

Amines

NEET previous year questions · Chemistry

6 questions from the official papers: NEET 2026 (3), Re-NEET 2026 (2), NEET 2020 (1). Each is followed by its answer and a worked solution written by BrainIt. Generated on 23 October 2026.



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1. NEET 2026 · Q46

Select the reagents that reduce nitriles to primary amines. Choose the correct answer from the options given below.

Statement I: (i) LiAlH_4 ; (ii) H_2O

Statement II: $\text{Sn} + \text{HCl}$

Statement III: H_2/Ni

Statement IV: $\text{Na}(\text{Hg})/\text{C}_2\text{H}_5\text{OH}$

Statement V: $\text{Br}_2/\text{aq. NaOH}$

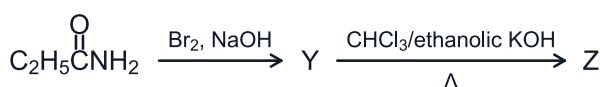
- (1) II, IV and V only (2) I, III and IV only
(3) I, IV and V only (4) I, II and III only

Answer (2)

Sol. Nitriles $\text{R} - \text{CN}$ are reduced to primary amines $\text{R} - \text{CH}_2 - \text{NH}_2$ by LiAlH_4 followed by hydrolysis, by catalytic hydrogenation H_2/Ni , and by $\text{Na}(\text{Hg})/\text{C}_2\text{H}_5\text{OH}$ (sodium amalgam in ethanol). So Statements I, III and IV are correct. $\text{Sn} + \text{HCl}$ (Stephen reduction) stops at the aldehyde, and $\text{Br}_2/\text{aq. NaOH}$ is the Hoffmann bromamide reaction on amides, not a nitrile reduction.

2. NEET 2026 · Q60

The following two reactions give the same foul smelling product Z:



X and Z, respectively, are:

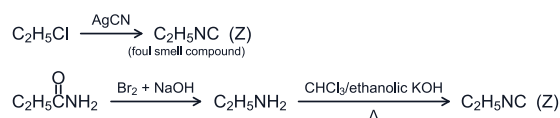
- (1) $\text{X} = \text{AgCN}$; $\text{Z} = \text{C}_2\text{H}_5\text{NC}$ (2) $\text{X} = \text{KCN}$; $\text{Z} = \text{C}_2\text{H}_5\text{CN}$
(3) $\text{X} = \text{AgCN}$; $\text{Z} = \text{C}_2\text{H}_5\text{CN}$ (4) $\text{X} = \text{KCN}$; $\text{Z} = \text{C}_2\text{H}_5\text{NC}$

Answer (1)

Sol. With silver cyanide (AgCN) the alkyl halide gives the isocyanide, so ethyl chloride yields foul-smelling ethyl isocyanide, $\text{C}_2\text{H}_5\text{NC}$ ($\text{X} = \text{AgCN}$). In the second route, propanamide undergoes Hoffmann bromamide degradation (Br_2/NaOH) to ethylamine, which then gives ethyl isocyanide via the carbylamine reaction ($\text{CHCl}_3 + \text{ethanolic KOH}$). Both paths converge on $\text{Z} = \text{C}_2\text{H}_5\text{NC}$. KCN would give the nitrile ($\text{C}_2\text{H}_5\text{CN}$), which is not foul-smelling.

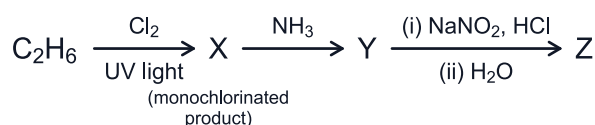
Why the other options are wrong:

- (2) Wrong: KCN gives nitrile, and nitrile is not the foul-smelling carbylamine product.
- (3) Wrong: AgCN does not give the nitrile.
- (4) Wrong: KCN gives nitrile, not isocyanide.



3. NEET 2026 · Q85

The major product Z formed in the following sequence of reactions is:

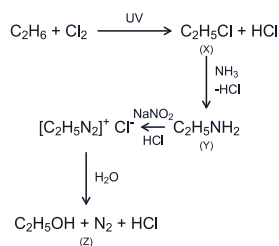


- (1) $\text{C}_2\text{H}_5\text{NO}_2$ (2) $\text{C}_2\text{H}_5 - \text{N} = \text{N} - \text{OH}$
(3) $\text{C}_2\text{H}_5\text{OH}$ (4) $\text{C}_2\text{H}_5\text{NH}_2$

Answer (3)

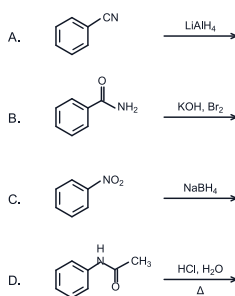
Sol. Monochlorination of ethane gives chloroethane $\text{C}_2\text{H}_5\text{Cl}$ (X). Reaction with NH_3 gives ethylamine $\text{C}_2\text{H}_5\text{NH}_2$ (Y). Treating this primary aliphatic amine with NaNO_2/HCl forms a highly unstable

diazonium salt that reacts with water to release N_2 and yield ethanol C_2H_5OH (Z). Hence (3) is correct.



4. Re-NEET 2026 · Q79

Identify the reactions which give aniline as the major product.



Choose the correct answer from the options given below.

- (1) A and B only (2) B and D only
 (3) A and C only (4) C and D only

Answer (2)

Sol. Reaction B is the Hofmann bromamide degradation, which removes one carbon from an amide and delivers the amine with the nitrogen now bonded directly to the ring - aniline. Reaction D is simple acid hydrolysis of an anilide, cleaving the amide bond to regenerate aniline and acetic acid. Reaction A gives benzylamine, since $LiAlH_4$ reduces the nitrile carbon to CH_2 and leaves an extra carbon in the chain, and reaction C fails because $NaBH_4$ is too mild to reduce an aromatic nitro group. NCERT Class 12, Amines (methods of preparation).

Why the other options are wrong:

- (1) includes the nitrile reduction, forgetting that the nitrile carbon is retained and gives benzylamine
- (3) includes both the nitrile reduction and the $NaBH_4$ attempt, neither of which yields aniline
- (4) includes the $NaBH_4$ reduction, confusing it with Sn/HCl or catalytic hydrogenation

5. Re-NEET 2026 · Q84

Given below are two statements.

Statement I: Oxidation of p-nitrotoluene with acidic $KMnO_4$ gives an acid that is stronger than benzoic acid.

Statement II: Reduction of p-nitrotoluene with Sn/HCl followed by neutralization gives an amine that is more basic than aniline.

In light of the above statements, choose the most appropriate answer from the options given below.

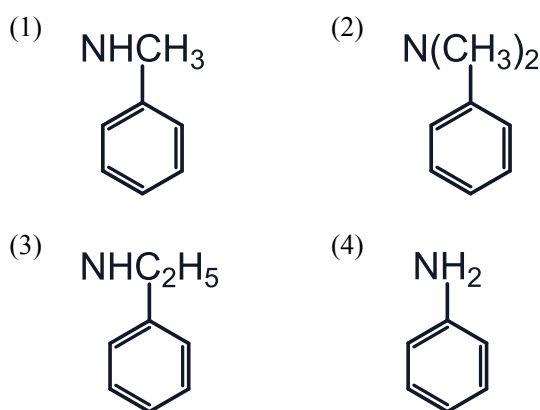
- (1) Both Statement-I and Statement-II are correct
 (2) Both Statement-I and Statement-II are incorrect
 (3) Statement-I is correct but Statement-II is incorrect
 (4) Statement-I is incorrect but Statement-II is correct

Answer (1)

Sol. Each reagent attacks a different group on the same starting material. Acidic permanganate oxidises the methyl group to $-COOH$, leaving the nitro group intact; the resulting p-nitrobenzoic acid is stronger than benzoic acid because the electron-withdrawing nitro group stabilises the carboxylate anion. Sn/HCl instead reduces the nitro group to $-NH_2$, leaving the methyl in place; the resulting p-toluidine is more basic than aniline because the electron-releasing methyl group raises the electron density on nitrogen. Both statements are therefore correct. NCERT Class 12, Amines; Aldehydes, Ketones and Carboxylic Acids.

6. NEET 2020 · Q129

Which of the following amine will give the carbylamine test?



Answer (4)

Sol. Only primary amines give the carbylamine test. Aniline is primary, whereas N-methyl-, N-ethyl- and N,N-dimethylaniline are secondary or tertiary. Chapter: Amines.

Why the other options are wrong:

- (1) N-methylaniline is a secondary amine with only one N-H, and an isocyanide needs two N-H hydrogens to form with CHCl_3 and alcoholic KOH.
 - (2) N,N-dimethylaniline is a tertiary amine with no N-H at all, so no isocyanide can form.
 - (3) N-ethylaniline is a secondary amine; its single N-H is not enough to give the foul-smelling isocyanide.
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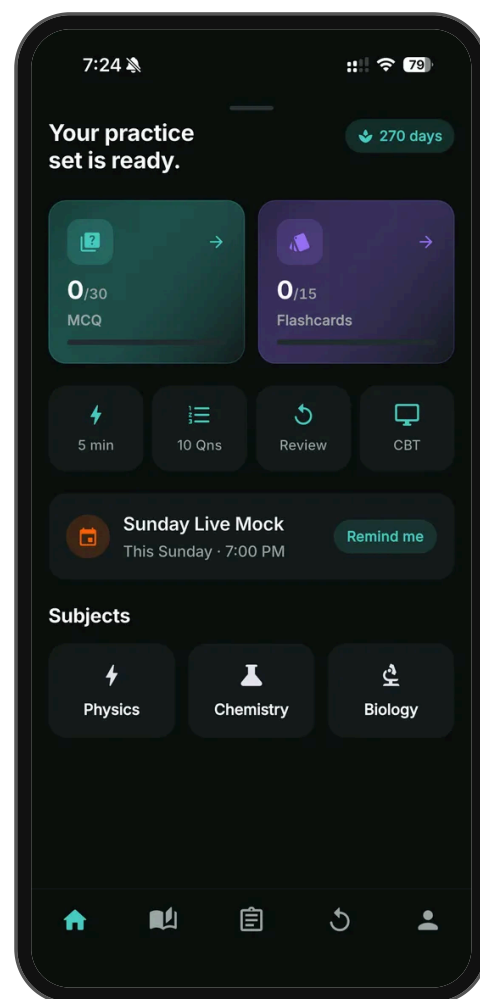
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