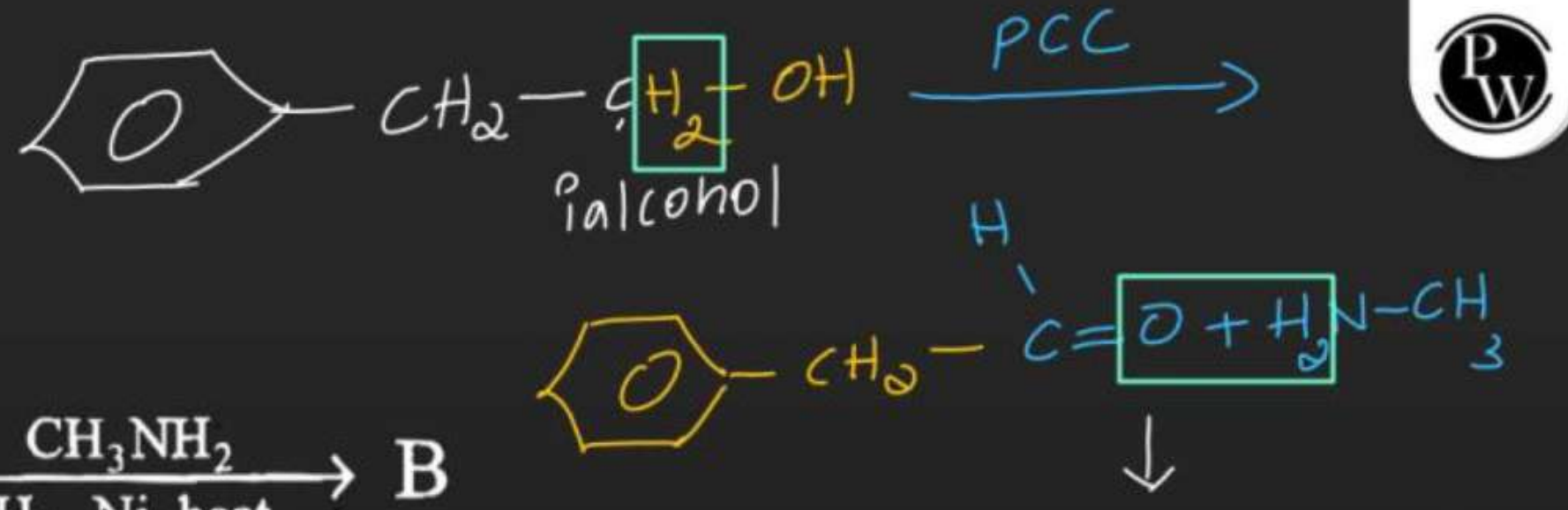
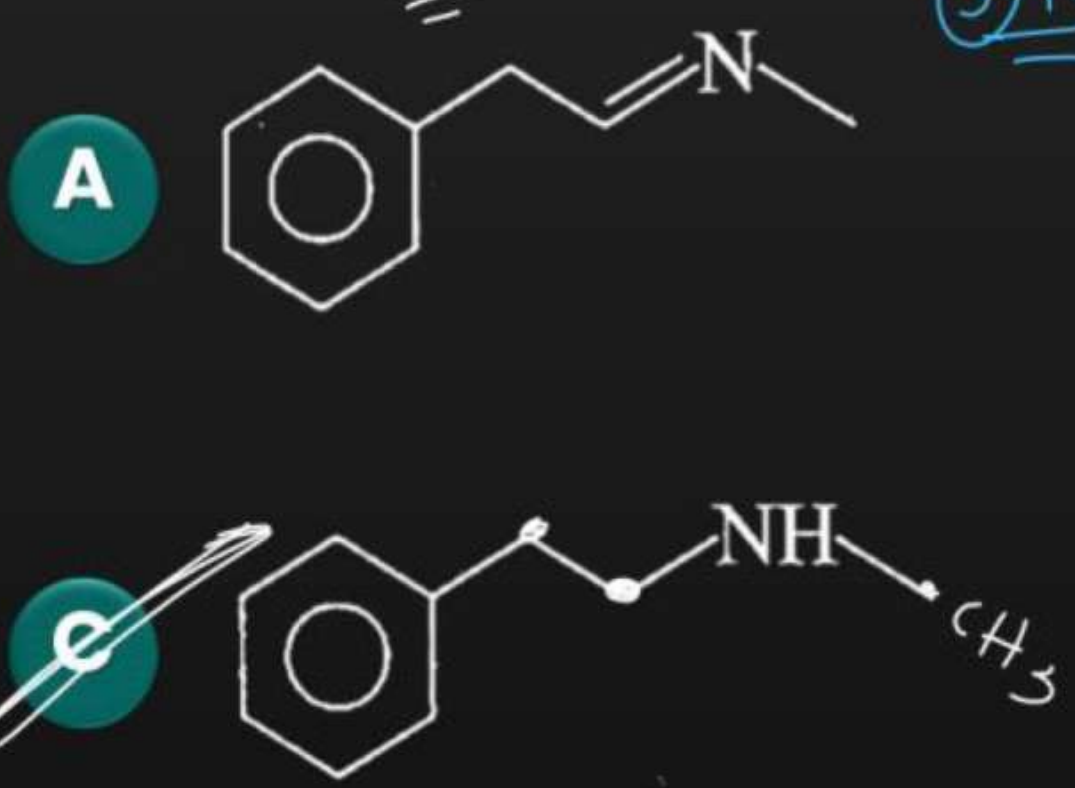
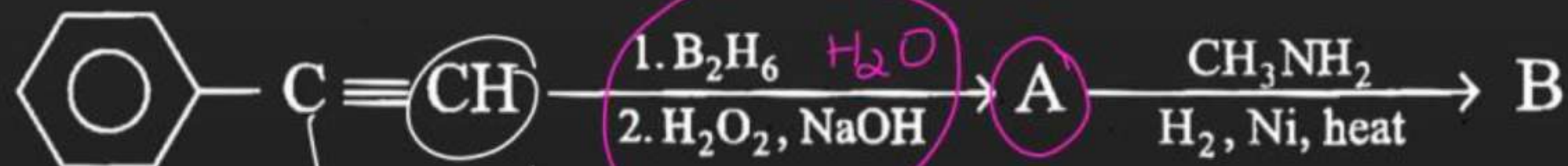


QUESTION

level-2



Identify the final product (B)



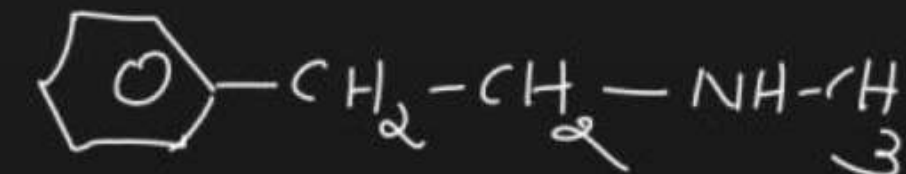
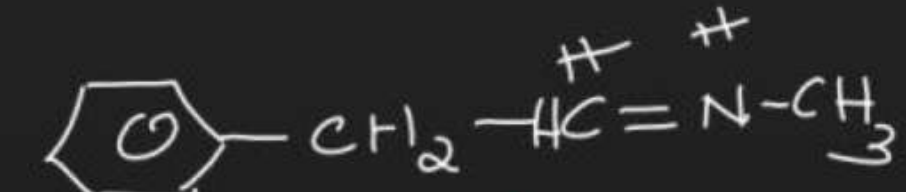
alcohol

3) PCC

H

+H
OH

H
C=O + H₂N-CH₃



QUESTION

Among the following compounds which one will produce a Schiff base on reaction with cyclohexanone ?



QUESTION

Which one of the following is formed when acetonitrile is hydrolysed partially with cold conc. HCl ?

A Acetic anhydride

B Acetic acid

C Methyl cyanide

D Acetamide

QUESTION

Acetamide and ethyl amine can be distinguished by reacting with

- A** aqueous HCl and heat
- B** aqueous NaOH and heat
- C** acidified KMnO_4
- D** bromine water

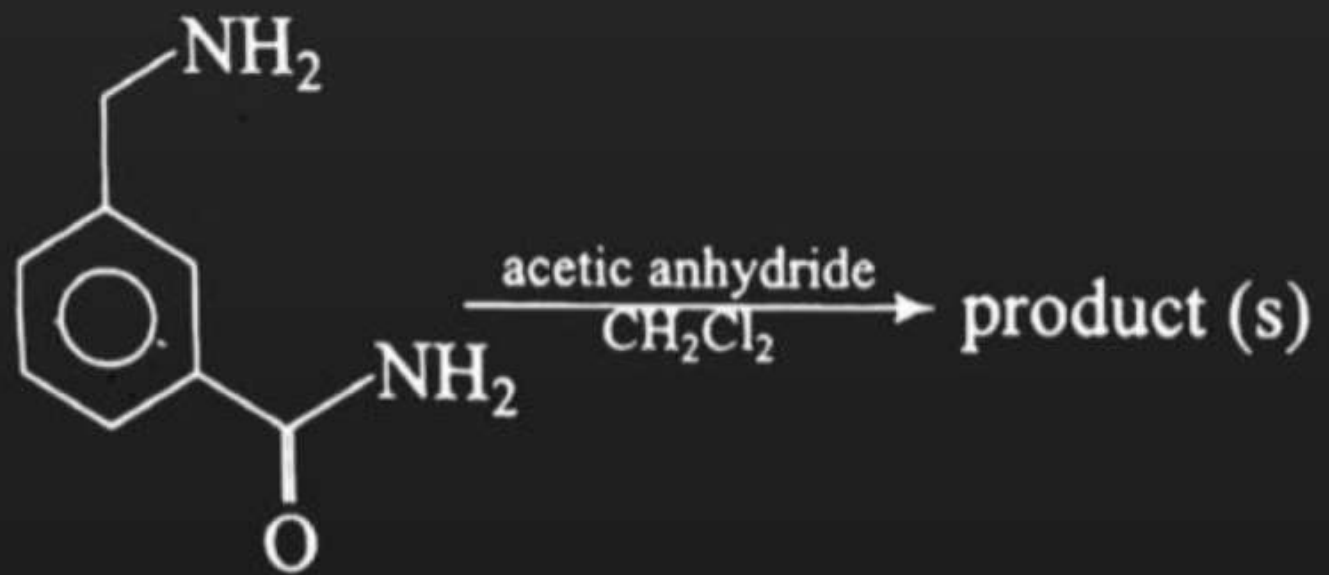
QUESTION

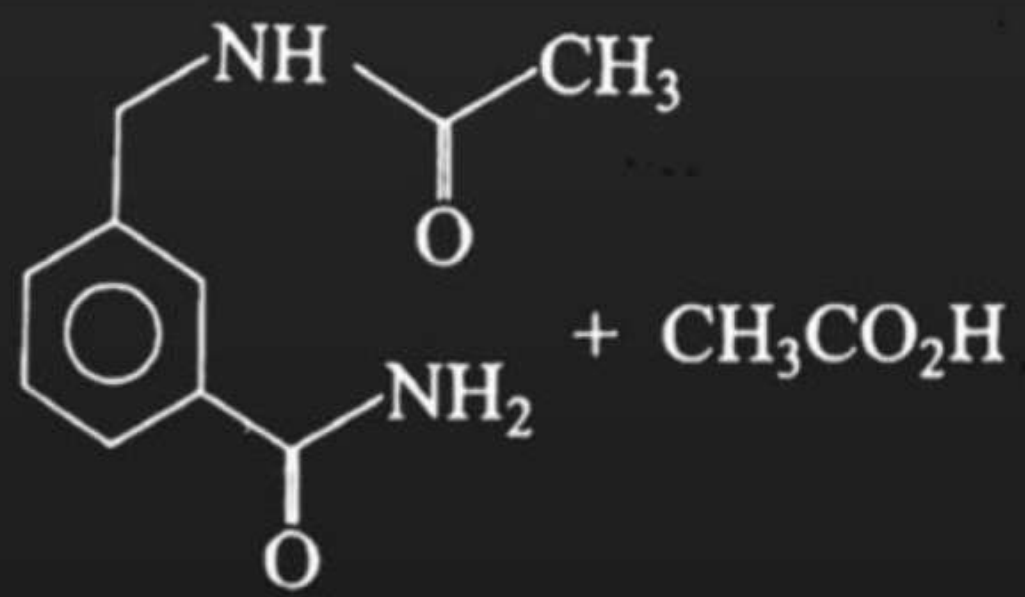
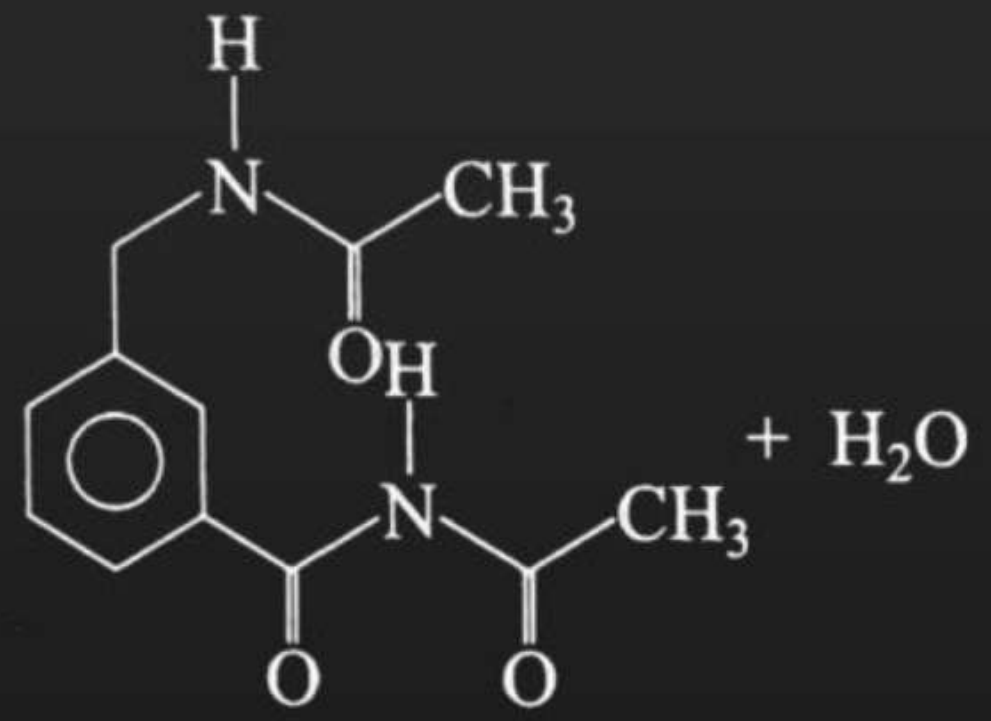
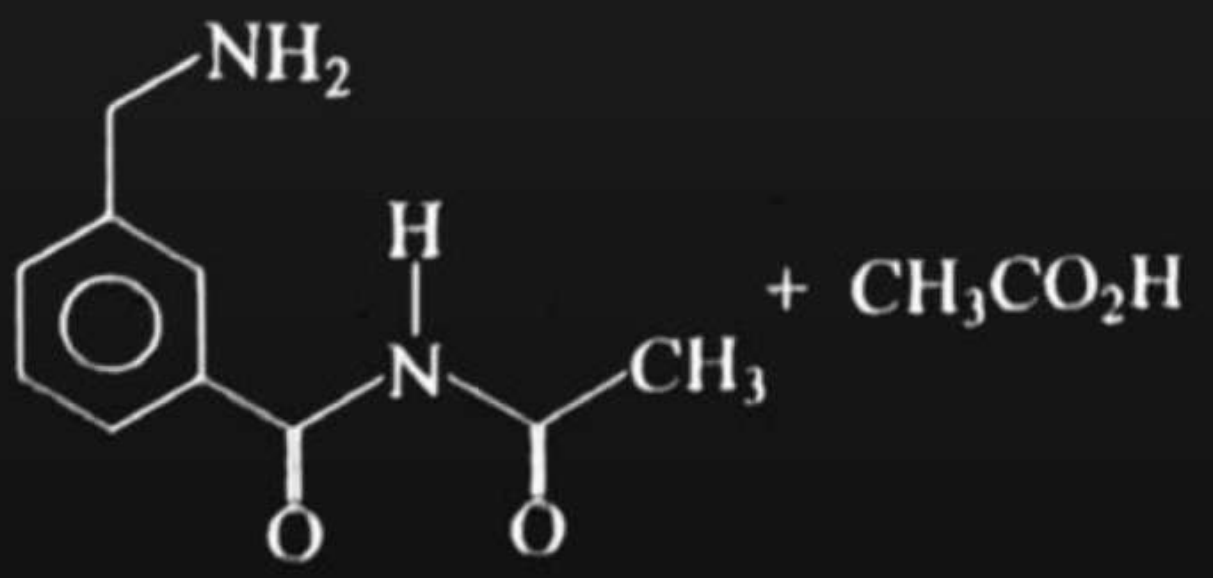
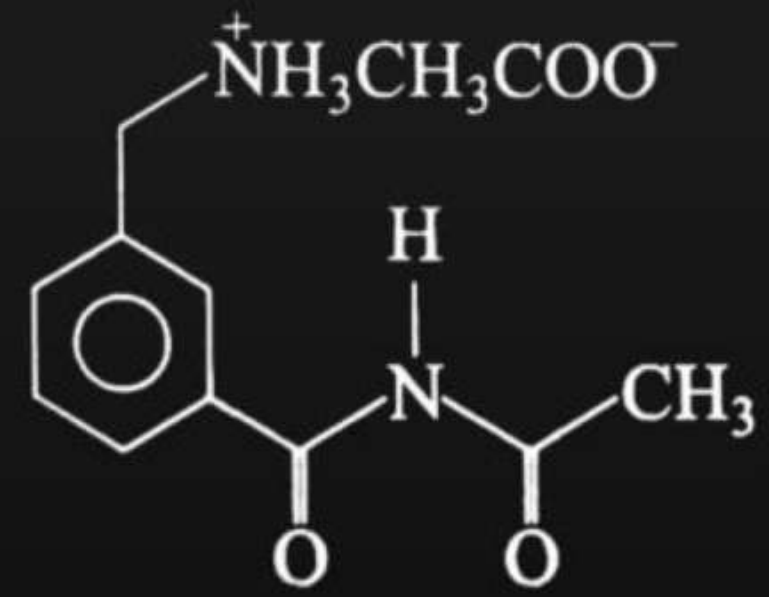
The gas leaked from a storage tank of the Union Carbide plant in Bhopal gas tragedy was:

- A** Methylamine
- B** Ammonia
- C** Phosgene
- D** Methyl isocyanate

QUESTION

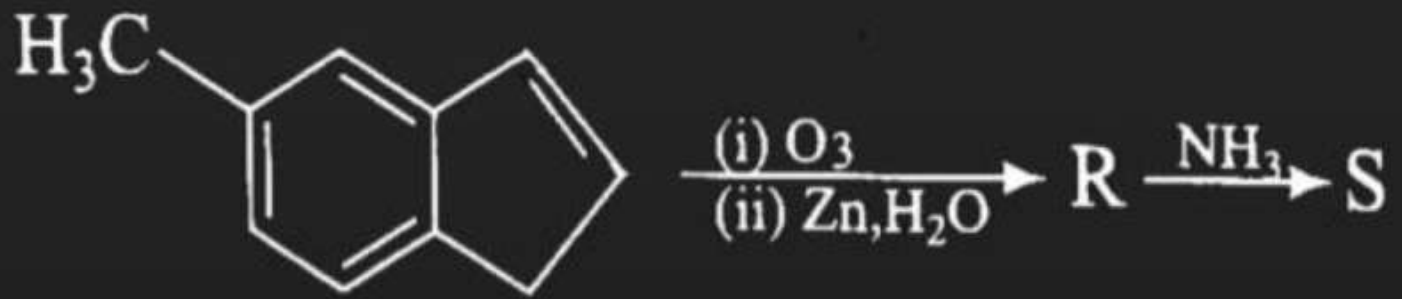
In the reaction shown below, the major product(s) formed is/are



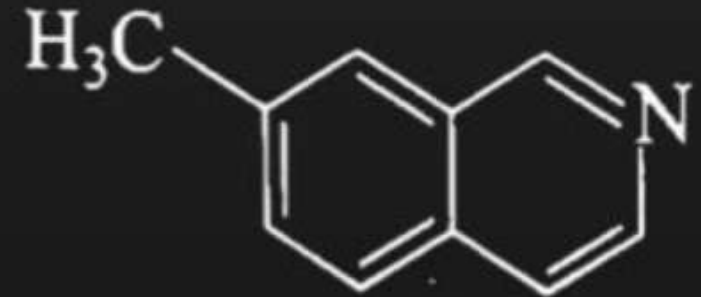
A**B****C****D**

QUESTION

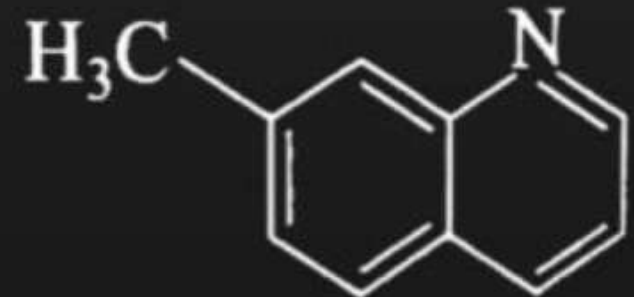
In the following reactions, the product S is



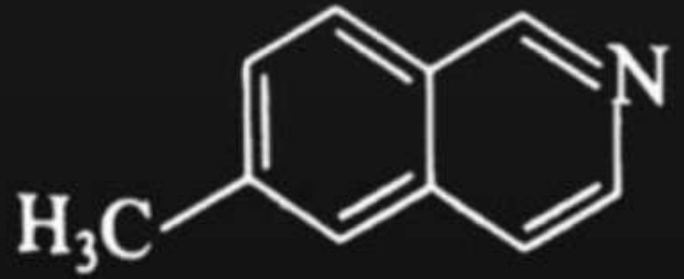
A



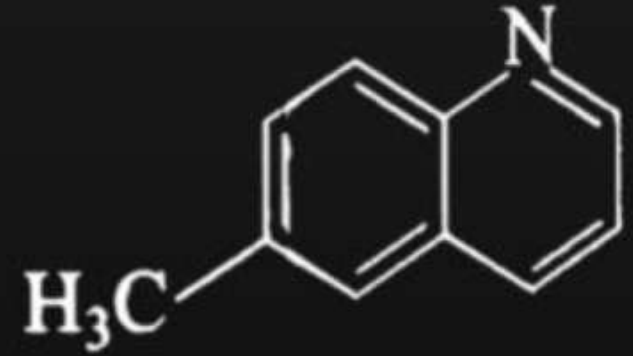
B



C

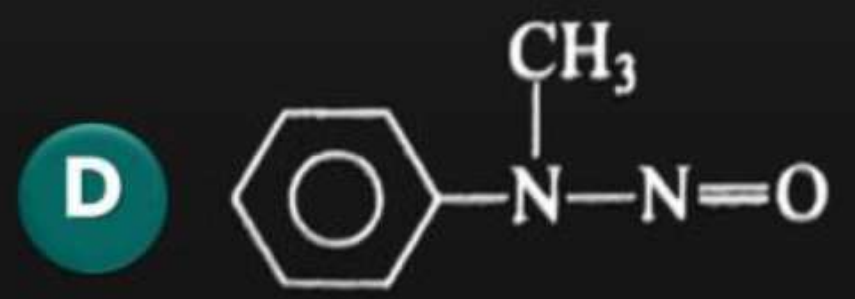
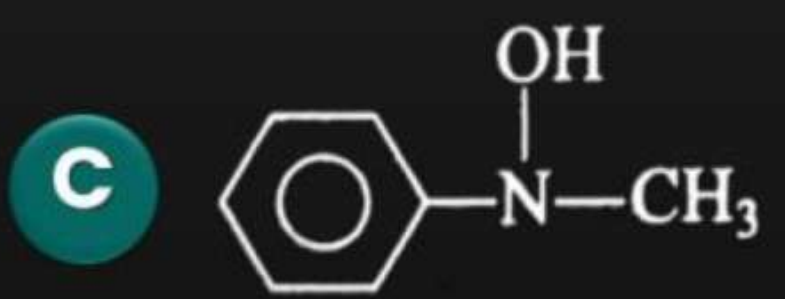
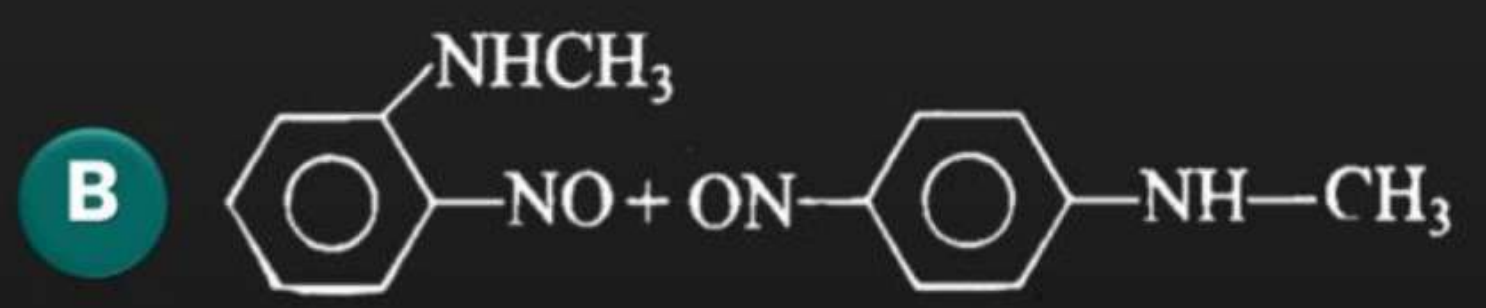
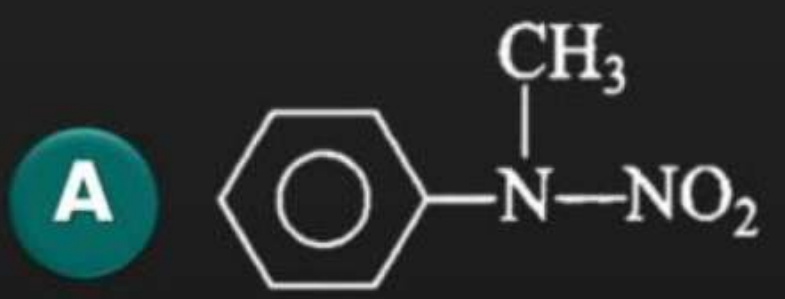
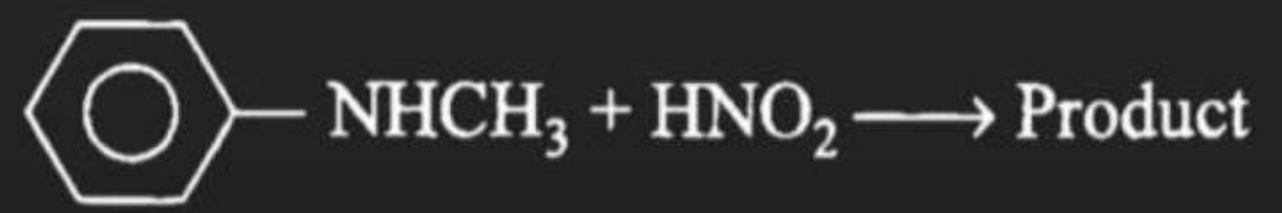


D



QUESTION

Predict the product



QUESTION

Which of the following is least basic?

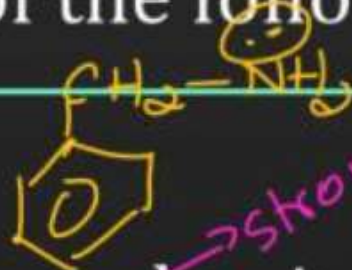
dissociation constant of base $\leftarrow K_b \uparrow$ $pK_b \downarrow$

Basicity

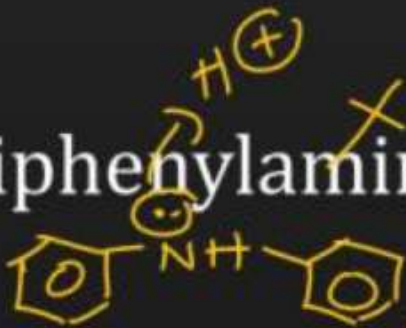
Strong base (weak base $pK_b \uparrow$)

H^+ accept

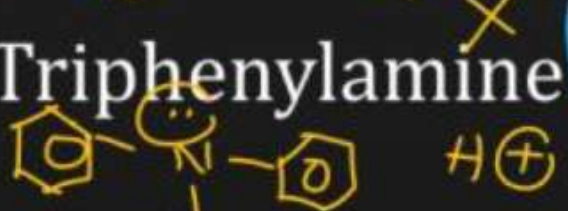
A Benzylamine



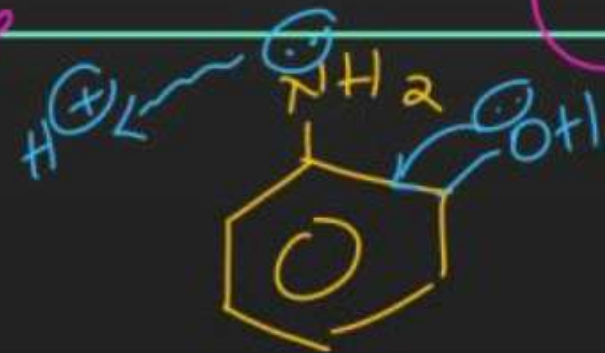
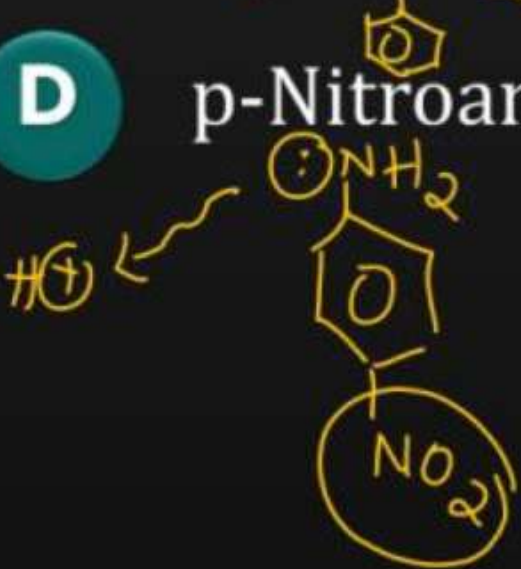
B Diphenylamine



~~**C** Triphenylamine~~



D p-Nitroaniline

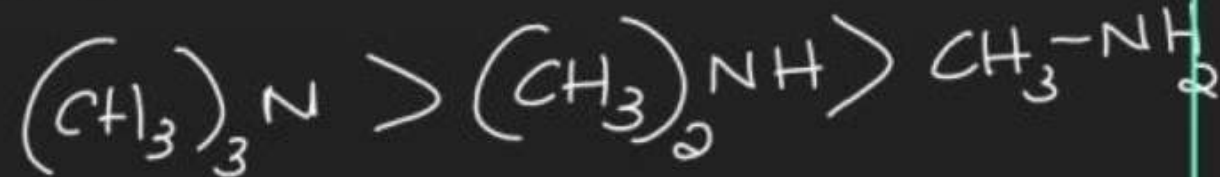


Strong base

EDG \rightarrow $pK_b \downarrow$ or $K_b \uparrow$ Cl/Ban I

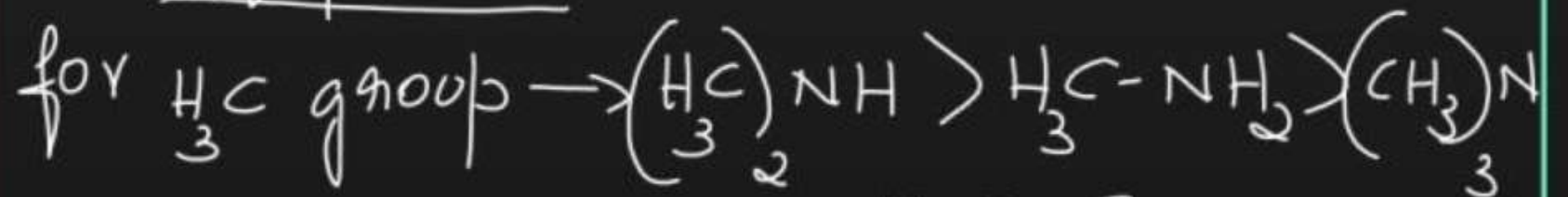
EWG \rightarrow $pK_b \uparrow$ $K_b \downarrow$ weak base

Gas phase

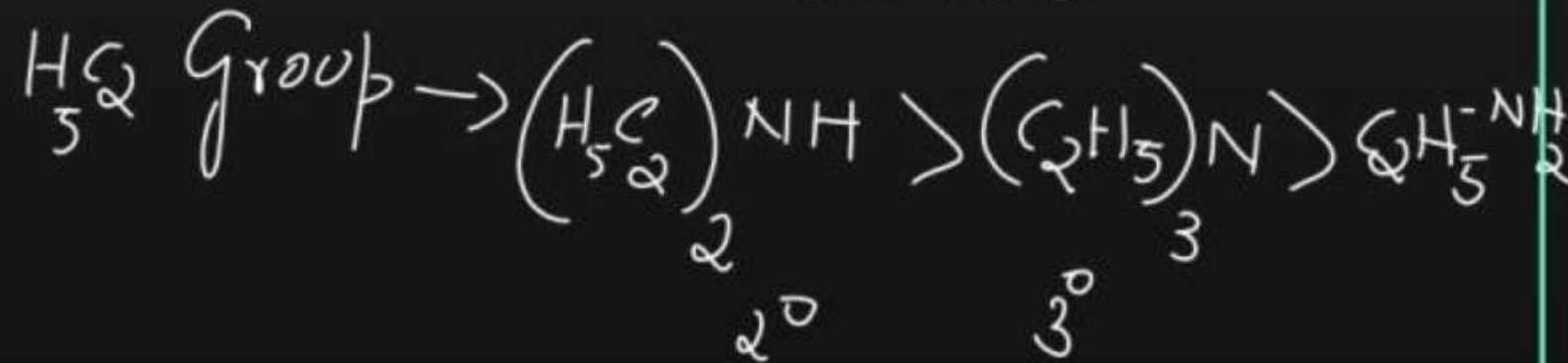


$3^\circ > 2^\circ > 1^\circ$ amine

aq. phase



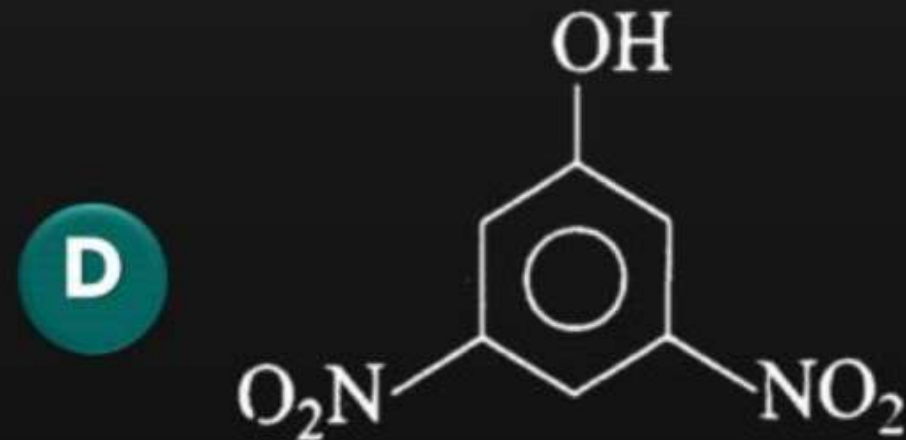
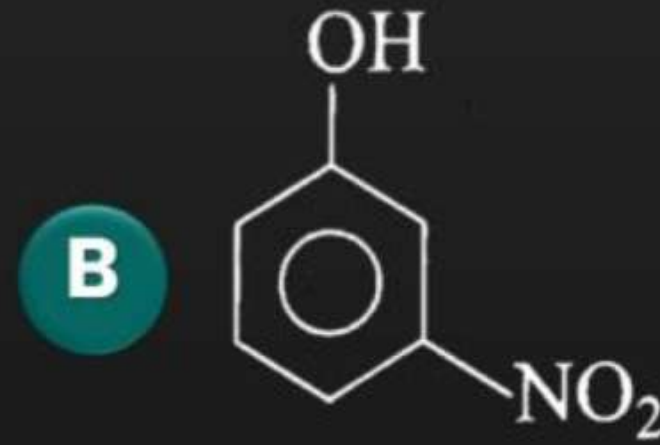
$2^\circ > 1^\circ > 3^\circ$



QUESTION



(i) red hot iron, 873K (ii) fuming HNO_3 , H_2SO_4 , heat (iii) H_2S NH_3 (iv) NaNO_2 , H_2SO_4 (v) hydrolysis Product. Identify the product (P).

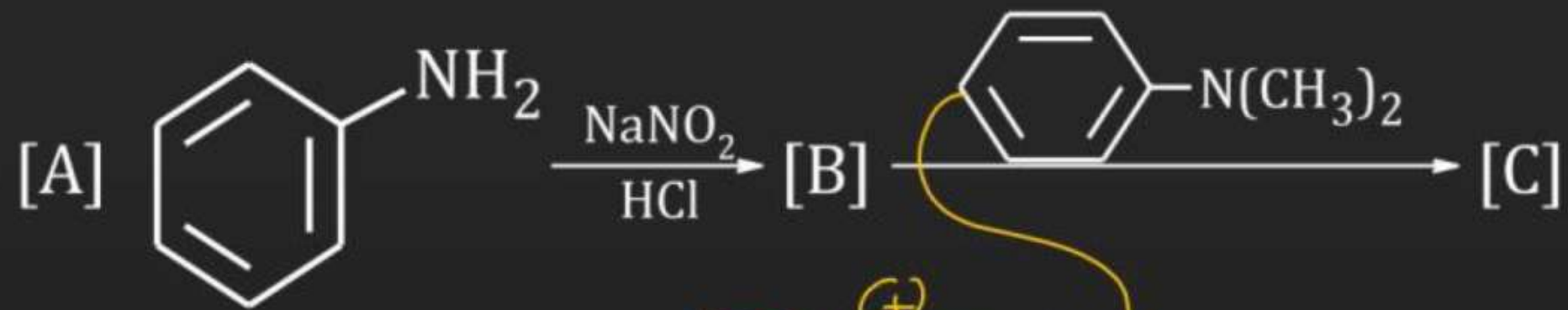


QUESTION

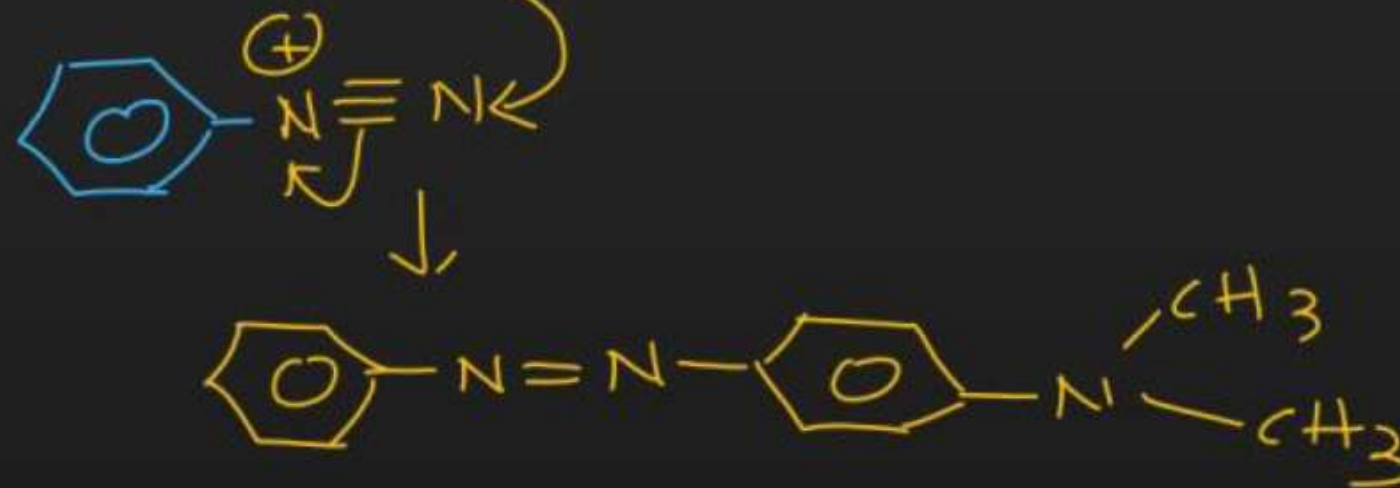
Pyridine is less basic than triethylamine because

- A** pyridine has aromatic character
- B** nitrogen in pyridine is sp^2 -hybridized
- C** pyridine is a cyclic system
- D** in pyridine the lone pair of nitrogen is delocalized.

In the following reactions of aniline, a coloured product C was obtained



The structure of [C] would be.

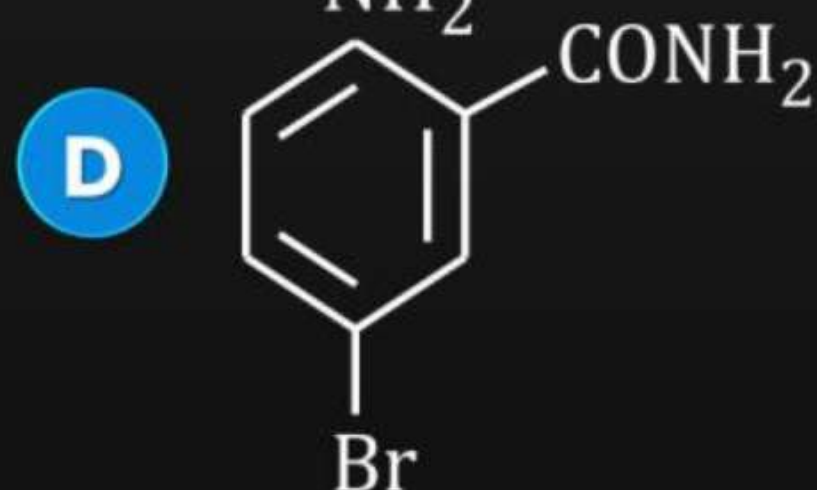
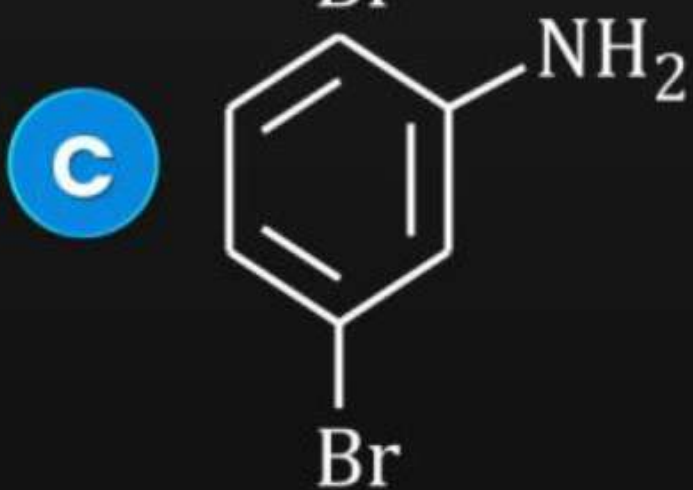
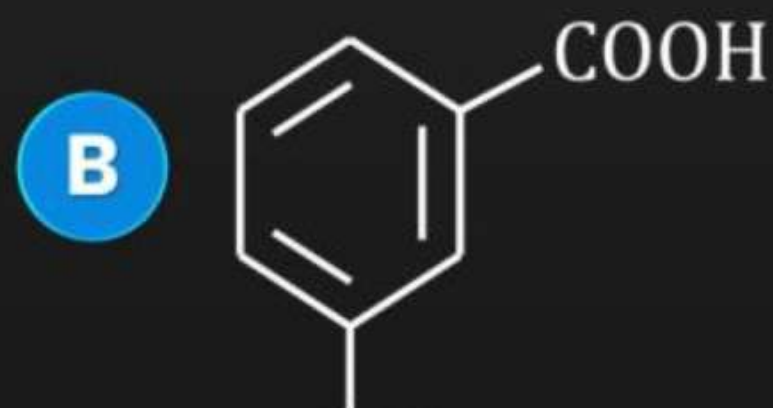
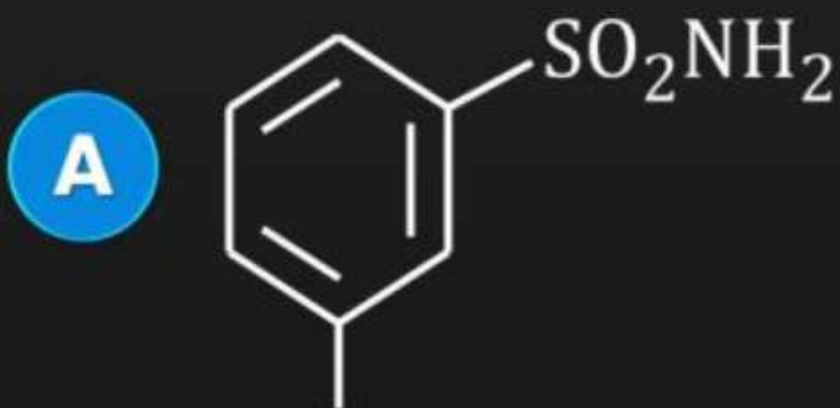
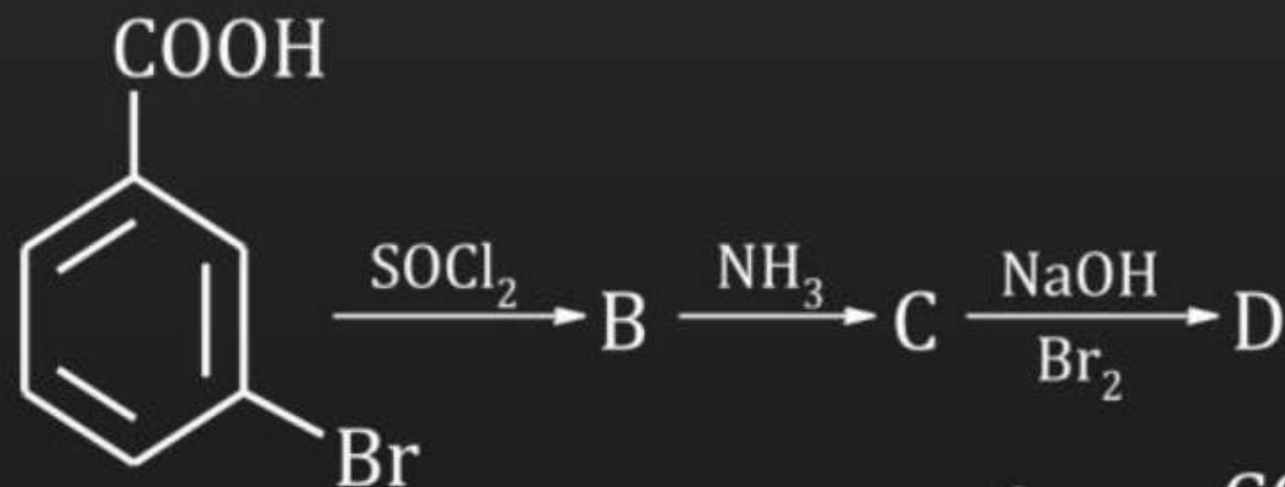


- A** Nc1ccccc1Nc2ccc(cc2)N(C)C **B** CN(C)c1ccc(cc1)/N=N/c2ccccc2
- C** CN(C)CNc1ccc(cc1)N=Cc2ccccc2 **D** Cc1ccc(cc1)/N=N/c2ccccc2C

QUESTION



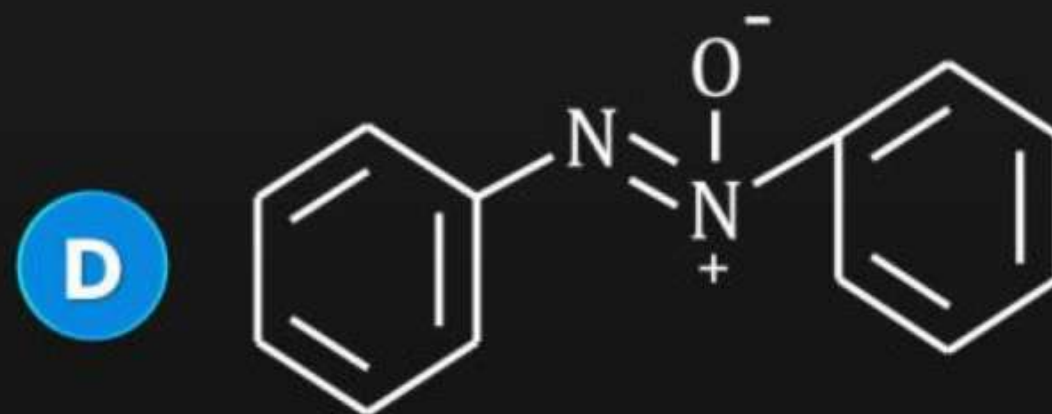
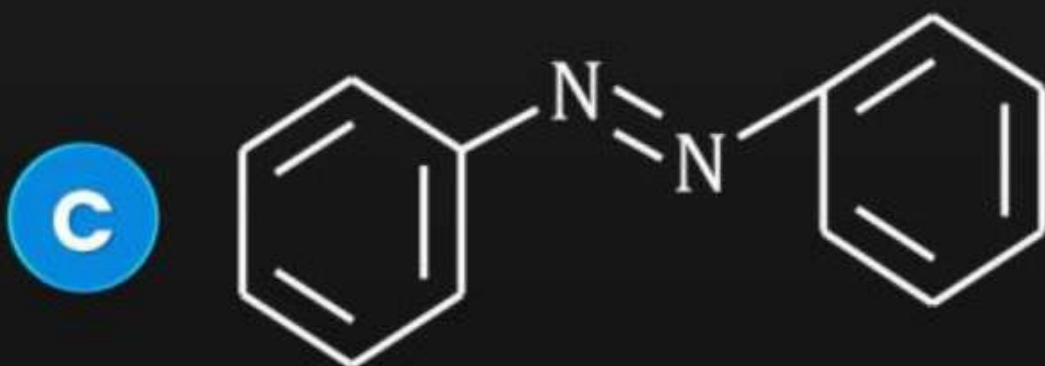
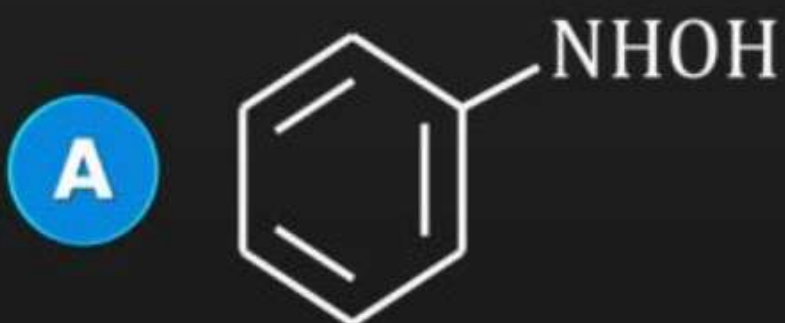
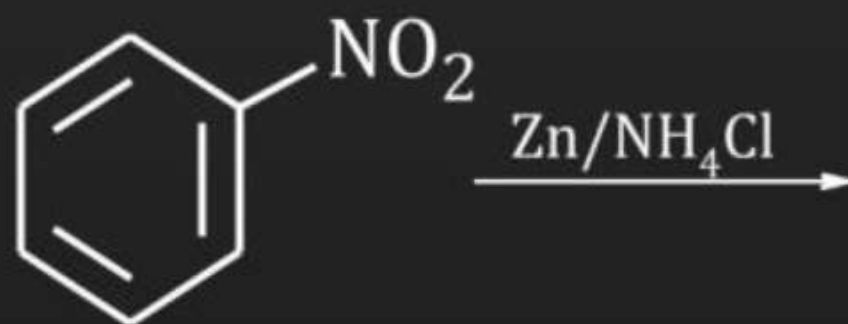
In a set of reactions, *m*-bromobenzoic acid gave a product D. Identify the product D.



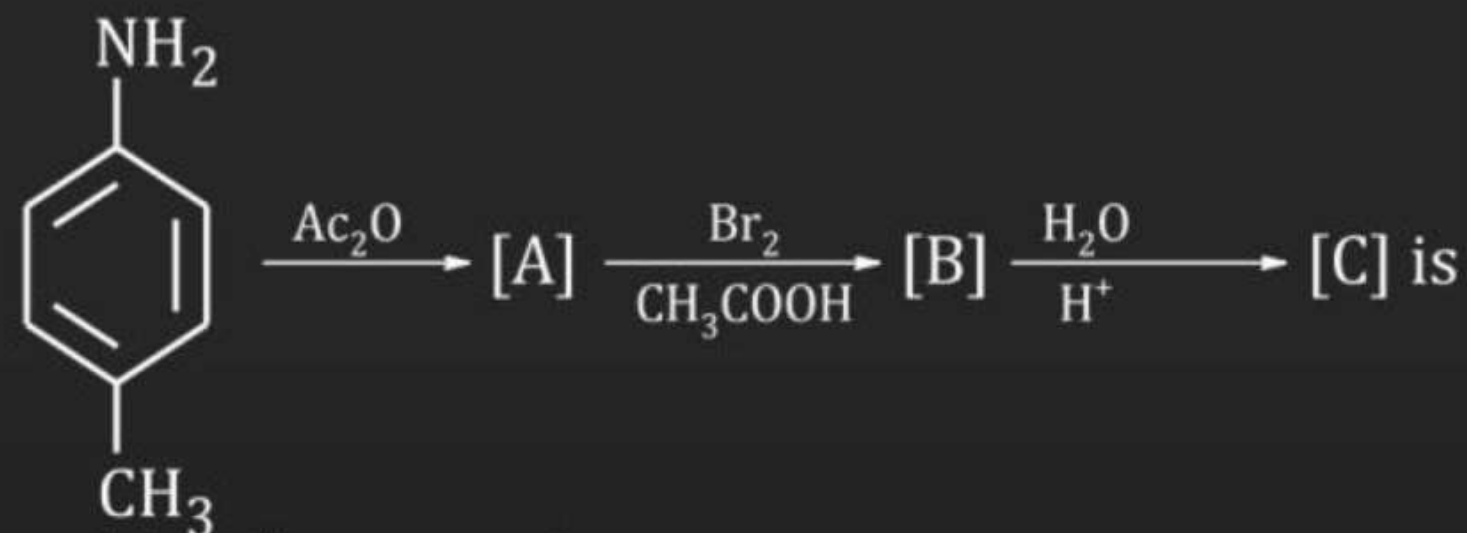
QUESTION



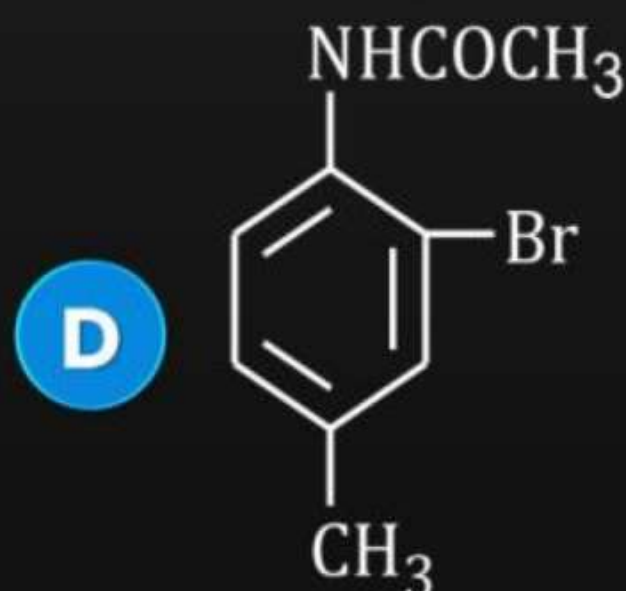
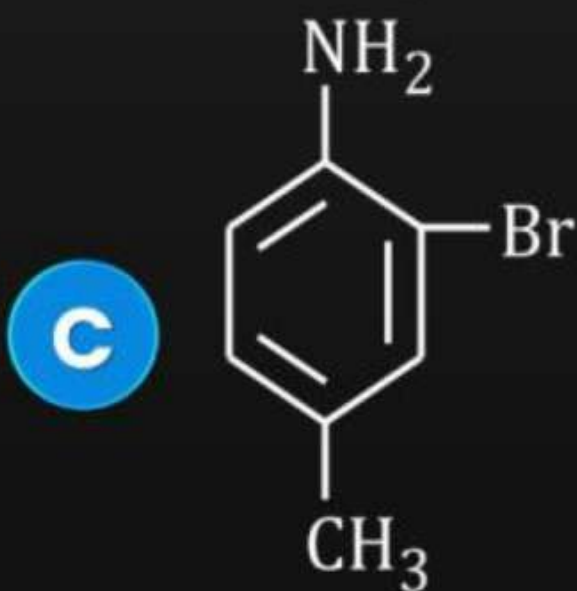
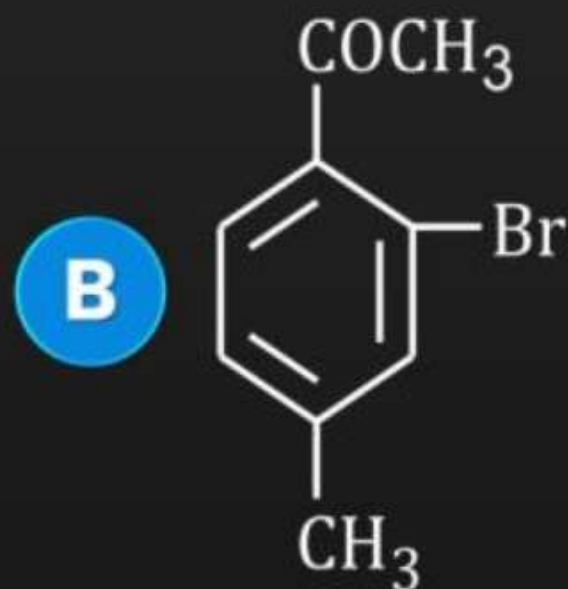
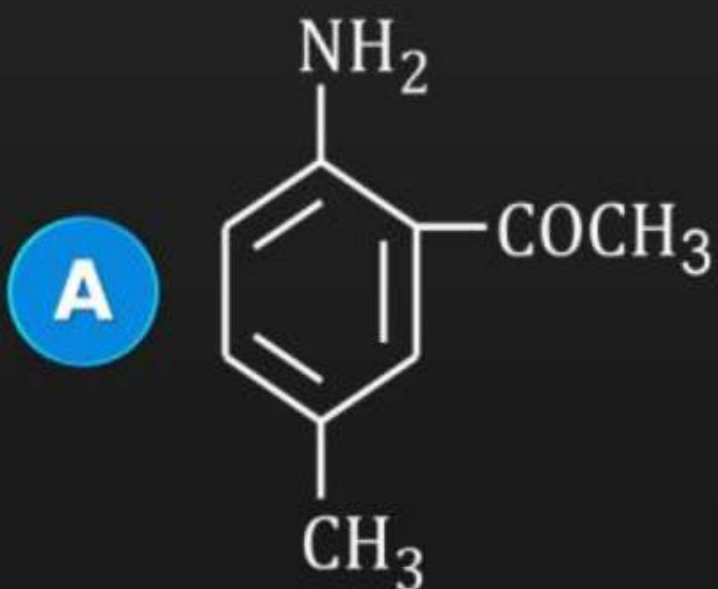
Identify the product formed in the following reaction



QUESTION

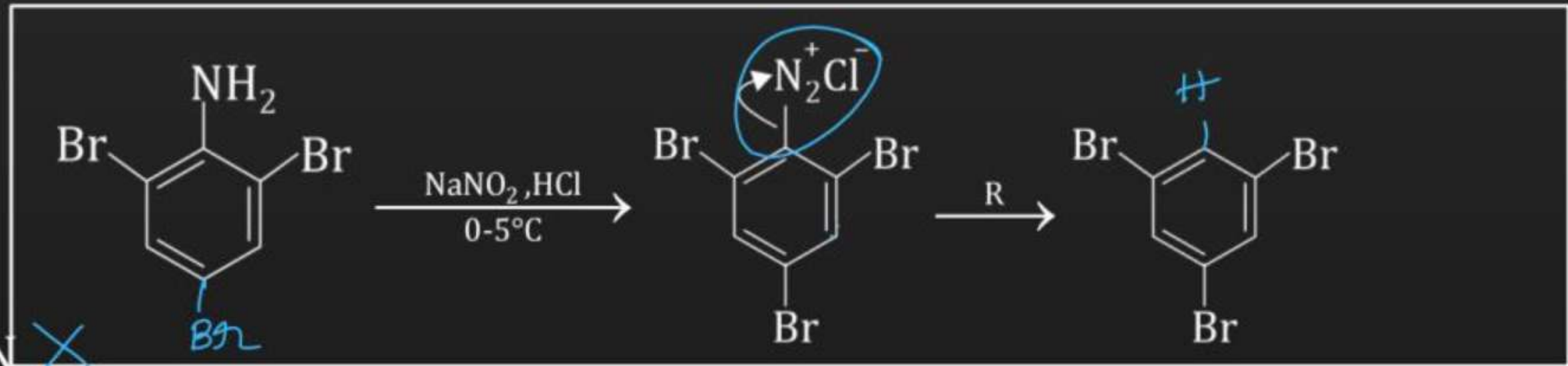


The final product [C] obtained in the reaction



QUESTION

The reagent in 'R' in the given sequence of chemical reaction is



A CuCN/KCN ~~X~~

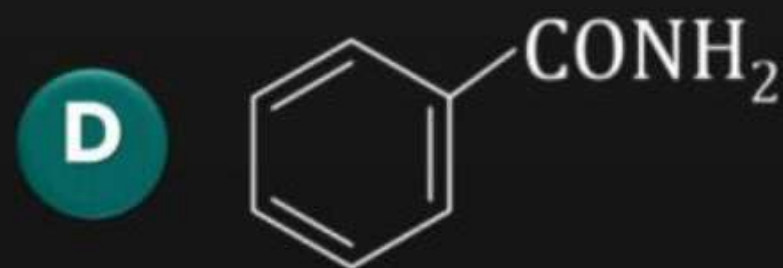
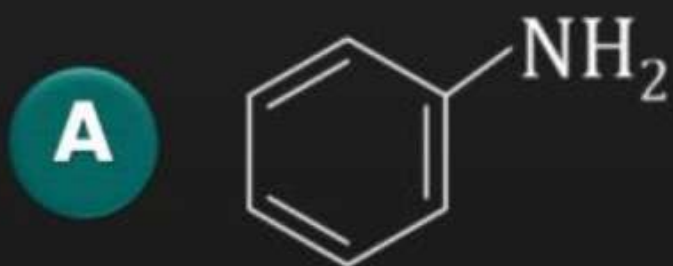
B H2O ~~X~~

C CH3CH2OH ✓

D HI ~~X~~

QUESTION

A given nitrogen-containing aromatic compound 'A' reacts with Sn/HCl, followed by HNO_3 to give an unstable compound 'B', 'B', on treatment with phenol, forms a beautiful coloured compound 'C' with the molecular formula $\text{C}_{12}\text{H}_{10}\text{N}_2\text{O}$. The structure of compound 'A' is



QUESTION

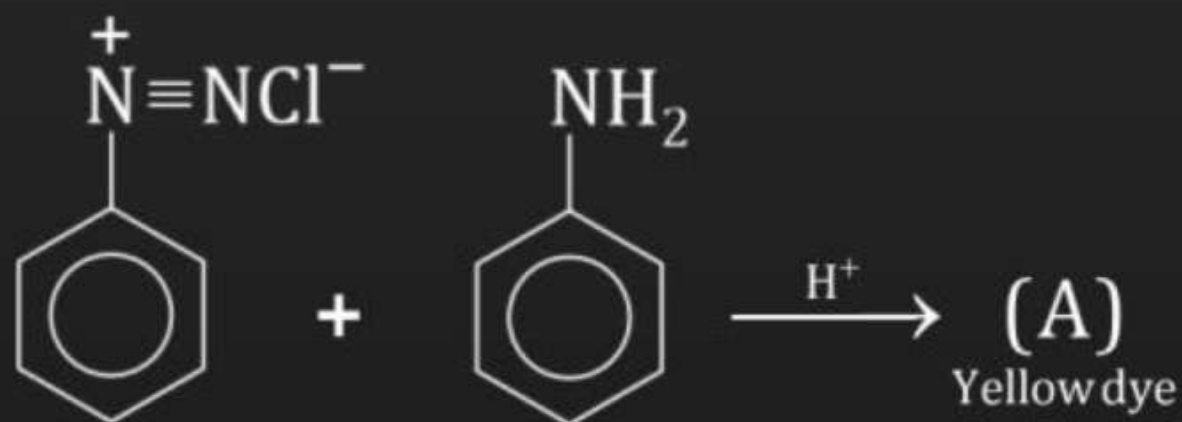
Consider the nitration of benzene using mixed conc. H_2SO_4 and HNO_3 . If a large amount of KHSO_4 is added to the mixture, the rate of nitration will be

- A** slower
- B** unchanged
- C** doubled
- D** faster

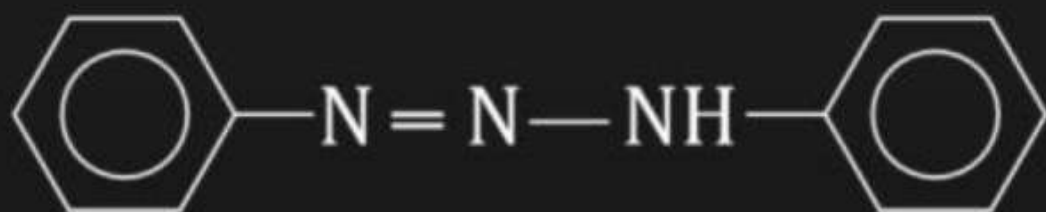
QUESTION



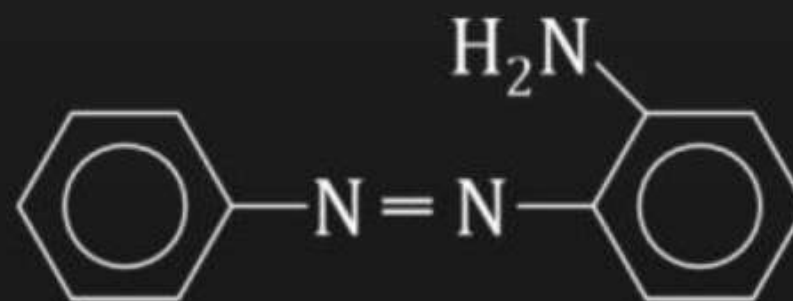
In the following reaction, the product (A) is



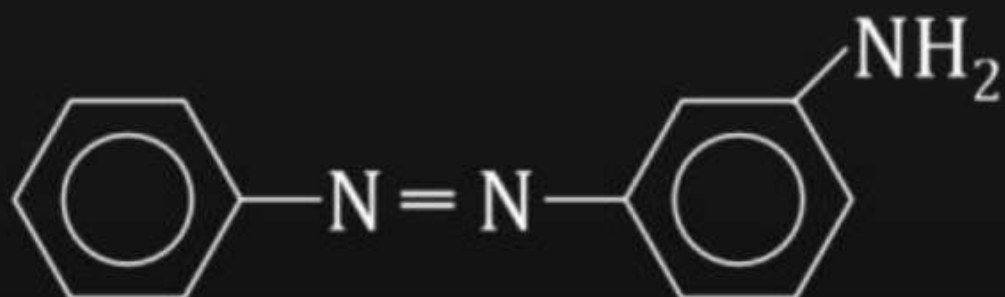
A



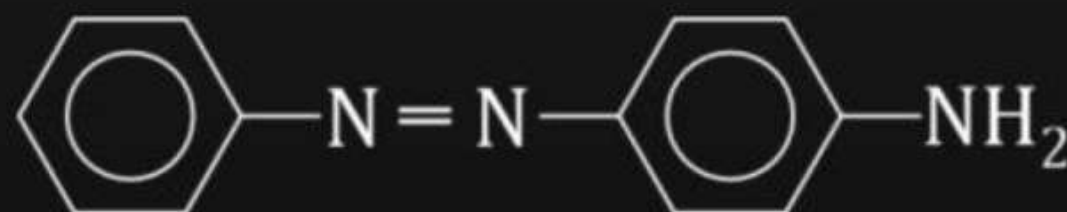
B



C

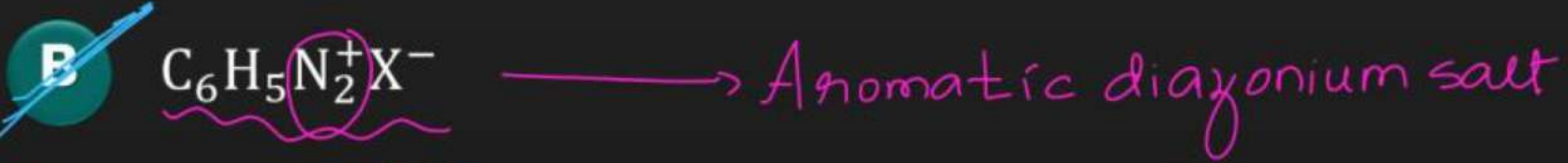
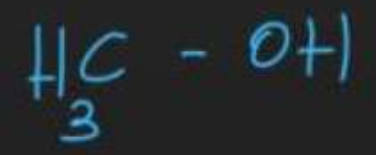


D



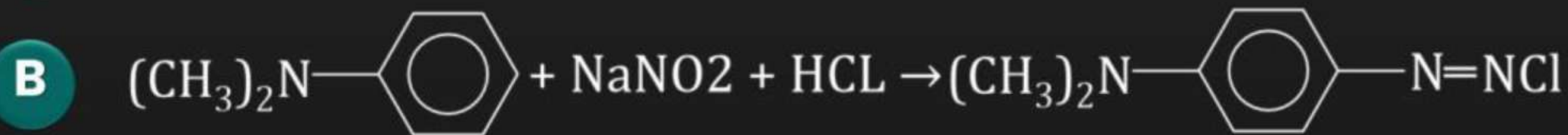
QUESTION

Which of the following will be most stable diazonium salt $RN_2^+X^-$?



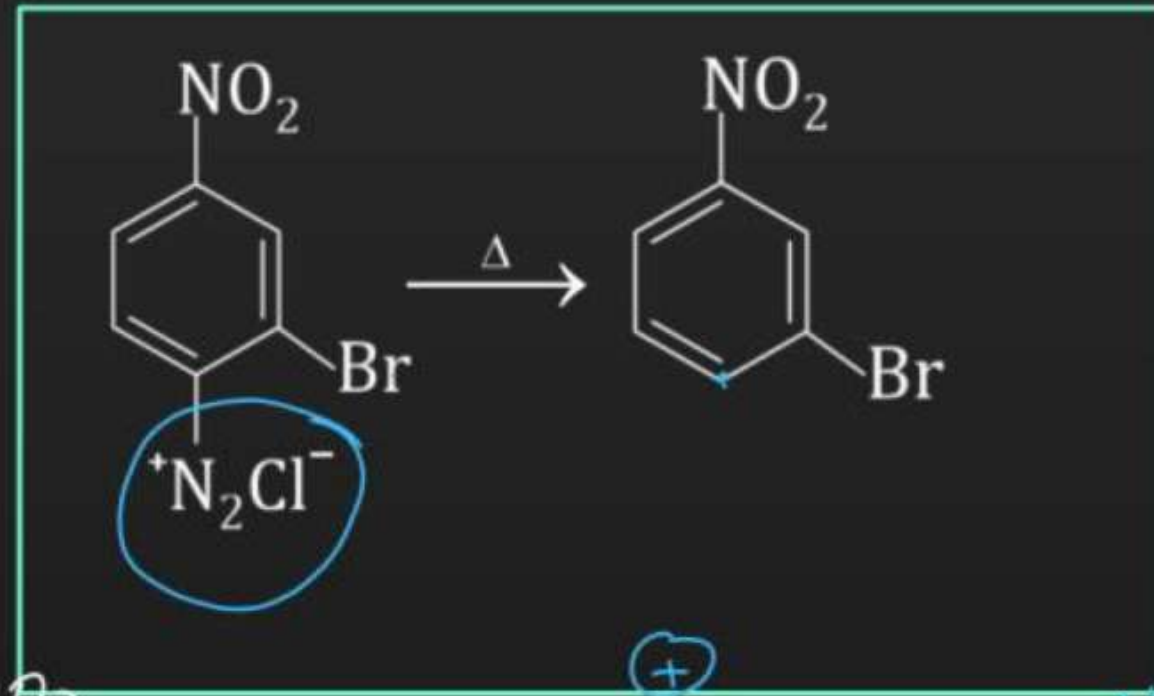
QUESTION

Some reactions of amines are given. Which one is not correct?



QUESTION

In the reaction A is



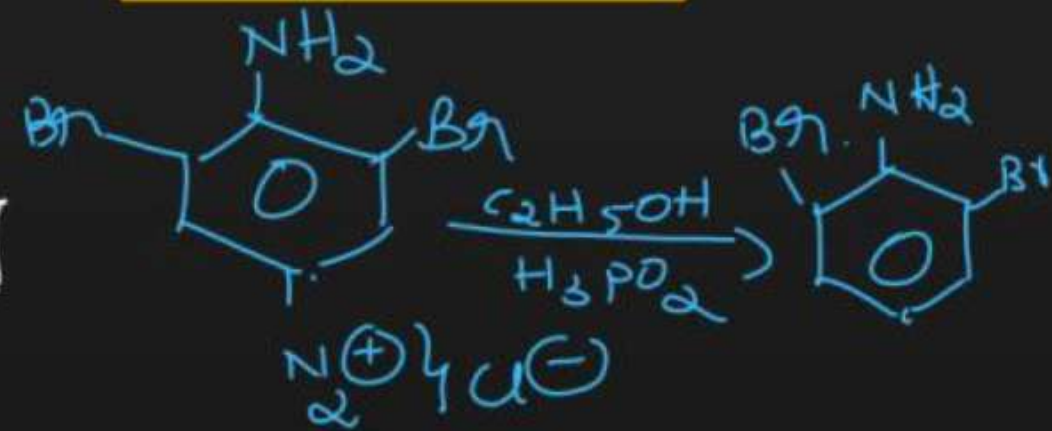
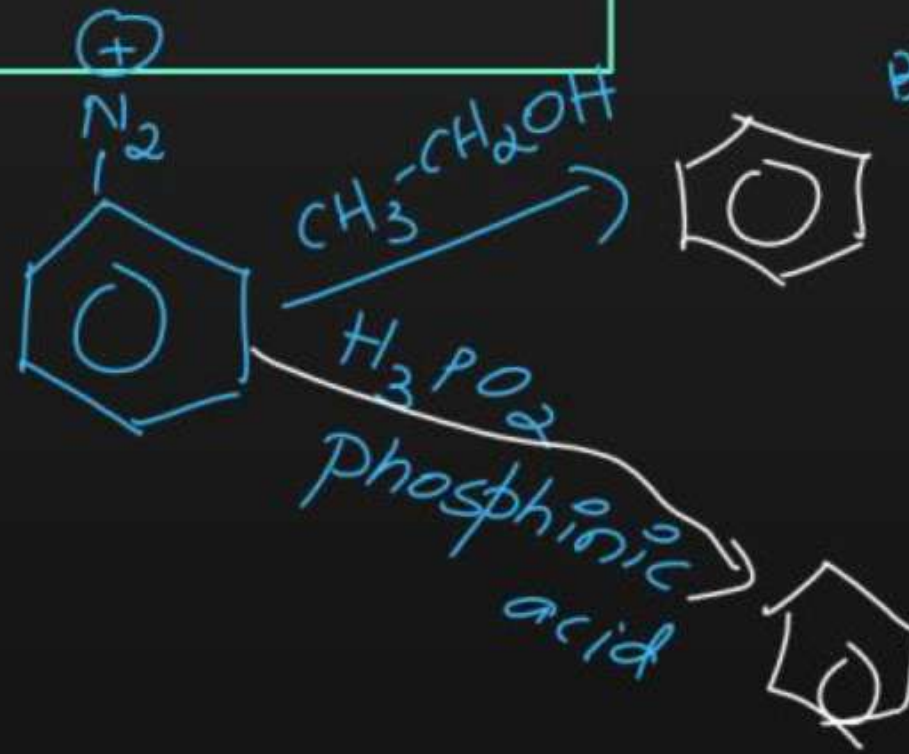
→ C₂H₅OH
 → H₃PO₂

~~A~~ H₃PO₂ and H₂O

B H⁺/H₂O

~~C~~ HgSO₄/H₂SO₄

D Cu₂Cl₂



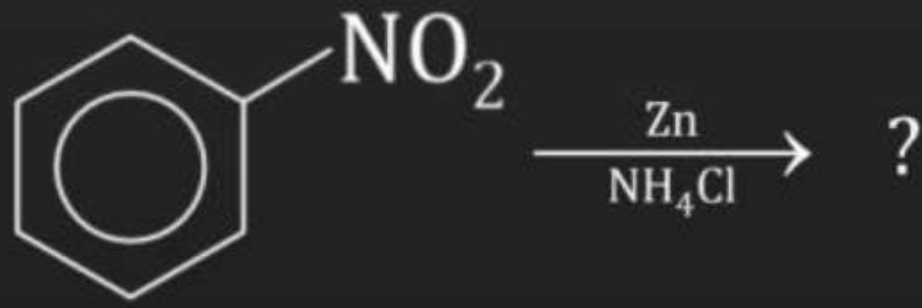
QUESTION

Nitrobenzene on reaction with conc. $\text{HNO}_3/\text{H}_2\text{SO}_4$ at $80-100^\circ\text{C}$ forms which one of the following products?

- A** 1, 4-dinitrobenzene
- B** 1, 2, 4-trinitrobenzene
- C** 1, 2-dinitrobenzene
- D** 1, 3-dinitrobenzene

QUESTION

What is the product obtained in the following reaction?

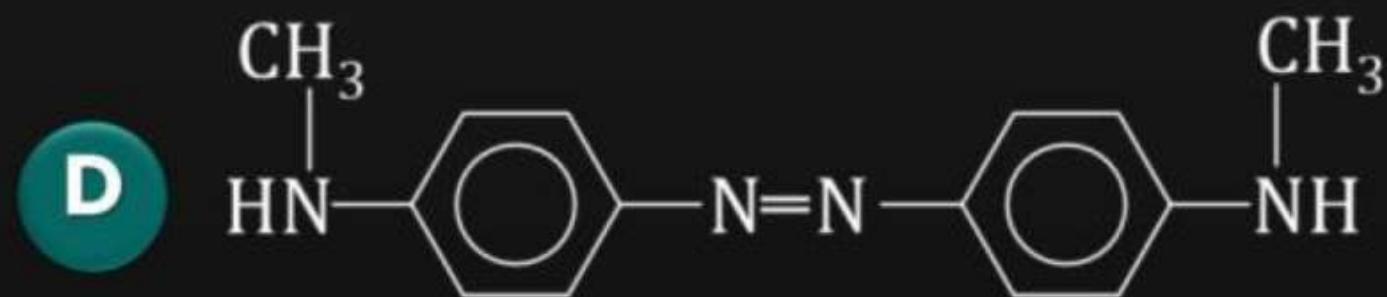
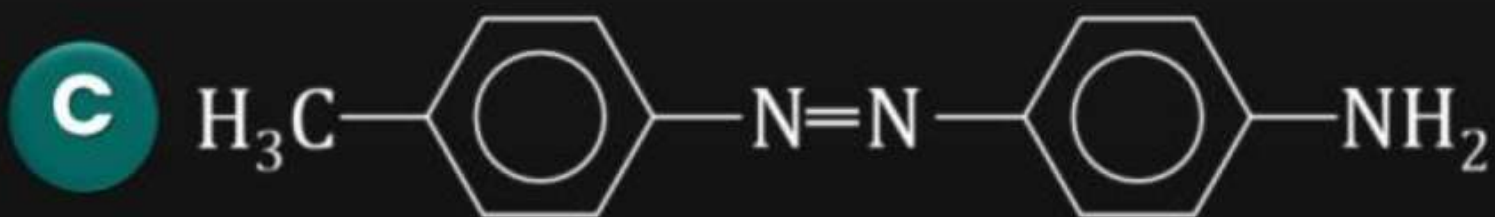
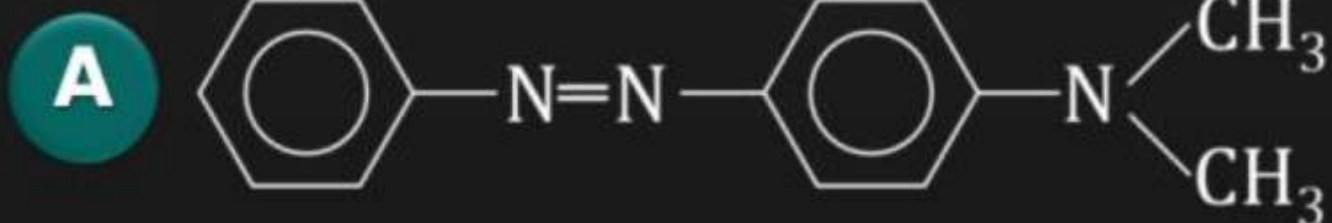
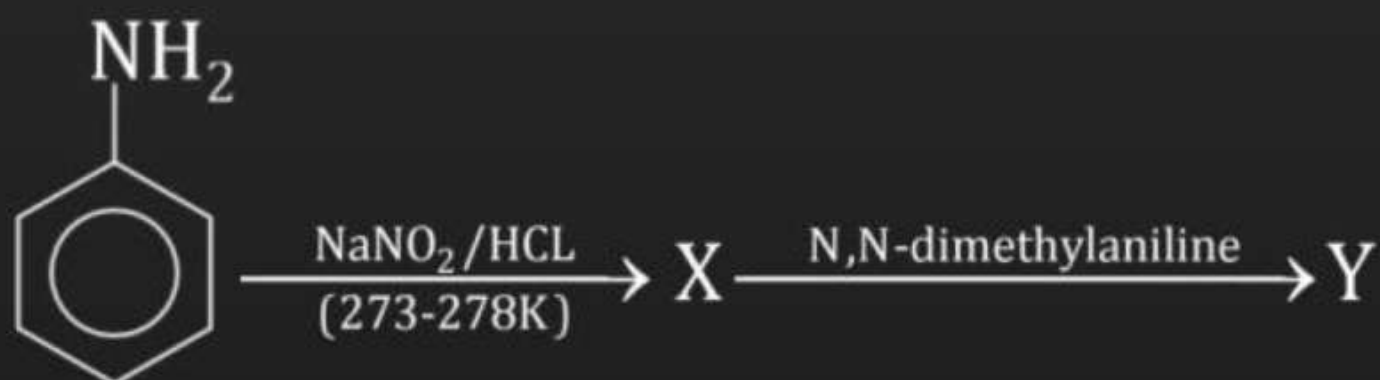


- A**
- B**
- C**
- D**

QUESTION

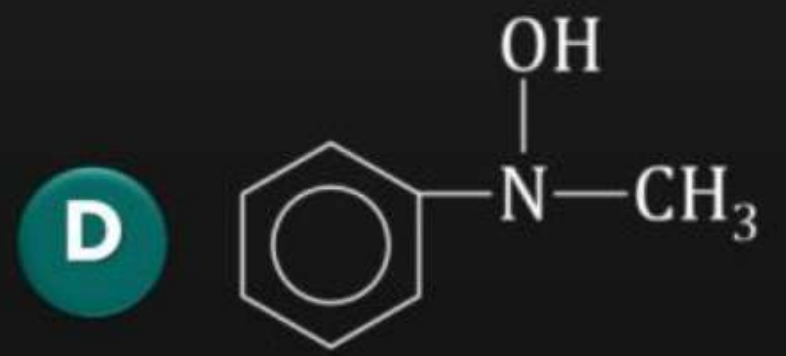
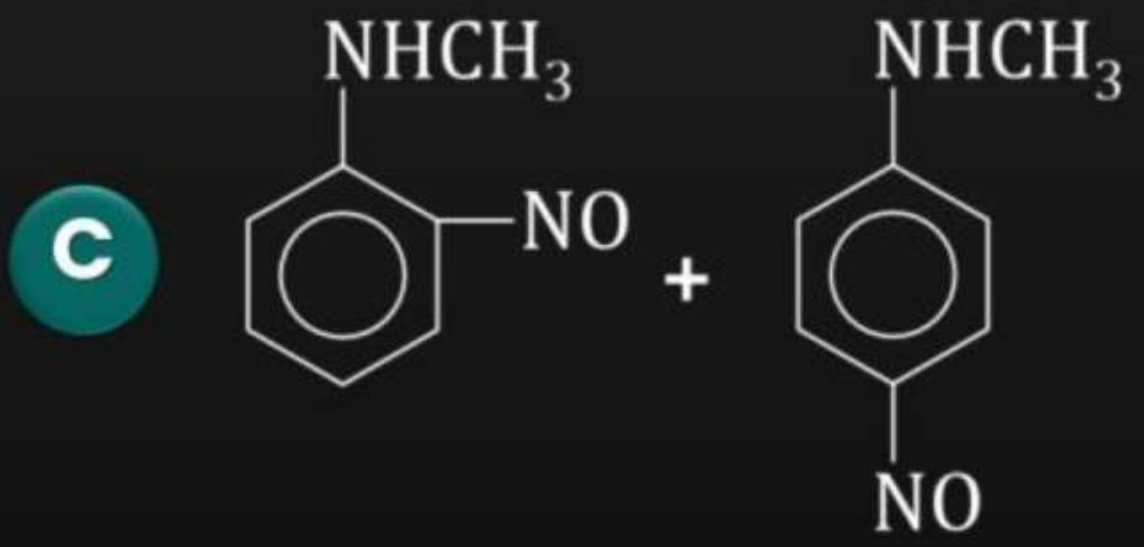
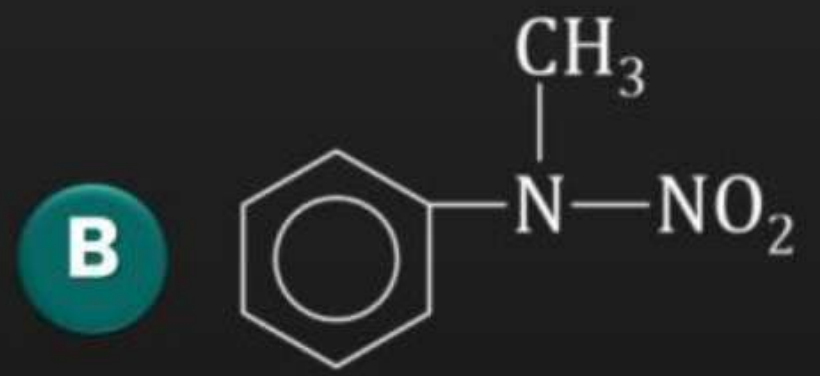
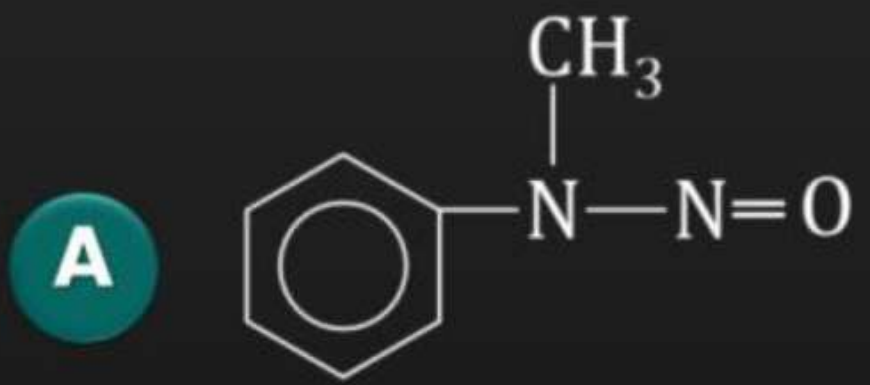


Aniline in a set of the following reactions yielded a coloured product Y.

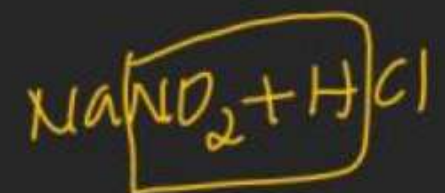


QUESTION

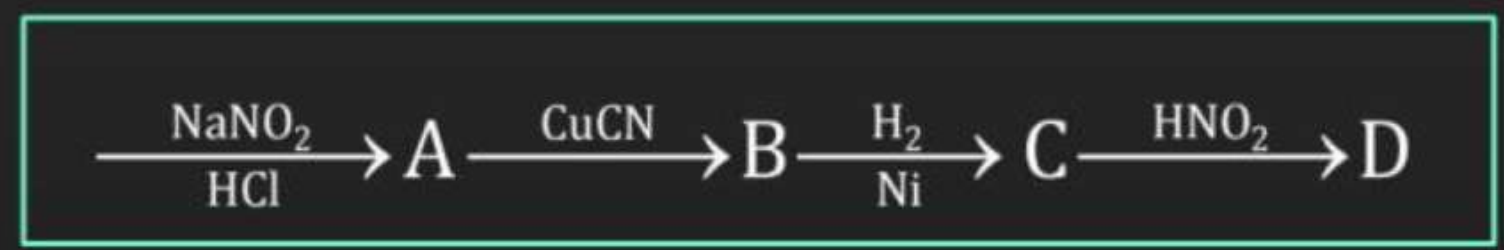
Predict the product, CNc1ccccc1 + NaNO2 + HCl → Product



QUESTION

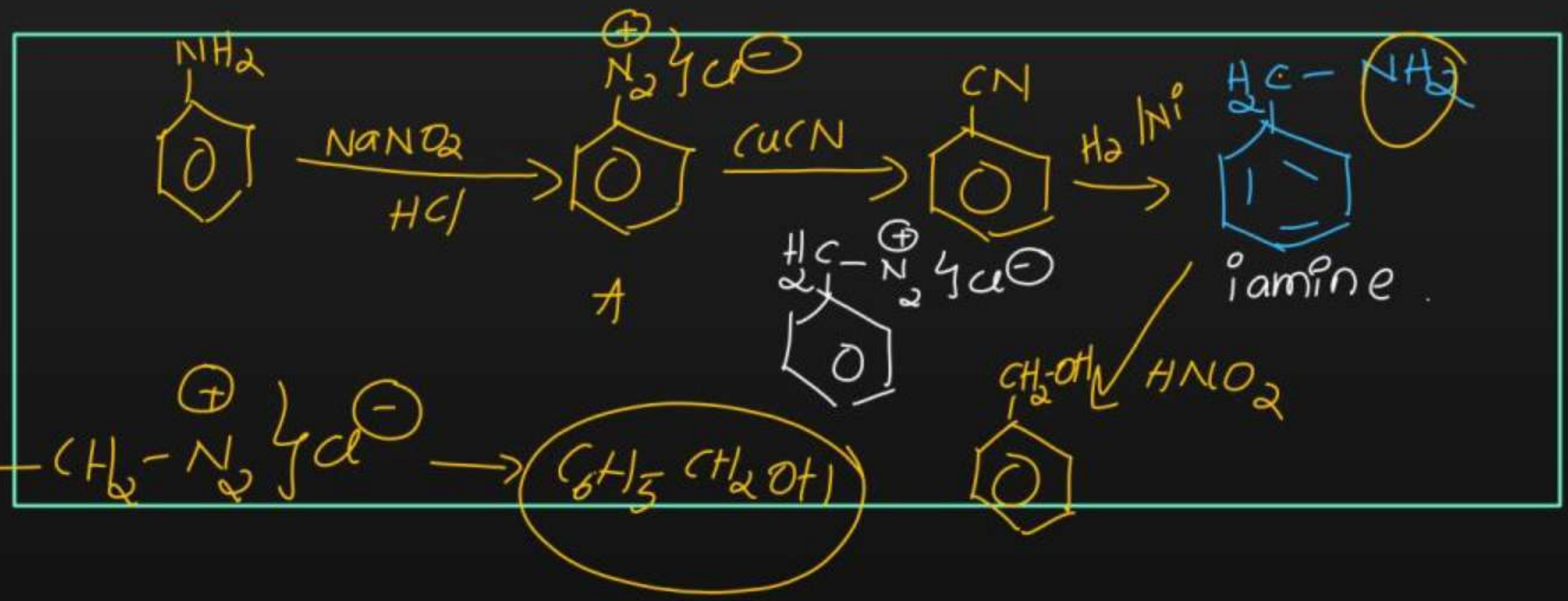


Aniline in a set of reactions yielded a product



The structure of the product D would be

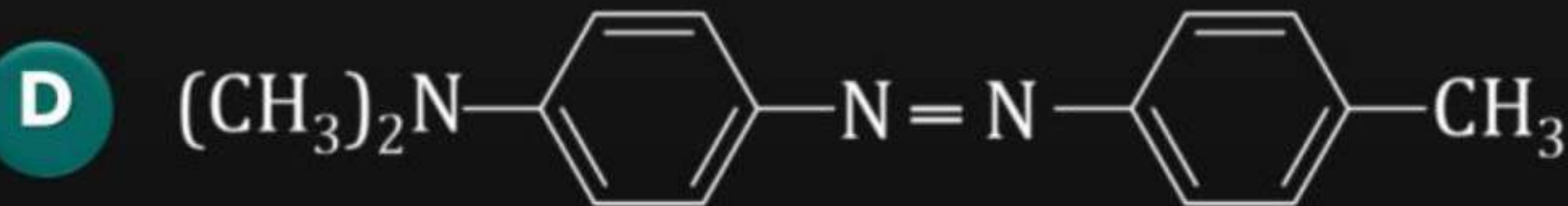
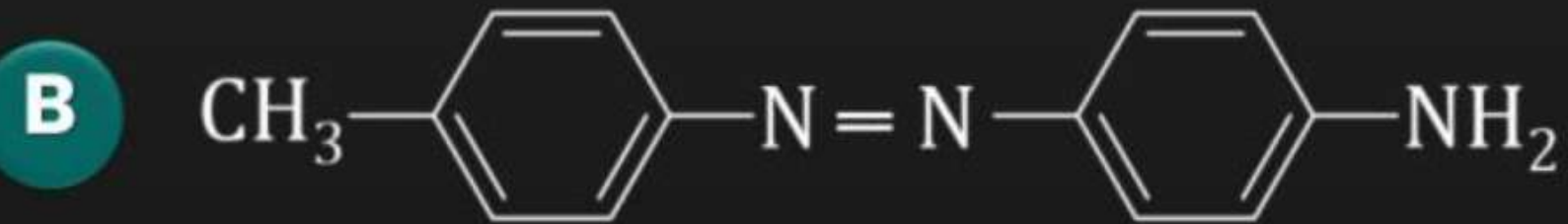
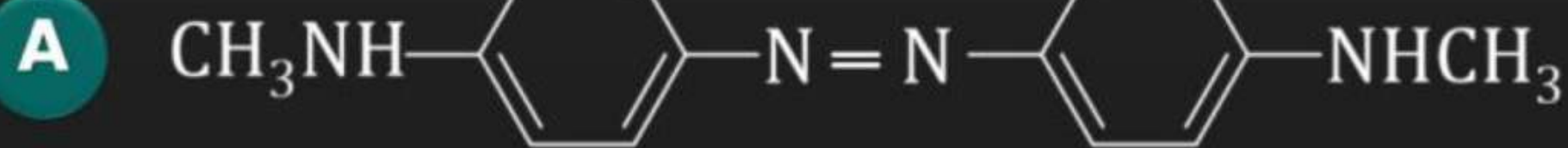
- A** $\text{C}_6\text{H}_5\text{CH}_2\text{NH}_2$
- B** $\text{C}_6\text{H}_5\text{NHCH}_2\text{CH}_3$
- C** $\text{C}_6\text{H}_5\text{NHOH}$
- D** $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$ ✓



QUESTION

Aniline when diazotised in cold and then treated with dimethyl aniline, gives a coloured product. Its structure would be

Coupling reaction



QUESTION

Which of the following reagents will convert p-methybenzenediazonium chloride into p-cresol?

A Cu powder

B H_2O

C H_3PO_2

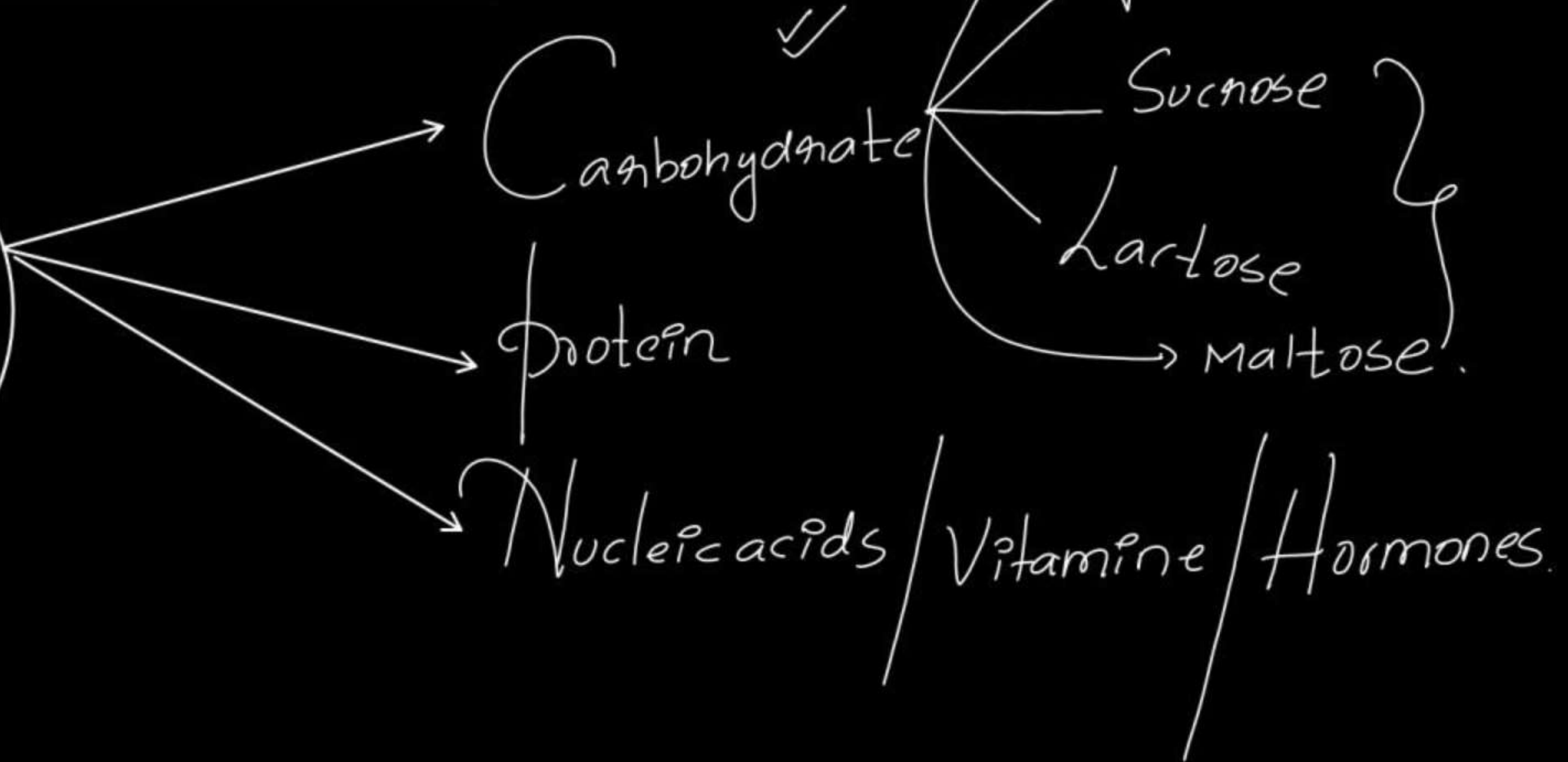
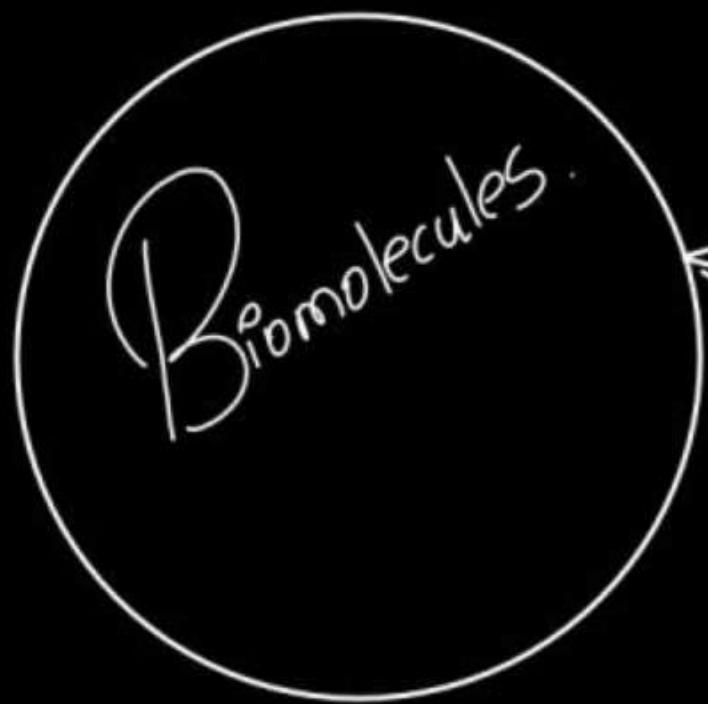
D $\text{C}_6\text{H}_5\text{OH}$

QUESTION

Aniline is reacted with bromine water and the resulting product is treated with an aqueous solution of sodium nitrite in presence of dilute hydrochloric acid. The compound so formed is converted into a tetrafluoroborate which is subsequently heated to dry. The final product is

- A** p-bromoaniline
- B** p-bromofluorobenzene
- C** 1, 3, 5-tribromobenzene
- D** 2, 4, 6-tribromofluorobenzene

Biomolecules



THANK

You

