

JEE MAIN ALDEHYDES, KETONES AND CARBOXYLIC ACIDS — NUCLEOPHILIC ADDITION REACTIONS OF ALDEHYDES AND KETONES — PYQS

Max. Marks: 36

Questions: 9

Section A (MCQ) — 6 questions

Q.1 Given below are two statements:

Statement-I: The condensation reaction between $\text{CH}_3\text{-CH=O}$ and $\text{H}_2\text{N-NH-C(=O)-NH}_2$ under optimum

pH will produce $\text{CH}_3\text{-CH=N-C(=O)-NH}_2$

Statement-II: The molecule, $\text{Ph-CH(O-CH}_3\text{)(O-H)}$ will generate Ph-CH=O in the presence of dilute acid.

In the light of the above statements, choose the **correct** answer from the options given below:

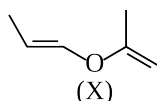
[JEE Main 2026 (Online) 5th April Evening Shift]

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

Scan or tap for the
full solution



Q.2 A molecule (X) with following structure under mild acidic condition is hydrolysed to produce (Y) and (Z). Identify the correct statements about (Y) and (Z).



- A. Both (Y) and (Z) have same molar mass.
- B. (Y) and (Z) can be distinguished from each other by NaHCO_3 .
- C. (Y) and (Z) react with HCN with same rates.
- D. (Y) and (Z) undergo addition reaction with 2,4-DNP.

Choose the **correct** answer from the options given below :

[JEE Main 2026 (Online) 2nd April Evening Shift]

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

Scan or tap for the
full solution



Q.3 Which of the following arrangements with respect to their reactivity in nucleophilic addition reaction is correct?

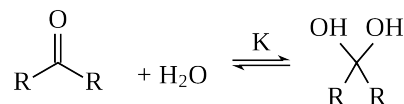
[JEE Main 2025 (Online) 24th January Morning Shift]

- (1) acetophenone < benzaldehyde < p-tolualdehyde < p-nitrobenzaldehyde
- (2) acetophenone < p-tolualdehyde < benzaldehyde < p-nitrobenzaldehyde
- (3) p-nitrobenzaldehyde < benzaldehyde < p-tolualdehyde < acetophenone
- (4) benzaldehyde < acetophenone < p-nitrobenzaldehyde < p-tolualdehyde

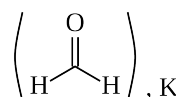
Scan or tap for the
full solution



Q.4 Given below are two statements:
Consider the following reaction

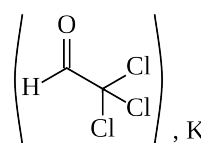


Statement-I: In the case of formaldehyde



is about 2280, due to small substituents, hydration is faster.

Statement-II: In the case of trichloro acetaldehyde



is about 2000 due to $-\text{I}$ effect of $-\text{Cl}$.

In the light of the above statements, choose the **correct** answer from the options given below :

[JEE Main 2025 (Online) 23rd January Evening Shift]

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

Scan or tap for the
full solution



Q.5 Which among the following aldehydes is most reactive towards nucleophilic addition reactions?

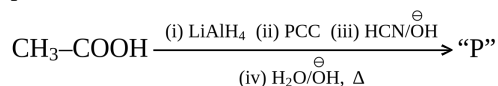
[JEE Main 2024 (Online) 6th April Morning Shift]

- (1) $\text{C}_2\text{H}_5-\overset{\text{O}}{\parallel}{\text{C}}-\text{H}$ (2) $\text{H}-\overset{\text{O}}{\parallel}{\text{C}}-\text{H}$
 (3) $\text{C}_3\text{H}_7-\overset{\text{O}}{\parallel}{\text{C}}-\text{H}$ (4) $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{H}$

Scan or tap for the full solution



Q.6 Consider the given reaction, identify the major product P.



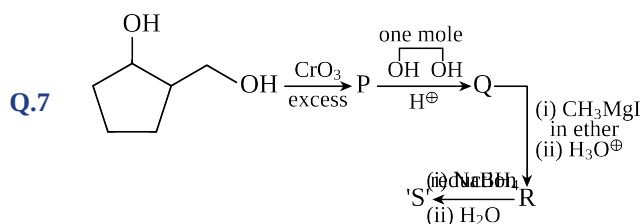
[JEE Main 2024 (Online) 6th April Evening Shift]

- (1) $\text{CH}_3-\overset{\text{OH}}{\text{CH}}-\text{COOH}$ (2) $\text{CH}_3-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{NH}_2$
 (3) $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2\text{CH}_3$ (4) $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{OH}$

Scan or tap for the full solution



Section B (Numerical) — 3 questions



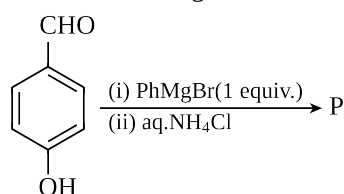
0.1 mole of compound 'S' will weigh ____ g.
 (Given molar mass in g mol^{-1} C : 12, H : 1, O : 16)

[JEE Main 2025 (Online) 29th January Morning Shift]

Scan or tap for the full solution



Q.8 The product of the following reaction is P.



The number of hydroxyl groups present in the product P is ____.

[JEE Main 2024 (Online) 31st January Morning Shift]

Scan or tap for the full solution



Q.9 The compound formed by the reaction of ethanal with semicarbazide contains _____ number of nitrogen atoms.

[JEE Main 2024 (Online) 30th January Morning Shift]

Scan or tap for the full solution



ANSWER KEY

Section A (MCQ) — 6 questions

Ques.	1	2	3	4	5	6					
Ans.	4	4	2	2	2	1					

Section B (Numerical) — 3 questions

Ques.	7	8	9								
Ans.	13	0	3								