

PART 1 - CHEMISTRY

Topic : Aldehydes, ketones and carboxylic acids, Polymers

SECTION-A : (Maximum Marks : 40)

This section contains **TEN** questions.

Each question has **FOUR** options (A), (B), (C) and (D). **ONE OR MORE THAN ONE** of these four option(s) is(are) correct answer(s).

For each question, choose the option(s) corresponding to (all) the correct answer(s).

Answer to each question will be evaluated according to the following marking scheme :

Full Marks : +4 ONLY if (all) the correct option(s) is(are) chosen;

Partial Marks : +3 If all the four options are correct but ONLY three options are chosen;

Partial Marks : +2 If three or more options are correct but ONLY two options are chosen, both of which are correct;

Partial Marks : +1 If two or more options are correct but ONLY one option is chosen and it is a correct option;

Zero Marks : 0 If none of the options is chosen (i.e. the question is unanswered);

Negative Marks : -1 In all other cases.

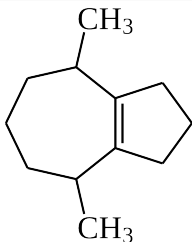
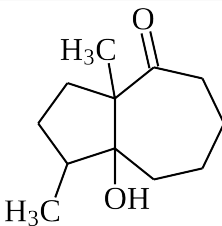
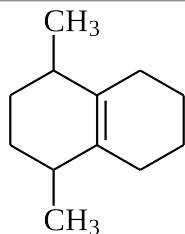
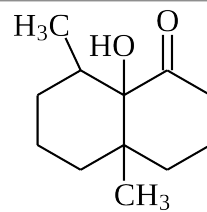
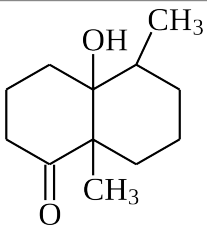
For example, in a question, if (A), (B) and (D) are the ONLY three options corresponding to correct answers, then choosing ONLY (A), (B) and (D) will get +4 marks; choosing ONLY (A) and (B) will get +2 marks; choosing ONLY (A) and (D) will get +2 marks; choosing ONLY (B) and (D) will get +2 marks; choosing ONLY (A) will get +1 mark; choosing ONLY (B) will get +1 mark; choosing ONLY (D) will get +1 mark; choosing no option (i.e. the question is unanswered) will get 0 marks; and choosing any other combination of options will get -1 marks.

1. The **List-II** contains products obtained from the reaction of compounds in **List-I** with $O_3/Zn - H_2O$ followed by cyclization (via more stable enolate) in the presence of aqueous NaOH. Match each entry in **List-I** with appropriate entry in **List-II** and choose the correct option.

[JEE Advanced 2026 Paper 1]

List-I		List-II	
P.		1.	
Q.		2.	

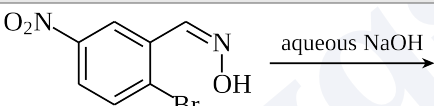
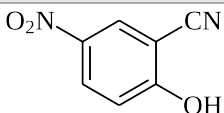
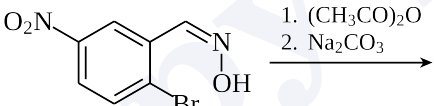
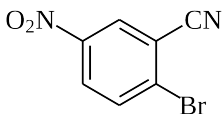
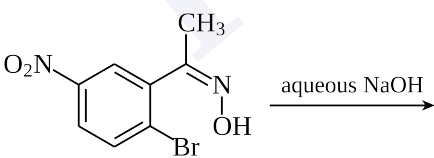
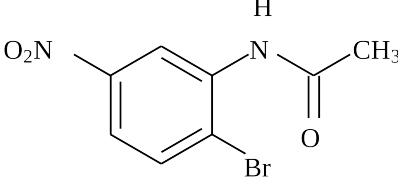
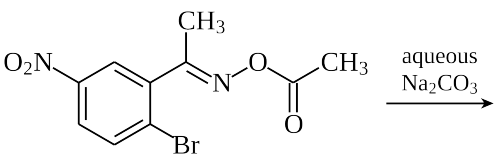
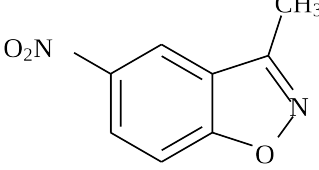
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List-I		List-II	
R.		3.	
S.		4.	
		5.	

- (A) P $\rightarrow$ 2; Q $\rightarrow$ 4; R $\rightarrow$ 1; S $\rightarrow$ 3 (B) P $\rightarrow$ 3; Q $\rightarrow$ 4; R $\rightarrow$ 5; S $\rightarrow$ 2
 (C) P $\rightarrow$ 2; Q $\rightarrow$ 1; R $\rightarrow$ 5; S $\rightarrow$ 3 (D) P $\rightarrow$ 3; Q $\rightarrow$ 5; R $\rightarrow$ 4; S $\rightarrow$ 2

Scan or tap for the full solution 

2. Match the major products obtained in the reactions given in **List-I** with the corresponding structures in **List-II** and choose the correct option. [JEE Advanced 2026 Paper 1]

List-I		List-II	
P.		1.	
Q.		2.	
R.		3.	
S.		4.	

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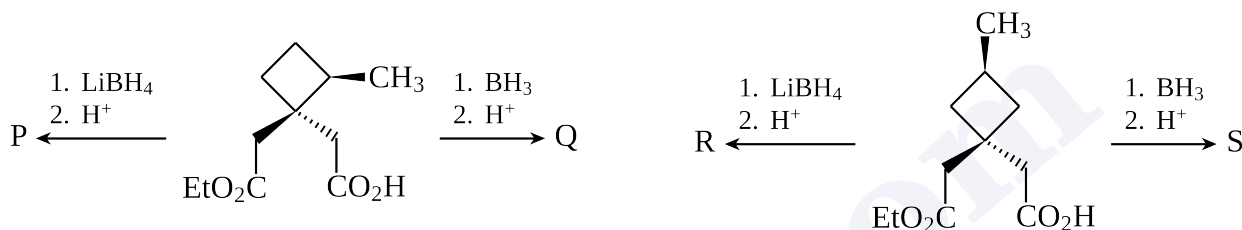
List-I	List-II
	5.

- (A) P → 2; Q → 1; R → 5; S → 4 (B) P → 1; Q → 2; R → 4; S → 5
 (C) P → 1; Q → 2; R → 3; S → 4 (D) P → 2; Q → 1; R → 3; S → 5

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3. Considering LiBH_4 reduces an ester group to the corresponding alcohol and does not reduce a carboxylic acid group, the correct statement about the major products P, Q, R and S is

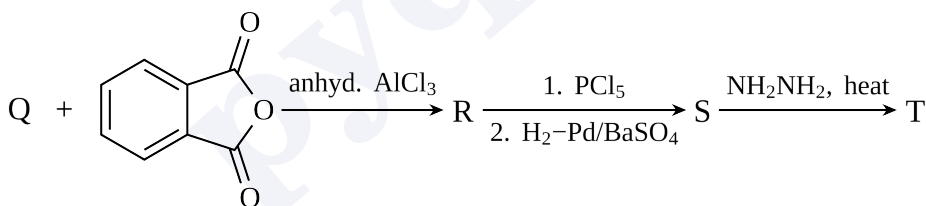
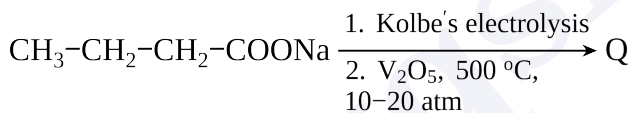
[JEE Advanced 2026 Paper 1]



- (A) P & Q are identical, and R & S are diastereomers.
 (B) P & Q are diastereomers, and R & S are identical.
 (C) P & Q are diastereomers, and R & S are diastereomers.
 (D) P & Q are identical, and R & S are identical.

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4. In the following reaction sequence, Q, R, S and T are the major products.



The correct statement(s) about Q, R, S and T is(are)

[JEE Advanced 2026 Paper 1]

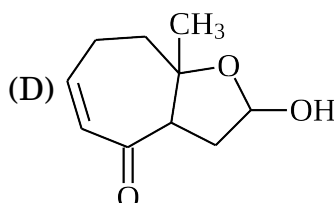
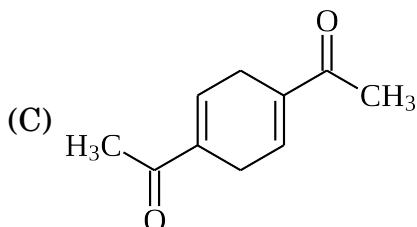
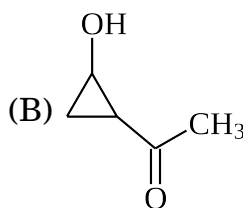
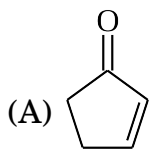
- (A) S on warming with ammoniacal AgNO_3 results in the formation of silver mirror.
 (B) Q on treatment with Cl_2 (excess)/UV gives gamma xane.
 (C) T is a heterocyclic compound.
 (D) R on acid catalyzed intramolecular cyclization followed by treatment with Zn-Hg/HCl gives 9,10-dihydroxyanthracene.

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Space for Rough Work

5. Natural rubber on complete ozonolysis ($\text{O}_3/\text{Zn} - \text{H}_2\text{O}$) gives compound X as the major product. X gives positive iodoform and Tollen's tests. X on heating with aqueous NaOH gives Y as the major product. Y is

[JEE Advanced 2026 Paper 2]

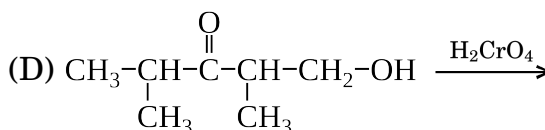
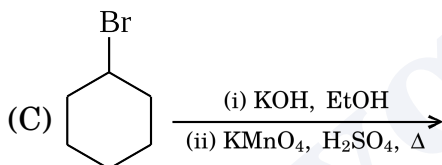
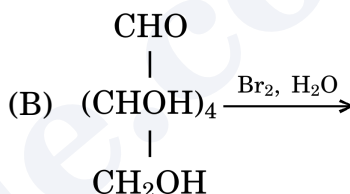
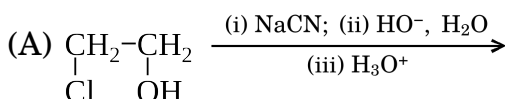


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6. The correct reaction/reaction sequence that would produce a dicarboxylic acid as the major product is

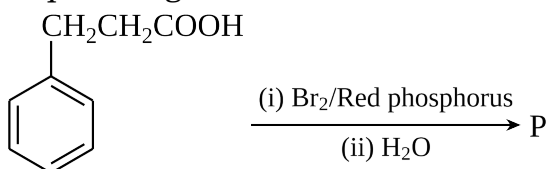
[JEE Advanced 2025 Paper 2]



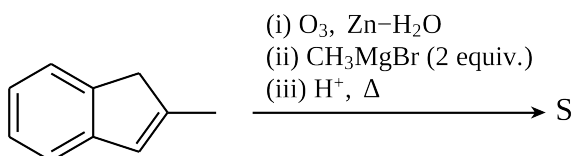
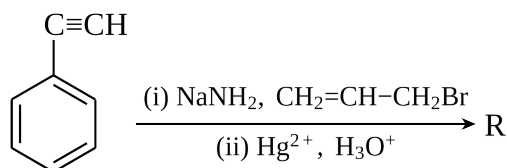
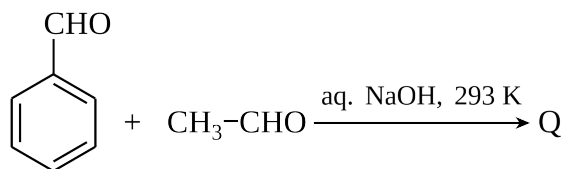
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7. Monocyclic compounds P, Q, R and S are the major products formed in the reaction sequences given below.



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The product having the highest number of unsaturated carbon atom(s) is

[JEE Advanced 2025 Paper 2]

- (A) P (B) Q (C) R (D) S

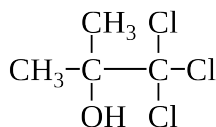
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8. Reaction of iso-propylbenzene with O_2 followed by the treatment with H_3O^+ forms phenol and a by-product P. Reaction of P with 3 equivalents of Cl_2 gives compound Q. Treatment of Q with Ca(OH)_2 produces compound R and calcium salt S.

The correct statement(s) regarding P, Q, R and S is(are)

[JEE Advanced 2024 Paper 1]

- (A) Reaction of P with R in the presence of KOH followed by acidification gives



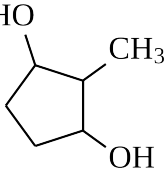
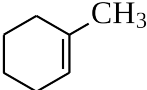
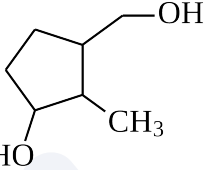
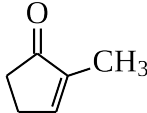
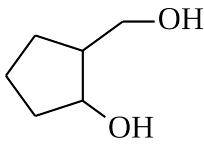
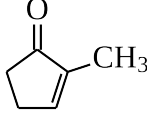
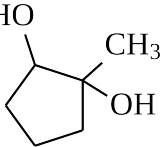
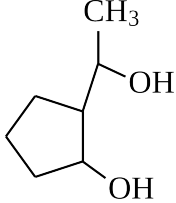
- (B) Reaction of R with O_2 in the presence of light gives phosgene gas
(C) Q reacts with aqueous NaOH to produce $\text{Cl}_3\text{CCH}_2\text{OH}$ and Cl_3CCOONa
(D) S on heating gives P

Scan or tap for the full solution 

9. **List-I** contains various reaction sequences and **List-II** contains the possible products. Match each entry in **List-I** with the appropriate entry in **List-II** and choose the correct option.

[JEE Advanced 2024 Paper 1]

Space for Rough Work

List-I		List-II	
P.	 i) O_3 , Zn ii) aq. NaOH, Δ iii) ethylene glycol, PTSA iv) a) BH_3 , b) H_2O_2 , NaOH v) H_3O^+ vi) NaBH_4	1.	
Q.	 i) O_3 , Zn ii) aq. NaOH, Δ iii) ethylene glycol, PTSA iv) a) BH_3 , b) H_2O_2 , NaOH v) H_3O^+ vi) NaBH_4	2.	
R.	 i) ethylene glycol, PTSA ii) a) $\text{Hg}(\text{OAc})_2$, H_2O , b) NaBH_4 iii) H_3O^+ iv) NaBH_4	3.	
S.	 i) ethylene glycol, PTSA ii) a) BH_3 , b) H_2O_2 , NaOH iii) H_3O^+ iv) NaBH_4	4.	
		5.	

(A) P-3, Q-5, R-4, S-1 (B) P-3, Q-2, R-4, S-1 (C) P-3, Q-5, R-1, S-4 (D) P-5, Q-2, R-4, S-1

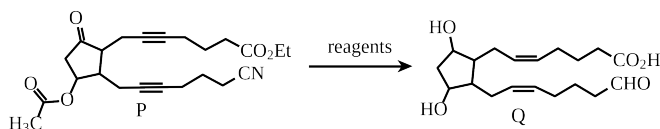
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Space for Rough Work

10. The option(s) with correct sequence of reagents for the conversion of P to Q is(are)

[JEE Advanced 2024 Paper 2]



- (A) i) Lindlar's catalyst, H_2 ; ii) $SnCl_2/HCl$; iii) $NaBH_4$; iv) H_3O^+
 (B) i) Lindlar's catalyst, H_2 ; ii) H_3O^+ ; iii) $SnCl_2/HCl$; iv) $NaBH_4$
 (C) i) $NaBH_4$; ii) $SnCl_2/HCl$; iii) H_3O^+ ; iv) Lindlar's catalyst, H_2
 (D) i) Lindlar's catalyst, H_2 ; ii) $NaBH_4$; iii) $SnCl_2/HCl$; iv) H_3O^+

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full solution



Space for Rough Work

SECTION-B : (Maximum Marks : 24)

This section contains **ONE** paragraph.

Based on each paragraph, there are **SIX** questions.

The answer to each question is a **NON-NEGATIVE INTEGER**.

For each question, enter the correct integer corresponding to the answer in the place designated to enter the answer.

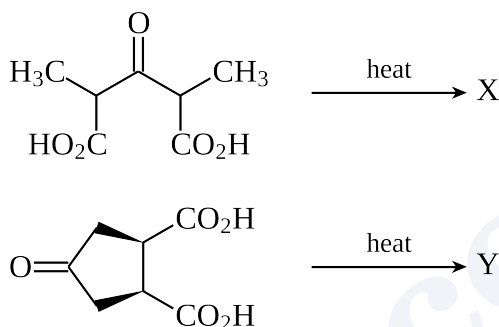
Answer to each question will be evaluated according to the following marking scheme :

Full Marks : +4 If **ONLY** the correct answer is entered;

Zero Marks : 0 In all other cases.

- 11.** The sum of total number of carbonyl groups ($>C=O$) present in the major products X and Y in the following reactions is ____.

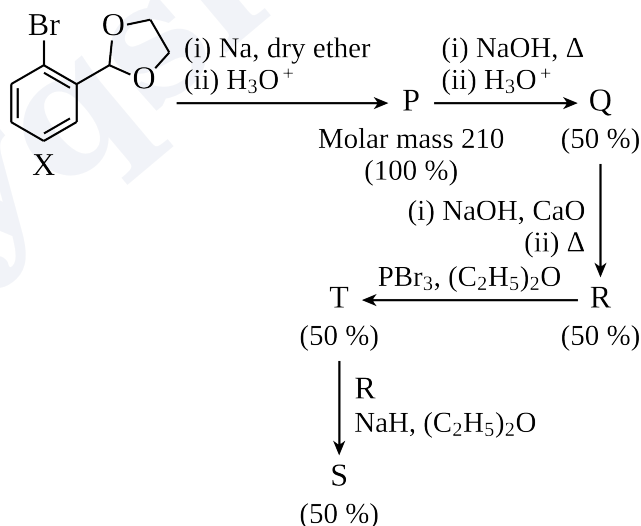
[JEE Advanced 2026 Paper 1]



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- 12.** The reaction sequence given below is carried out with 16 moles of X. The yield of the major product in each step is given below the product in parentheses. The amount (in grams) of S produced is ____.



Use: Atomic mass (in amu): H = 1, C = 12, O = 16, Br = 80

[JEE Advanced 2025 Paper 1]

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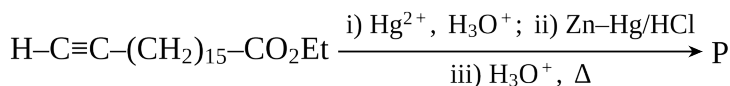
13. Complete reaction of acetaldehyde with excess formaldehyde, upon heating with conc. NaOH solution, gives P and Q. Compound P does not give Tollens' test, whereas Q on acidification gives positive Tollens' test. Treatment of P with excess cyclohexanone in the presence of catalytic amount of p-toluenesulfonic acid (PTSA) gives product R. Sum of the number of methylene groups ($-\text{CH}_2-$) and oxygen atoms in R is _____.

[JEE Advanced 2024 Paper 1]

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14. In the following reaction sequence, the major product P is formed.



Glycerol reacts completely with excess P in the presence of an acid catalyst to form Q. Reaction of Q with excess NaOH followed by the treatment with CaCl_2 yields Ca-soap R, quantitatively.

Starting with one mole of Q, the amount of R produced in gram is _____.

[Given, atomic weight: H = 1, C = 12, N = 14, O = 16, Na = 23, Cl = 35, Ca = 40]

[JEE Advanced 2024 Paper 1]

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Paragraph for Questions 15 and 16

An organic compound P with molecular formula $\text{C}_9\text{H}_{18}\text{O}_2$ decolorizes bromine water and also shows positive iodoform test. P on ozonolysis followed by treatment with H_2O_2 gives Q and R. While compound Q shows positive iodoform test, compound R does not give positive iodoform test. Q and R on oxidation with pyridinium chlorochromate (PCC) followed by heating give S and T, respectively. Both S and T show positive iodoform test.

Complete copolymerization of 500 moles of Q and 500 moles of R gives one mole of a single acyclic copolymer U.

[Given, atomic mass: H = 1, C = 12, O = 16]

15. Sum of number of oxygen atoms in S and T is _____.

[JEE Advanced 2024 Paper 2]

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16. The molecular weight of U is _____.

[JEE Advanced 2024 Paper 2]

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JEE ADVANCED ALDEHYDES, KETONES AND CARBOXYLIC ACIDS — PYQS

Test Pattern : JEE (Advanced)

ANSWER KEY

SECTION-A

Ques.	1	2	3	4	5	6	7	8	9	10						
Ans.	C	B	C	A, B, C	A	C	D	A, B, D	A	A, C, D						

SECTION-B

Ques.	11	12	13	14	15	16											
Ans.	4	175	18	909	2	93018											