

EXERCISE - O

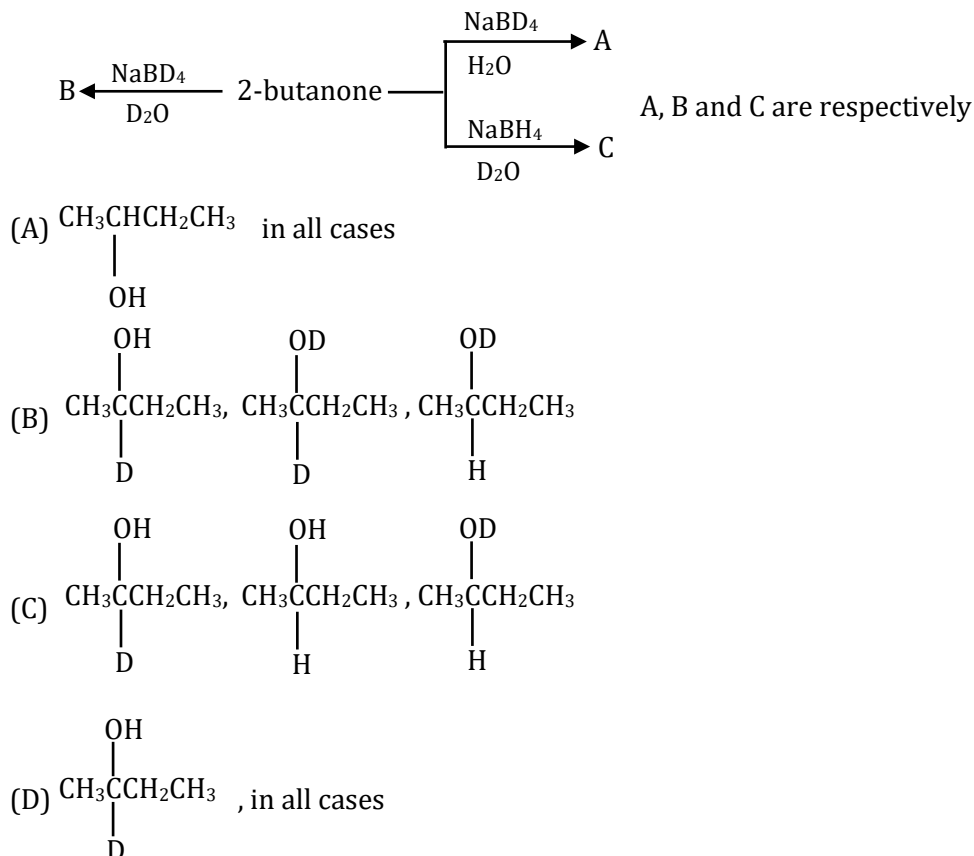
SINGLE CORRECT TYPE QUESTIONS

Metal hydride reduction

1. The product of the reaction $\text{Ph}_2\text{C} = \text{O} \xrightarrow[\text{H}_3\text{O}^+]{\text{LiAlD}_4}$ is
 (A) $\text{Ph}_2\text{CD}(\text{OH})$ (B) $\text{Ph}_2\text{CH}(\text{OD})$ (C) $\text{Ph}_2\text{CD}(\text{OD})$ (D) None

CRD086

2. Consider reduction of 2-butanone.



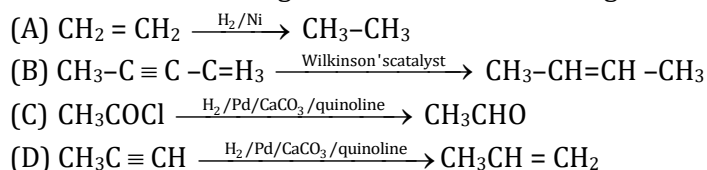
CRD087

Catalytic hydrogenation

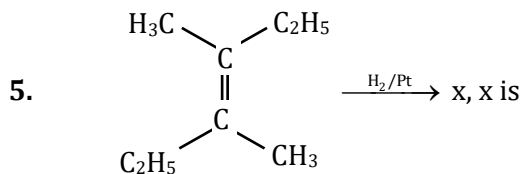
3. The relative rates of hydrogenation is in the order of :
 (A) $\text{CH}_2 = \text{CH}_2 > \text{RCH} = \text{CH}_2 > \text{RCH} = \text{CHR} > \text{R}_2\text{C} = \text{CHR}$
 (B) $\text{R}_2\text{C} = \text{CHR} > \text{RCH} = \text{CHR} > \text{RCH} = \text{CH}_2 > \text{CH}_2 = \text{CH}_2$
 (C) $\text{RCH} = \text{CHR} > \text{R}_2\text{C} = \text{CHR} > \text{RCH} = \text{CH}_2 > \text{CH}_2 = \text{CH}_2$
 (D) $\text{R}_2\text{C} = \text{CHR} > \text{CH}_2 = \text{CH}_2 > \text{RCH} = \text{CHR} > \text{RCH} = \text{CH}_2$

CRD053

4. Which of the following reactions involves homogeneous reduction



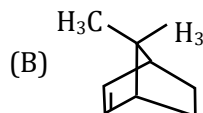
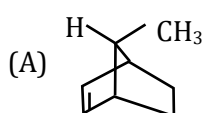
CRD088



- (A) Only (R,R) (B) Only (S,S) (C) Meso compound (D) Racemic mixture

CRD089

6. Which undergoes catalytic hydrogenation much faster ?



- (C) equally (D) cannot be predicted

CRD090

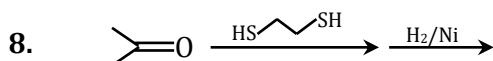
Metal based reducing agent

7. Stephen reduction ($\text{SnCl}_2 / \text{HCl}$) converts cyanides to

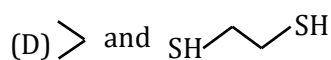
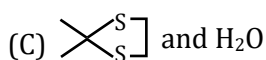
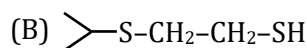
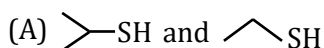
- (A) Aldehydes (B) Ketones (C) Amines (D) Acids

CRD056

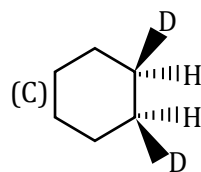
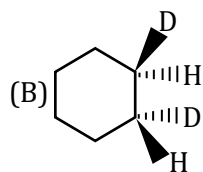
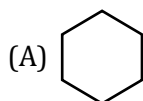
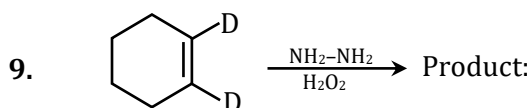
Miscellaneous reducing agent



The end products of the reaction are :

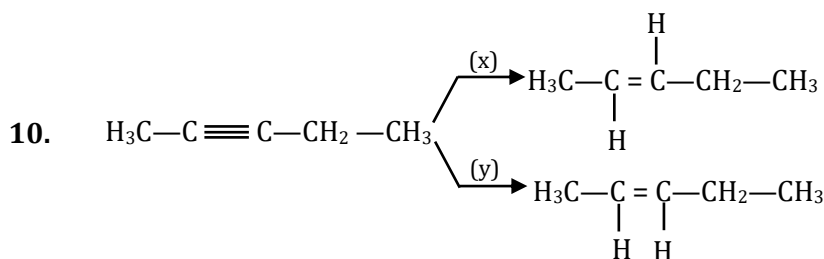


CRD001



- (D) Both (B) and (C)

CRD003



In the above reaction the using reagents X and Y are

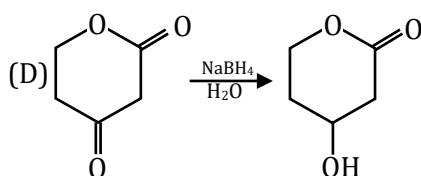
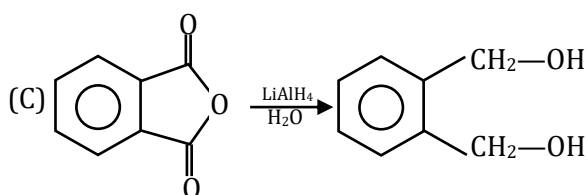
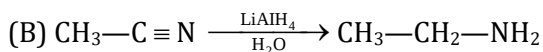
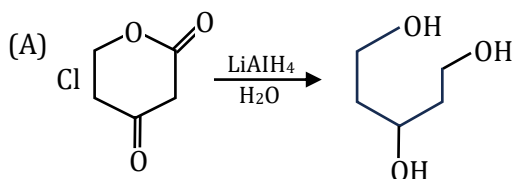
- (A) $\text{Na}/\text{liq. NH}_3$ for X (B) $\text{H}_2, \text{Pd}/\text{BaSO}_4$ for Y
 (C) $\text{BH}_3\text{-THF} + \text{CH}_3\text{COOH}$ for Y (D) All of these are correct

CRD091

MULTIPLE CORRECT TYPE QUESTIONS

Metal hydride reduction

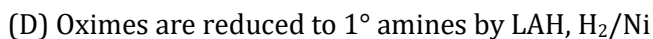
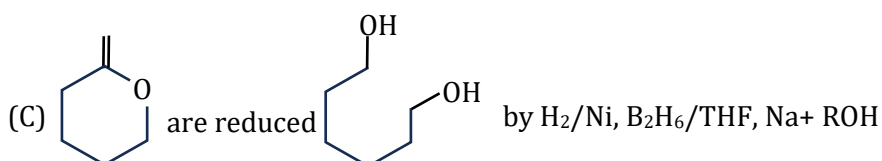
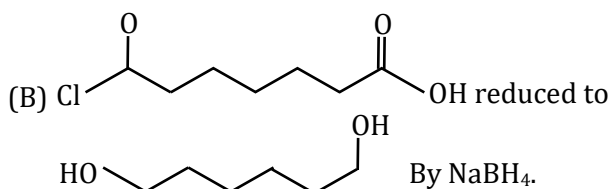
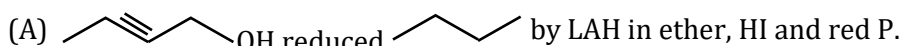
11. Which of the following reactions is/ are correct?



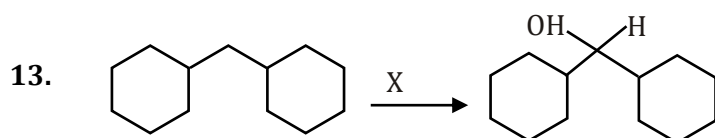
CRD092

Miscellaneous reducing agent

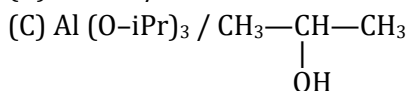
12. Which of the following is (are) not correct?



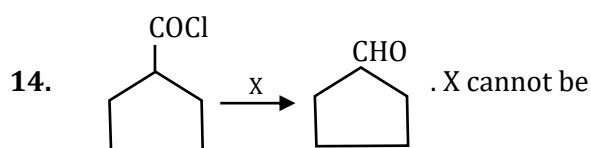
CRD093



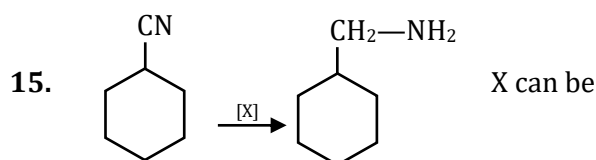
X is / are



CRD094

(A) $\text{NaBH}_4 / \text{EtOH}$ (B) $\text{LiAlH}_4 / \text{THF}$ (C) Na / EtOH (D) $\text{H}_2 / \text{Pd} - \text{BaSO}_4$

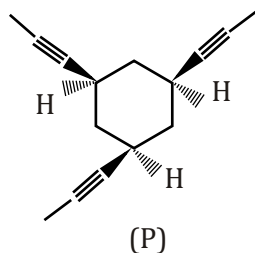
CRD095

(A) H_2 / Ni (B) LiAlH_4 (C) NaBH_4 (D) $\text{Na} + \text{EtOH}$

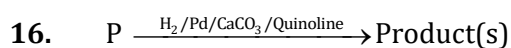
CRD096

COMPREHENSION TYPE QUESTIONS

Paragraph for Questions: 16 & 17



Catalytic hydrogenation



The number of isomeric product (s) obtained in this reaction is

(A) 1

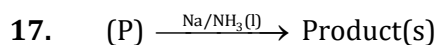
(B) 2

(C) 4

(D) 8

CRD097

Metal based reducing agent



The products (s) has/ have degree of unsaturation and number of isomeric product (s) formed are, respectively

(A) 1,4

(B) 4,2

(C) 4,1

(D) 2,4

CRD098

MATRIX MATCH TYPE QUESTION

Miscellaneous reducing agent

18. Match the items given in column I with those in column II.

Column I		Column II	
a.		p.	DIBAL - H
b.		q.	H ₂ /Ni, (25°/C)
c.		r.	Na/NH ₃ (l)/ C ₂ H ₅ OH
d.		s.	H ₂ /Pd/ BaSO ₄ /quinoline

CRD099

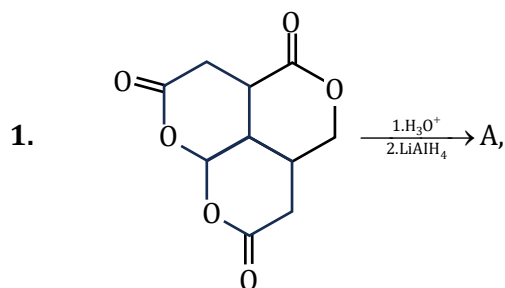
19. Match the items given in column I with those in column II

Column I		Column II	
a.		p.	Stephen's reduction
b.		q.	Bouveault Blanc reduction
c.		r.	Mendius reduction
d.		s.	Meerwein-Ponndorf-Verley reduction

CRD100

EXERCISE - S

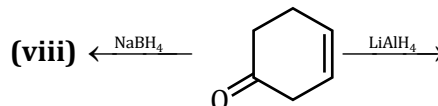
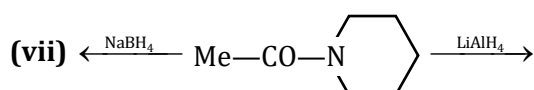
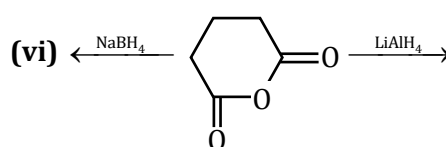
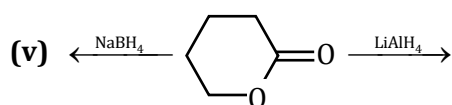
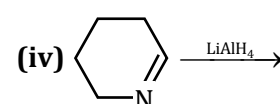
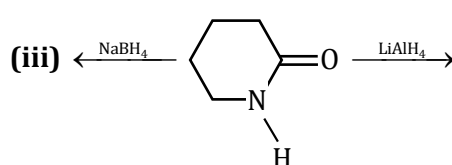
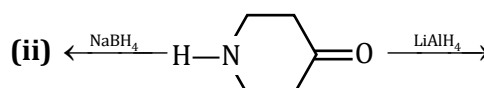
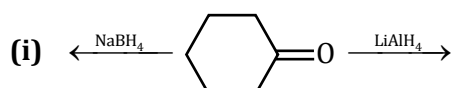
Metal hydride reduction



How many -OH group in the product (A) is

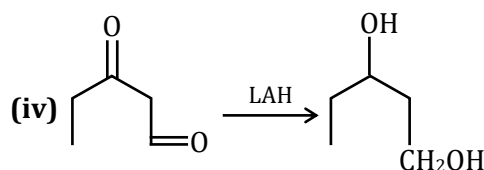
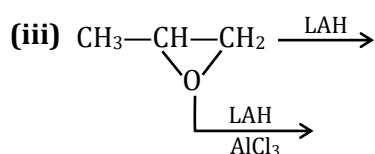
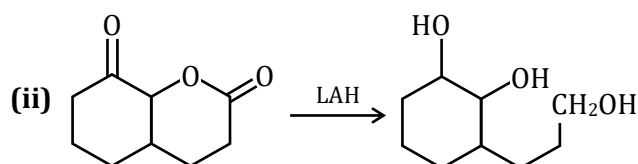
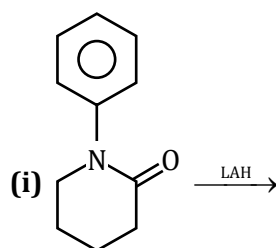
CRD101

2. Give product in following reactions.



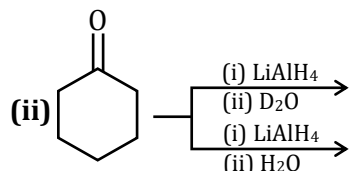
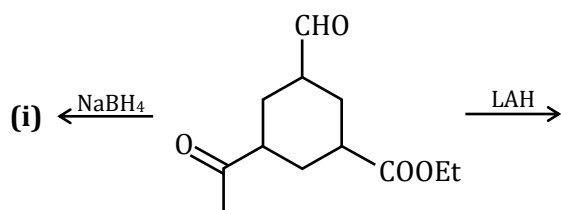
CRD102

3. Give product in following reactions.

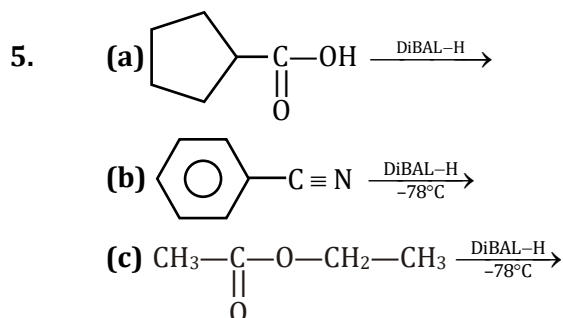


CRD103

4. Give product in following reactions.



CRD104



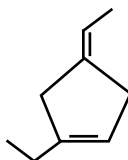
CRD105

Catalytic hydrogenation

6. On catalytic reduction with H_2/Pt how many alkenes will give n-butane ?

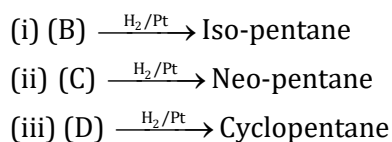
CRD004

7. If the following compound is treated with Pd in excess of H_2 gas, how many stereoisomers of the product will be obtained ?



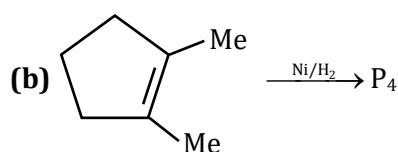
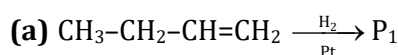
CRD011

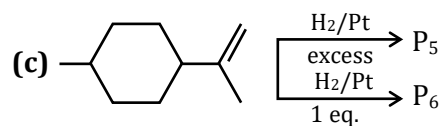
8. How many alkene on catalytic reduction gives following product.



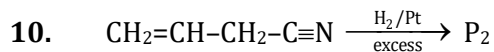
CRD106

9. Give the expected major product for each reaction, including stereochemistry where applicable.

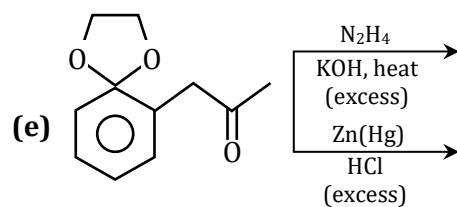
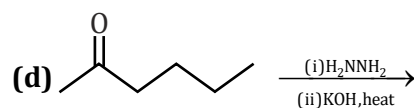
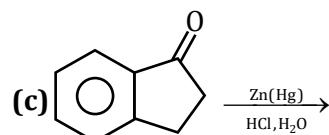
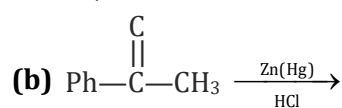
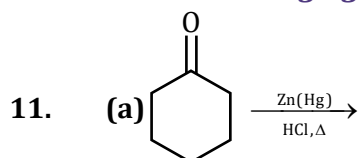




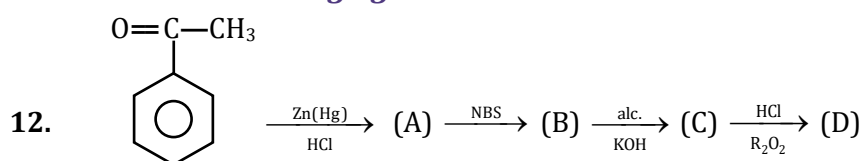
CRD107



CRD108

Metal based reducing agent

CRD109

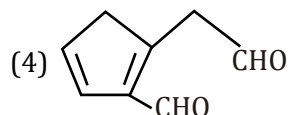
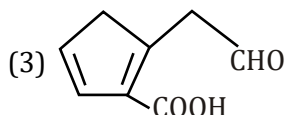
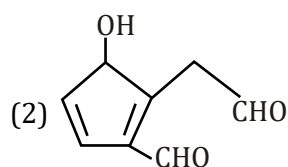
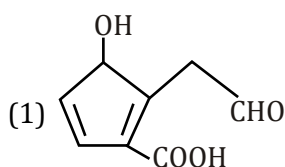
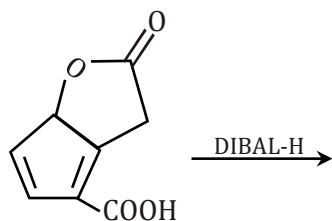
Miscellaneous reducing agent

CRD110

EXERCISE - JEE (Main) PYQ

1. The major product obtained in the following reaction is :

[JEE (Main) 2017]



CRD031

2. Glucose on prolonged heating with HI gives :

[JEE (Main) 2018]

- (1) 1-Hexene (2) Hexanoic acid (3) 6-iodohexanal (4) n-Hexane

CRD032

3. The trans-alkenes are formed by the reduction of alkynes with :

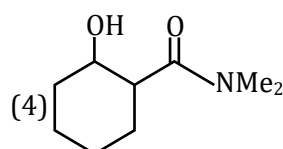
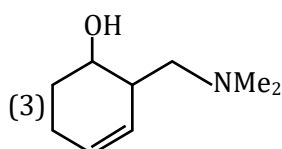
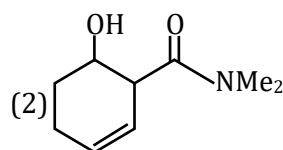
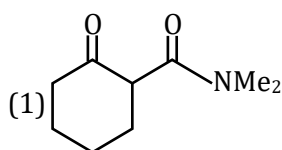
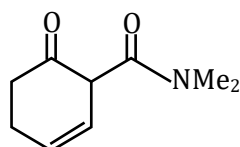
[JEE (Main) 2018]

- (1) NaBH_4 (2) $\text{Na}/\text{liq. NH}_3$ (3) Sn-HCl (4) $\text{H}_2\text{-Pd/C, BaSO}_4$

CRD033

4. The main reduction product of the following compound with NaBH_4 in methanol is :-

[JEE (Main) 2018]



CRD034

5. Wilkinson catalyst is :

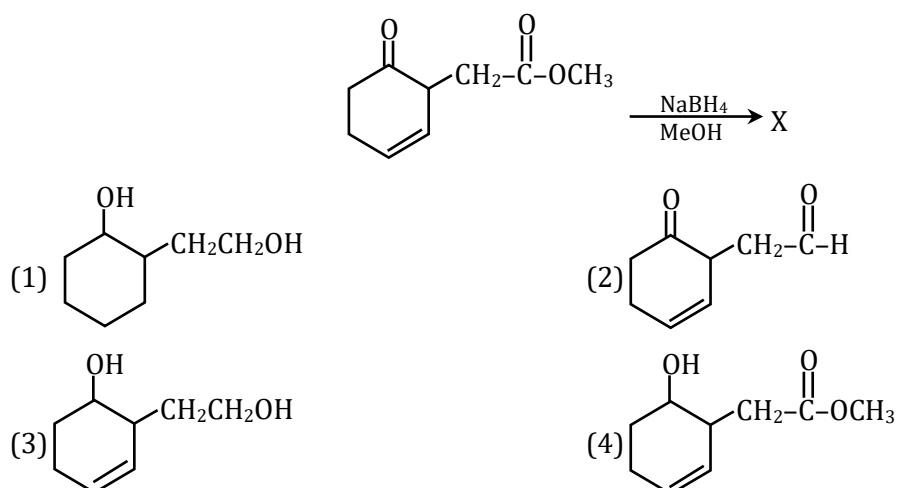
[JEE (Main) 2019]

- (1) $[(\text{Ph}_3\text{P})_3\text{RhCl}]$ ($\text{Et} = \text{C}_2\text{H}_5$) (2) $[\text{Et}_3\text{P}]_3\text{IrCl}]$
 (3) $[\text{Et}_3\text{P}]_3\text{RhCl}]$ (4) $[(\text{Ph}_3\text{P})_3\text{IrCl}]$

CRD036

6. The major product 'X' formed in the following reaction is :

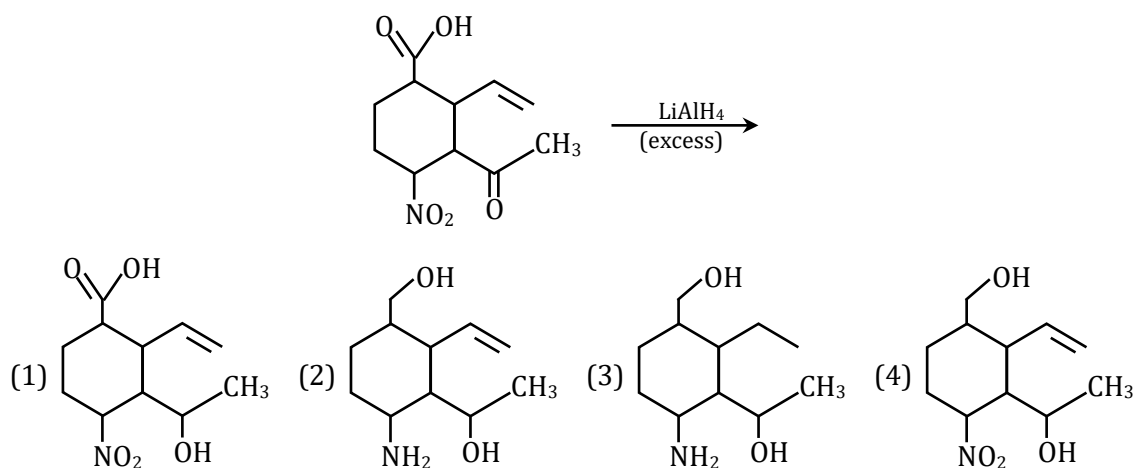
[JEE (Main) 2019]



CRD037

7. The major product obtained in the following reaction is :-

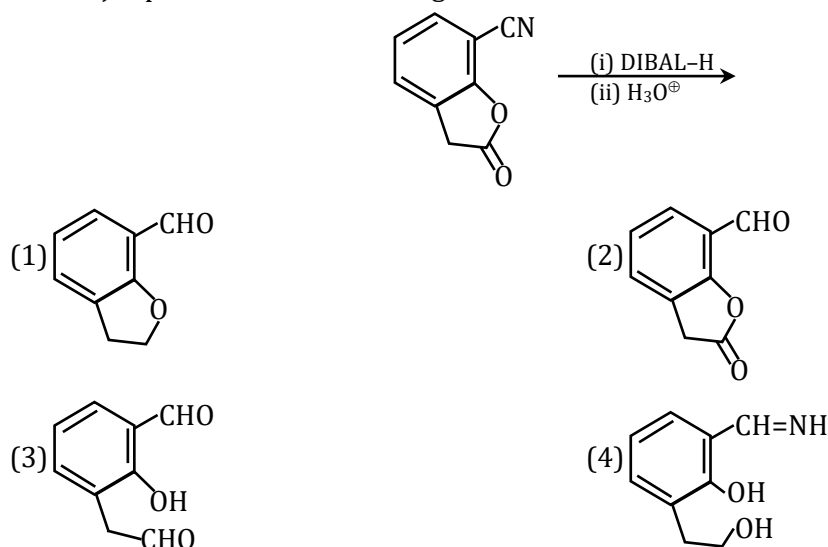
[JEE (Main) 2019]



CRD038

8. The major product of the following reaction is:

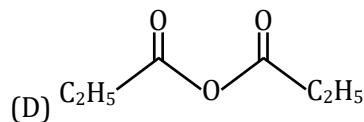
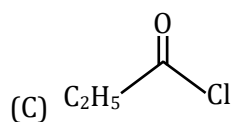
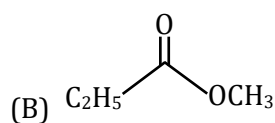
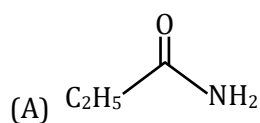
[JEE (Main) 2019]



CRD039

9. The increasing order of the reactivity of the following with LiAlH_4 is :

[JEE (Main) 2019]



(1) (A) < (B) < (D) < (C)

(2) (A) < (B) < (C) < (D)

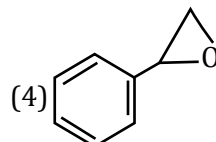
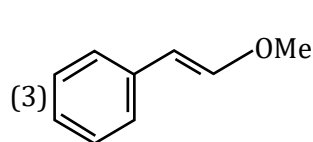
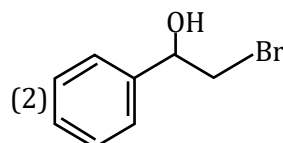
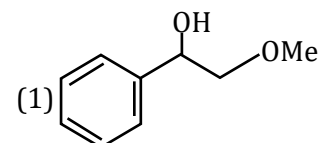
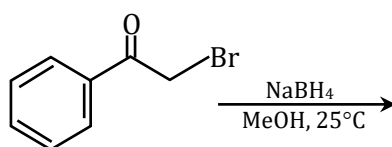
(3) (B) < (A) < (D) < (C)

(4) (B) < (A) < (C) < (D)

CRD040

10. The major product of the following reaction is :

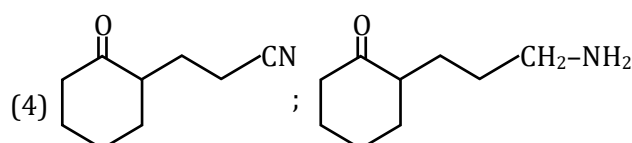
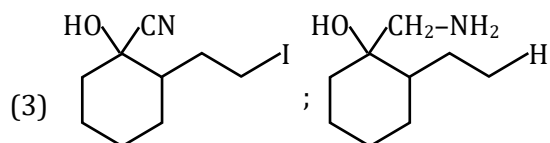
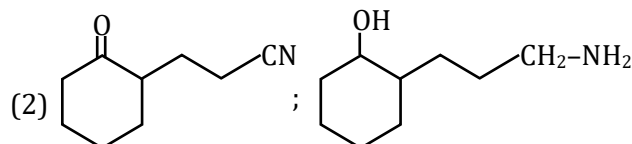
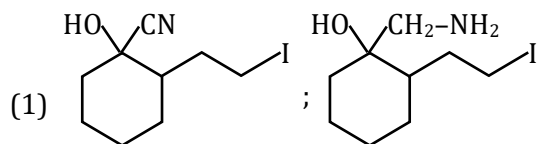
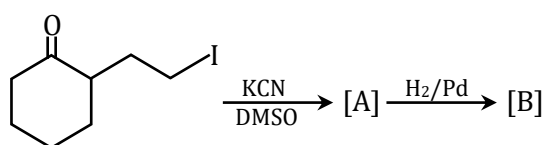
[JEE (Main) 2019]



CRD041

11. The major products A and B for the following reactions are, respectively:

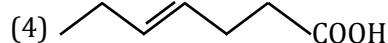
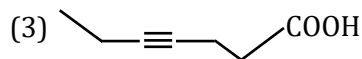
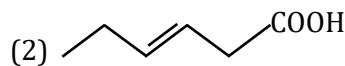
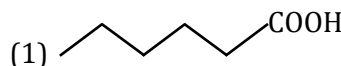
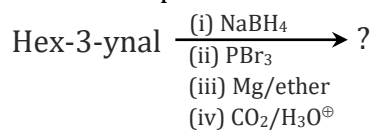
[JEE (Main) 2019]



CRD042

12. What is the product of following reaction ?

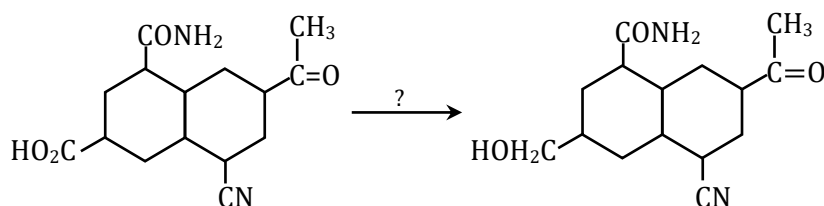
[JEE (Main) 2020]



CRD043

13. The most suitable reagent for the given conversion is :

[JEE (Main) 2020]



(1) LiAlH_4

(2) NaBH_4

(3) H_2/Pd

(4) B_2H_6

CRD044

14. **Statement I :** Sodium hydride can be used as an oxidising agent.

[JEE (Main) 2021]

Statement II : The lone pair of electrons on nitrogen in pyridine makes it basic.

Choose the CORRECT answer from the options given below :

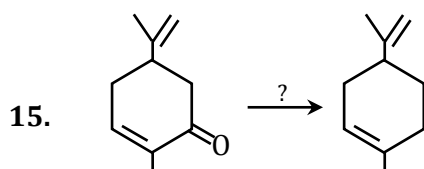
(1) Both statement I and statement II are false

(2) Statement I is true but statement II is false

(3) Statement I is false but statement II is true

(4) Both statement I and statement II are true

CRD045



[JEE (Main) 2021]

Which of the following reagent is suitable for the preparation of the product in the above reaction?

(1) NaBH_4

(2) $\text{NH}_2\text{-NH}_2/\text{C}_2\text{H}_5\text{O}^-\text{Na}^+$

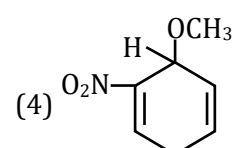
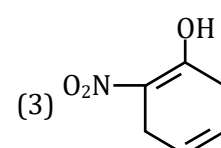
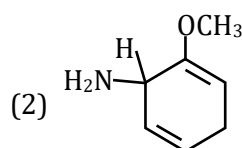
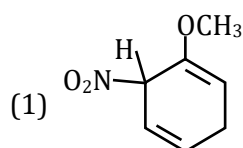
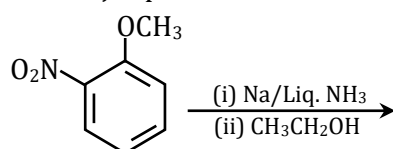
(3) Ni/H_2

(4) Red P + Cl_2

CRD046

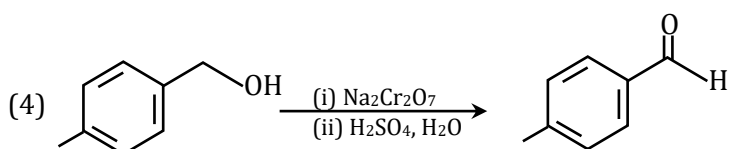
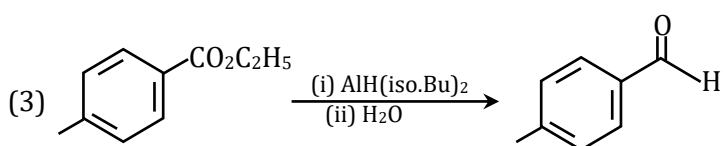
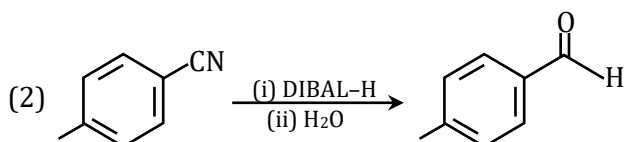
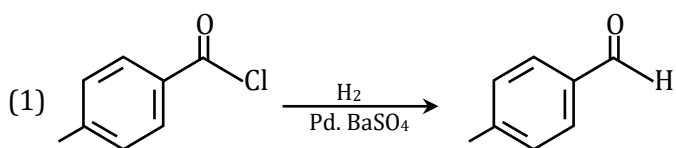
16. The major product of the following reaction is

[JEE (Main) 2022]

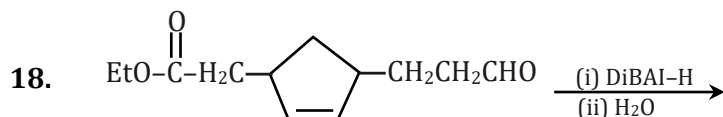


CRD047

17. Which one of the following reactions does not represent correct combination of substrate and product under the given conditions ? [JEE (Main) 2022]

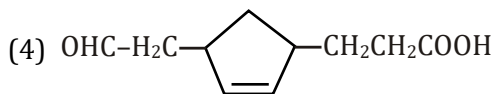
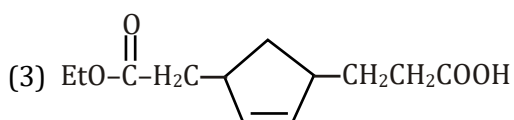
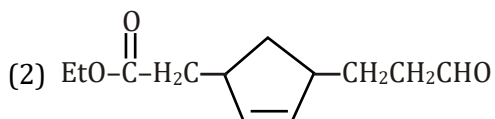
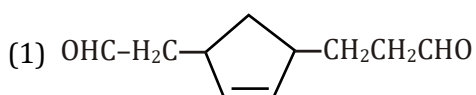


CRD048



[JEE (Main) 2022]

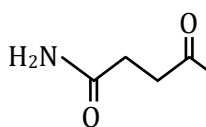
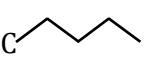
Consider the above reaction and predict the major product.

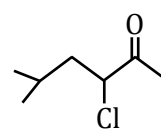
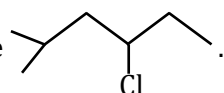


CRD049

19. Given below are two statements :

[JEE (Main) 2023]

Statement I :  under Clemmensen reduction conditions will give .

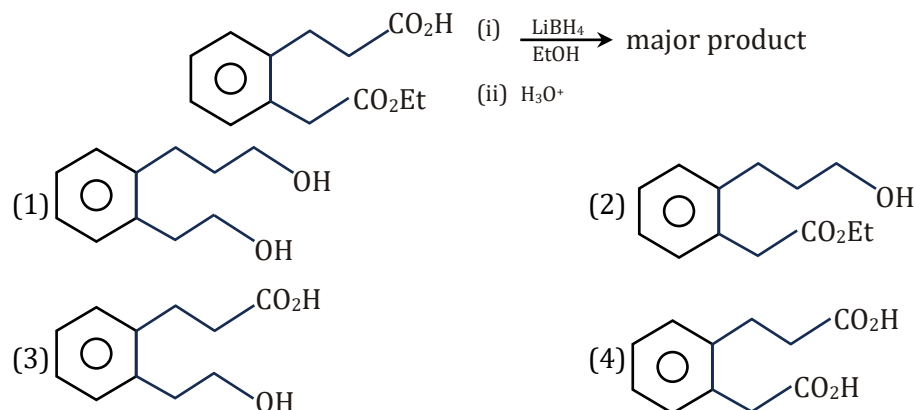
Statement II :  under Wolff-Kishner reduction condition will give .

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

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

20. The major product formed in the following reaction is:

CRD050
[JEE (Main) 2023]



CRD111

EXERCISE - JEE (Advanced) PYQ

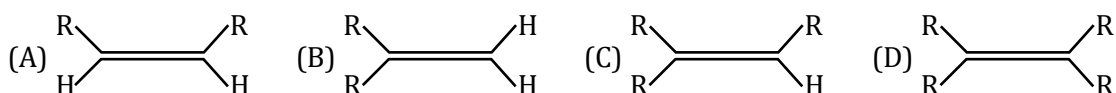
1. Hydrogenation of benzoyl chloride in the presence of Pd and BaSO₄ gives : [IIT 1992]
 (A) Benzyl alcohol (B) Benzaldehyde (C) Benzoic acid (D) Phenol

CRD071

2. Under Wolff Kishner reduction conditions, the conversions which may be brought about is? [IIT 1995]
 (A) Benzaldehyde into Benzyl alcohol (B) Cyclohexanol into Cyclohexane
 (C) Cyclohexanone into Cyclohexanol (D) Benzophenone into Diphenylmethane

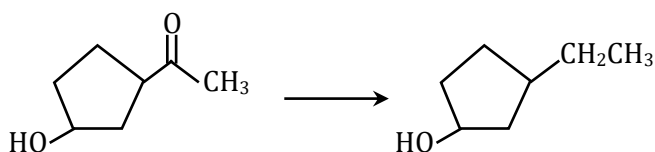
CRD072

3. Which one of the following alkenes will react fastest with H₂ under catalytic hydrogenation condition [IIT 2000]



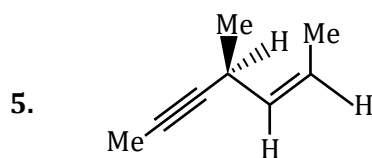
CRD073

4. The appropriate reagent for the following transformation: [IIT 2000]



- (A) Zn(Hg), HCl (B) NH₂NH₂, OH[⊖] (C) H₂/Ni (D) NaBH₄

CRD074



Hydrogenation of the above compound in the presence of poisoned palladium catalyst gives-

[IIT 2001]

- (A) An optically active compound (B) An optically inactive compound
 (C) A racemic mixture (D) A diastereomeric mixture

CRD075

6. When CH₂=CH-COOH is reduced with LiAlH₄, the compound obtained will be - [AIEEE 2003]
 (A) CH₃-CH₂-CH₂OH (B) CH₃-CH₂-CHO
 (C) CH₃-CH₂-COOH (D) CH₂=CH-CH₂OH

CRD076

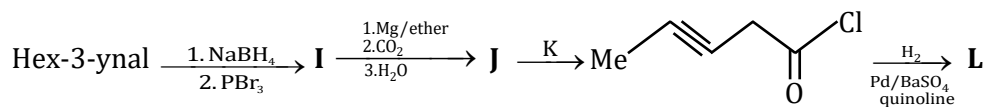
7. 2-hexyne can be converted into trans-2-hexene by the action of : [IIT 2004]
 (A) H₂-Pd-BaSO₄ (B) Li in liq. NH₃ (C) H₂-PtO₂ (D) NaBH₄

CRD077

Reduction

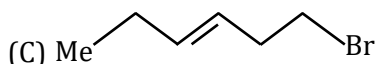
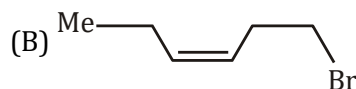
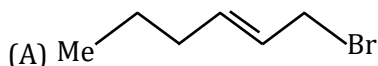
Paragraph for Question No. 08 to 10

In the following reaction sequence, products **I**, **J** and **L** are formed. **K** represents a reagent.



8. The structure of the product **I** is

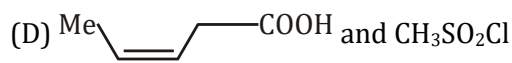
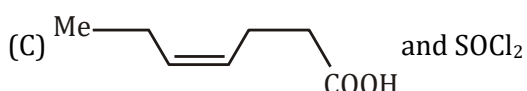
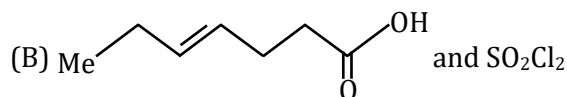
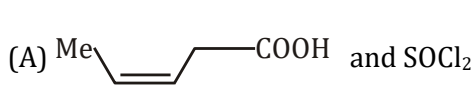
[JEE (Advanced) 2008]



CRD078

9. The structures of compounds **J** and **K**, respectively, are

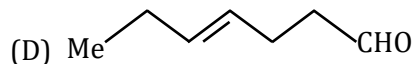
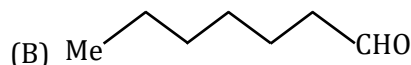
[JEE (Advanced) 2008]



CRD079

10. The structure of product **L** is :

[JEE (Advanced) 2008]



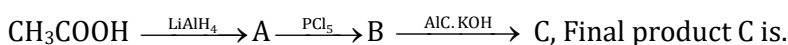
CRD080

11. Consider all possible isomeric ketones including stereoisomers of MW = 100, All these isomers are independently reacted with NaBH_4 (**NOTE** : stereoisomers are also reacted separately). The total number of ketones that give a racemic product(s) is/are.

[JEE (Advanced) 2014]

CRD081

12. In the reaction,



[JEE (Advanced) 2014]

(A) Ethylene

(B) Acetyl chloride

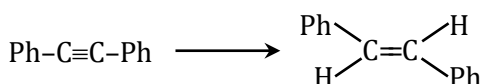
(C) Acetaldehyde

(D) Acetylene

CRD082

13. The reagent needed for converting is :

[JEE (Advanced) 2014]



(A) H_2 / Lindlar Cat.

(B) Cat. hydrogenation

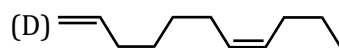
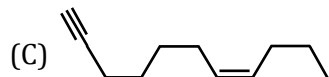
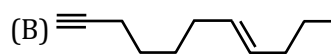
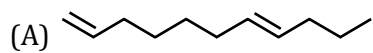
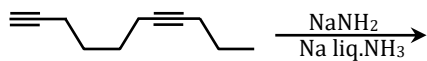
(C) LiAlH_4

(D) Li / NH_3

CRD083

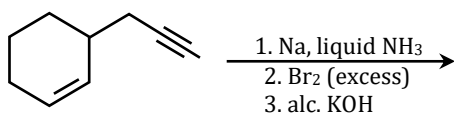
14. The major product formed in the following reaction is

[JEE (Advanced) 2021]



CRD084

15. The number of isomeric tetraenes (NOT containing sp-hybridized carbon atoms) that can be formed from the following reaction sequence is _____. [JEE (Advanced) 2022]



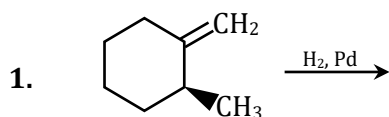
CRD085

JEE (Main) Practice Paper

(This paper is for yourself practice and assessment the discussion of this paper is optional though you can see PDF solutions or video solutions or solutions in hardcopy whichever is provided.)

SECTION-A

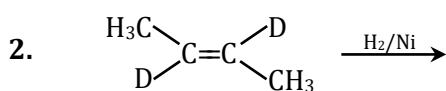
- This section contains **TWENTY** questions.
- Each question has **FOUR** options (1), (2), (3) and (4). **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories :
 Full Marks : +4, if only the bubble corresponding to the correct option is darkened.
 Zero Marks : 0, if none of the bubbles is darkened.
 Negative Marks : -1 in all other cases



Products of the above reaction will be :

- (1) Racemic mixture (2) Diastereomers (3) Meso (4) Structural isomer

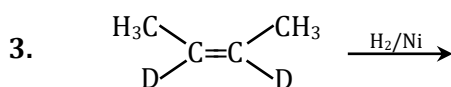
CRD002



Product of above reaction will be :

- (1) Racemic mixture (2) Diastereomers (3) Meso (4) Constitutional isomers

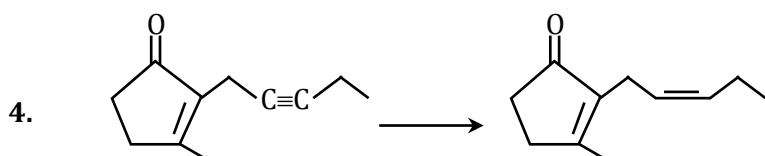
CRD005



Product of above reaction will be :

- (1) Racemic mixture (2) Diastereomers (3) Meso (4) Constitutional isomers

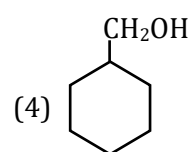
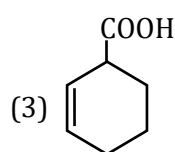
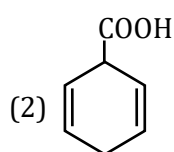
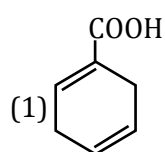
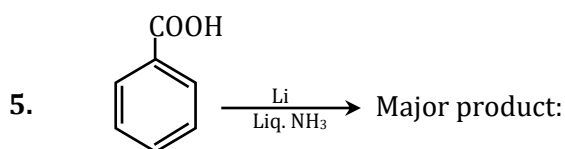
CRD006



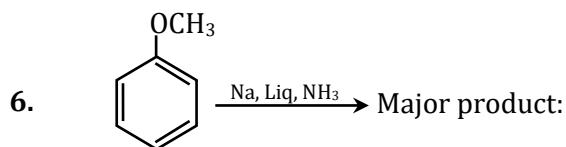
Which reagent will be used for the above conversion ?

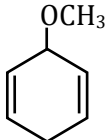
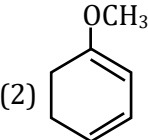
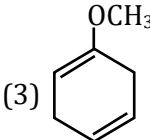
- (1) Na/Liq. NH₃ (2) H₂, Pd-CaCO₃ (3) Li, Ph-NH₂ (4) H₂, Pt

CRD007

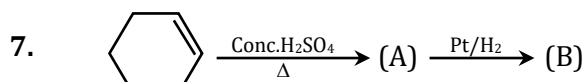


CRD008

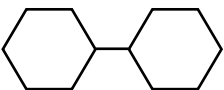
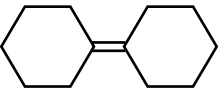
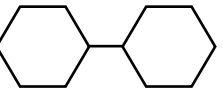
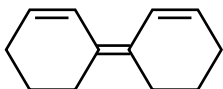
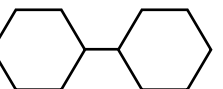
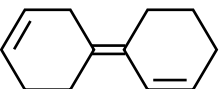
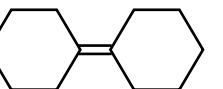


- (1)  (2)  (3)  (4) None of these

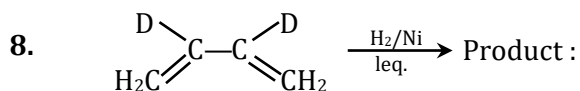
CRD009

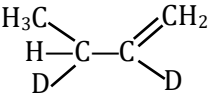
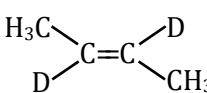
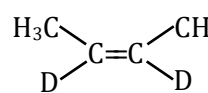


A and B respectively are :

- (1) Both  (2)  , 
(3)  ,  (4)  , 

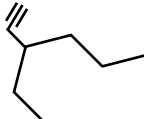
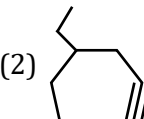
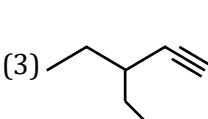
CRD010



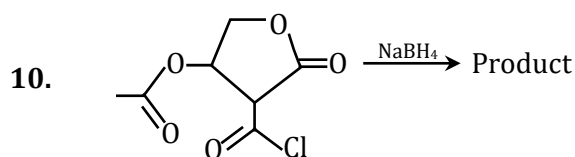
- (1)  (2)  (3)  (4) All of these

CRD012

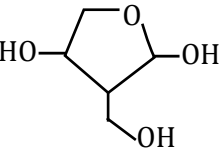
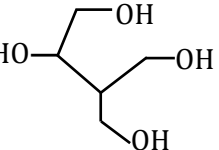
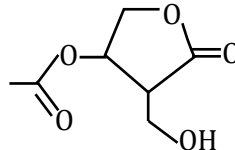
9. Which alkyne gives 3-ethylhexane on catalytic hydrogenation ?

- (1)  (2)  (3)  (4) All of these

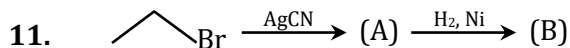
CRD013



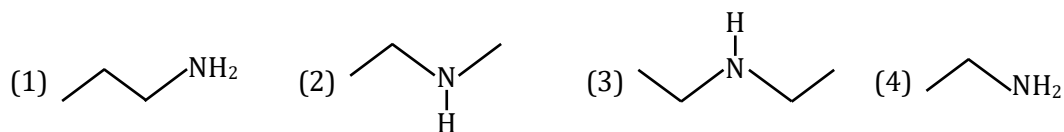
The product is :

- (1)  (2) $\text{CH}_3\text{-CH}_2\text{-OH}$
(3)  (4) 

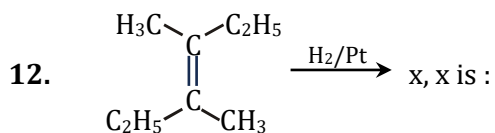
CRD014



The final product (B) is :



CRD015



- (1) Only (R,R) product (2) Only (S,S) product
(3) Meso compound (4) Racemic mixture

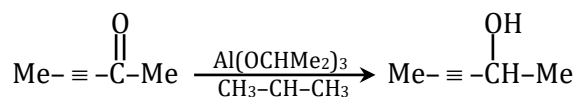
CRD016

13. When benzoic acid is treated with LiAlH_4 , it forms

- (1) Benzaldehyde (2) Benzyl alcohol
(3) Benzene (4) Toluene

CRD017

14. Name the reaction



- (1) Meerwein-Ponndorf-Verley reduction (2) Wolff-Kishner reduction
(3) Bouveault-Blanc reduction (4) Stephen's reduction

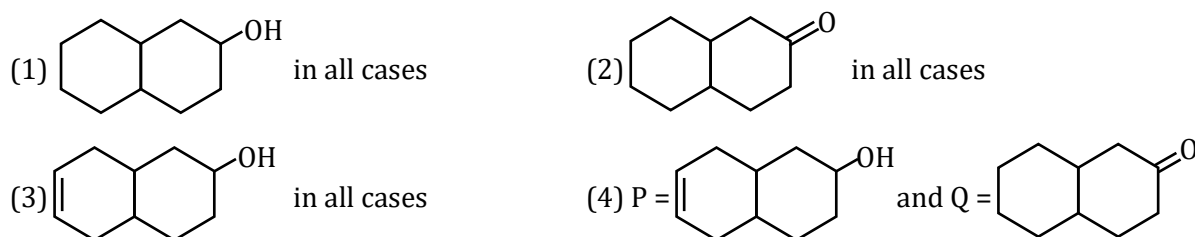
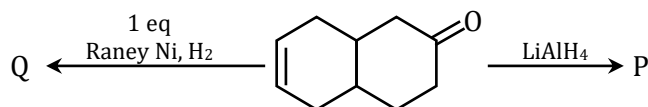
CRD018

15. In the following reaction $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5 + 4\text{H} \xrightarrow{\text{Red P+HI}} 2\text{X} + \text{H}_2\text{O}$, X is

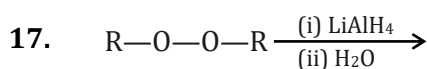
- (1) Ethane (2) Ethylene (3) Butane (4) Propane

CRD019

16. What are A and B in the following ?

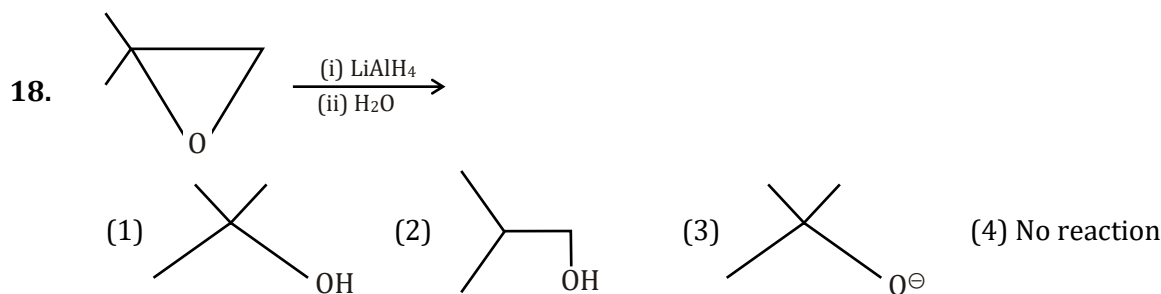


CRD020

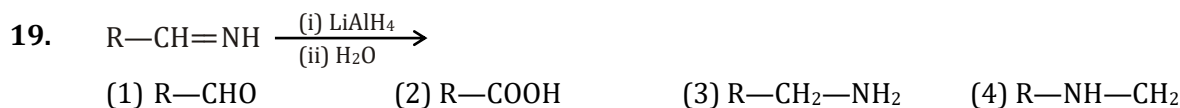


- (1) $\text{R}-\text{O}-\text{R} + \text{H}_2\text{O}$ (2) $\text{R}-\text{OH} + \text{H}_2\text{O}$ (3) $\text{H}_2\text{O} + \text{H}_2\text{O}$ (4) $\text{R}-\text{O}-\text{R} + \text{ROH}$

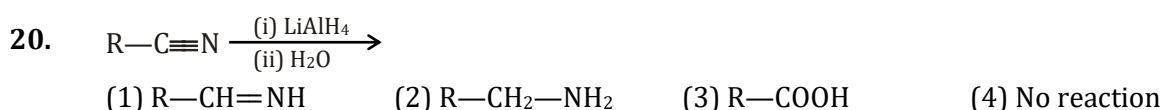
CRD112



CRD113



CRD114



CRD115

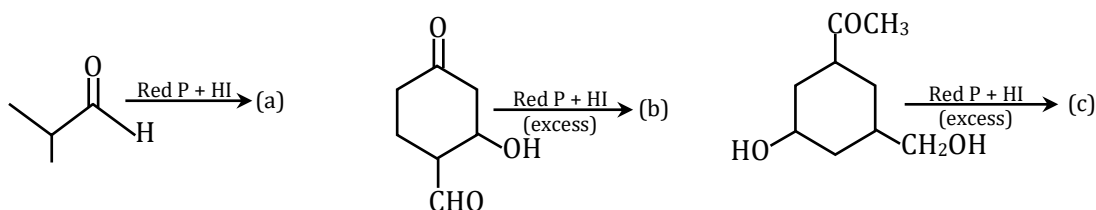
SECTION-B

- This section will have **TEN questions**. Candidate can choose to attempt any 5 questions out of these 10 questions. In case if candidate attempts more than 5 questions, first 5 attempted questions will be considered for marking.
- The answer to each question is a **NUMERICAL VALUE**.
- For each question, enter the correct numerical value (Answer should be rounded off to the nearest integer).
- Answer to each question will be evaluated according to the following marking scheme:
 Full Marks : +4, if only correct answer is given.
 Zero Marks : 0, if no answer is given.
 Negative Marks : -1 for incorrect answer

1. How many alkene on catalytic reduction gives following product.
 Alkene $\xrightarrow{H_2/Pt}$ Iso-pentane

CRD021

2. Calculate DOU in $[a + b + c]$.

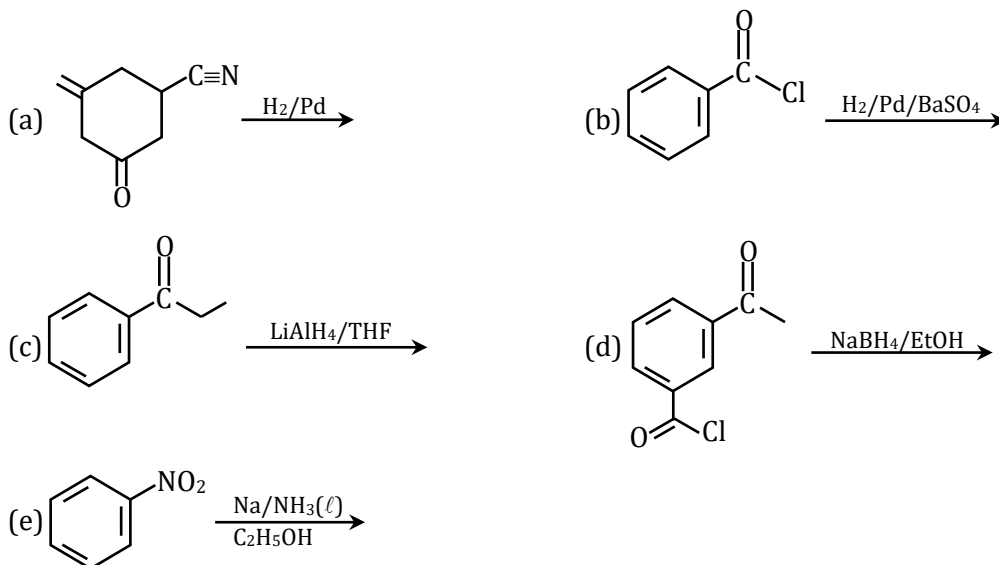


CRD022

3. $CH_3-C\equiv C-CH_3$ $\xrightarrow[Na/NH_3(liq.)]{H_2/PdBaSO_4}$ $\xrightarrow{D_2/Ni}$ X-number of products
 $\xrightarrow{Na/NH_3(liq.)}$ $\xrightarrow{D_2/Ni}$ Y-number of products
 Find the value of $x + y$.

CRD023

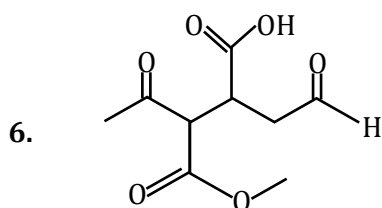
4. Number of reactions which give alcohol as product.



CRD024

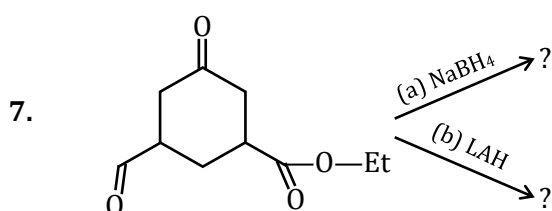
5. Total number of the following catalysts is/are used for partial reduction of alkyne ?
Na/NH₃(l), Ni₂B or P-2 catalyst, Lindlar catalyst, H₂/Pd

CRD025



In the above given compound x functional group are reduced by LAH (Lithium aluminium hydride) and y functional groups are reduced by SBH (sodium brohydride) respectively. The value of (x + y) is :

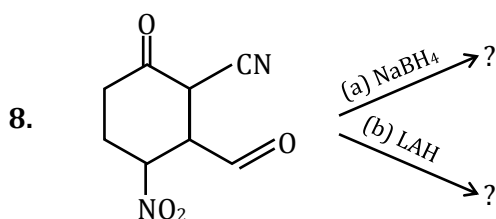
CRD026



(a) and (b) are number of moles of NaBH₄ and LAH

∴ a + b =

CRD027



(a) and (b) are mole of NaHBH₄ and LAH ∴ a + b =

CRD028

9. Among the following how many compound reacts with NaBH_4 ?

- (i) $\text{CH}_3\text{—CHO}$ (ii) $\text{CH}_3\text{—}\overset{\text{O}}{\parallel}\text{C—CH}_3$
 (iii) $\text{CH}_3\text{—}\overset{\text{O}}{\parallel}\text{C—O—Et.}$ (iv) $\text{CH}_3\text{—}\overset{\text{O}}{\parallel}\text{C—Cl}$
 (v) $\text{CH}_3\text{—}\overset{\text{O}}{\parallel}\text{C—O—}\overset{\text{O}}{\parallel}\text{C—CH}_3$ (vi) $\text{CH}_3\text{—CH}_3$
 (vii) $\text{H}_2\text{C} = \text{CH}_2$

CRD029

10. Out of the following compounds given below, the number of compounds which are reduced by NaBH_4 are :

I. PhCHO

II. $\text{C}_2\text{H}_5\text{CHO}$

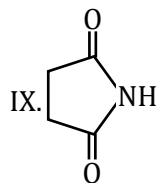
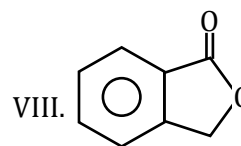
III. $\text{C}_2\text{H}_5\text{COOCH}_3$

IV. PhCOCH_3

V. PhCONH_2



VII. $(\text{CH}_3)_2\text{CHCOCH}_3$



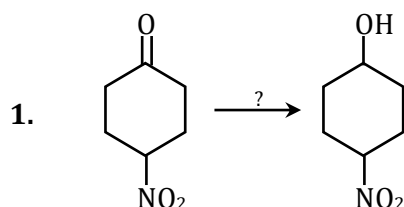
CRD030

JEE (Advanced) Practice Paper

(This paper is for yourself practice and assessment the discussion of this paper is optional though you can see PDF solutions or video solutions or solutions in hardcopy whichever is provided.)

SECTION-I

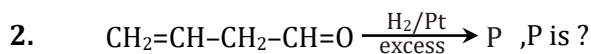
- This section contains **NINE** questions.
- Each question has **FOUR** options (A), (B), (C) and (D). **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories :
 Full Marks : +3, if only the bubble corresponding to the correct option is darkened.
 Zero Marks : 0, if none of the bubbles is darkened.
 Negative Marks : -1, in all other cases



above conversion can be achieved by

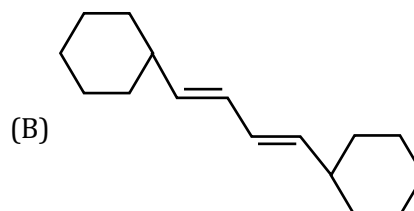
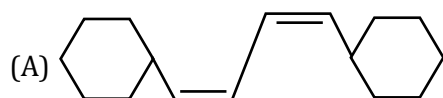
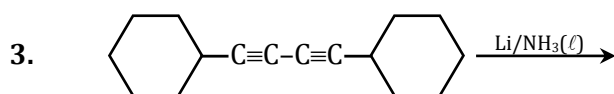
- (A) LiAlH_4 (B) $\text{H}_2 / \text{Ni}, \Delta$
 (C) NaBH_4 (D) All

CRD051



- (A) $\text{CH}_2=\text{CH}-\text{CH}_2-\text{CH}=\text{O}$ (B) $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}=\text{O}$
 (C) $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{OH}$ (D) None of these

CRD052



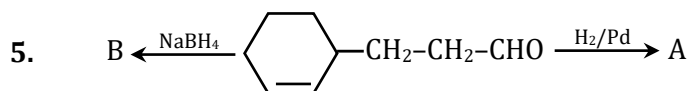
- (C) Both (A) and (B) (D) None of these

CRD054

4. Which of the following reagents converts both acetaldehyde and acetone to alkanes?

- (A) Ni/H_2 (B) LiAlH_4
 (C) I_2/NaOH (D) $\text{Zn}-\text{Hg}/\text{conc. HCl}$

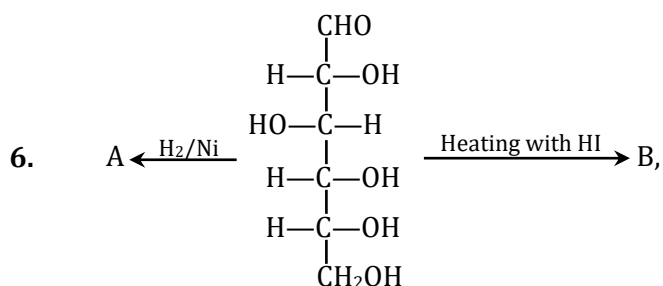
CRD055



A and B are respectively :

- (A) Cyclohexane-CH₂CH₂CHO, Cyclohexene-CH₂-CH₂-CH₂-OH
 (B) Cyclohexane-CH₂CH₂CH₂OH, Cyclohexene-CH₂-CH₂-CH₂-OH
 (C) Cyclohexene-CH₂-CH₂-CH₂-OH in both case
 (D) Cyclohexane-CH₂-CH₂-CH₂-OH in both case

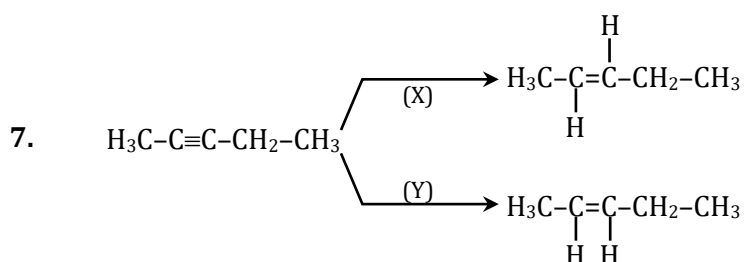
CRD057



A and B can be :

- (A) Both are n-Hexane
 (B) Both are Hexan-1,2,3,4,5,6-hexaol
 (C) A is n-Hexane B is Hexan-1,2,3,4,5,6-hexaol
 (D) A is Hexan-1,2,3,4,5,6-hexaol and B is n-Hexane

CRD058

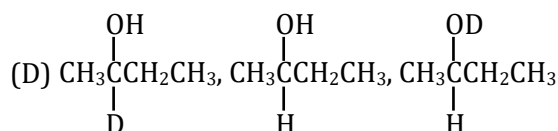
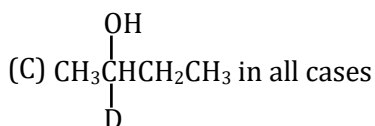
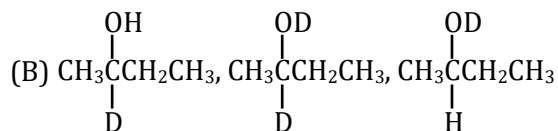
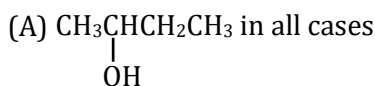
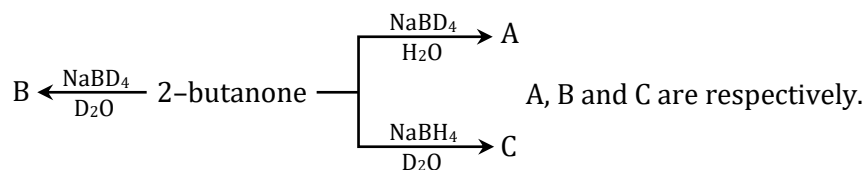


In the above reaction the using reagents X and Y are ;

- (A) Na/ liq. NH₃ for X
 (B) H₂, Pd/ BaSO₄ for Y
 (C) BH₃[⊖] THF + CH₃COOH for Y
 (D) All of these are correct.

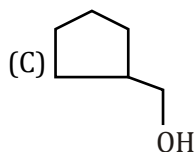
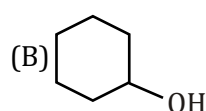
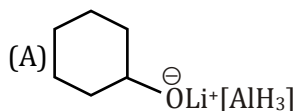
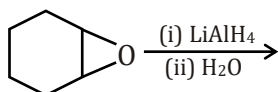
CRD059

8. Consider reduction of 2-butanone.



CRD060

9.



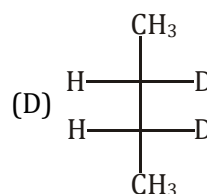
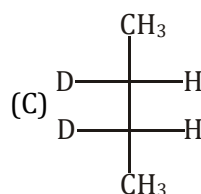
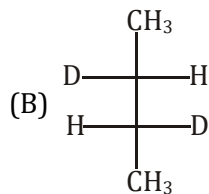
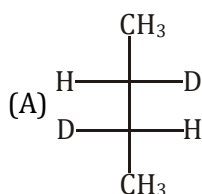
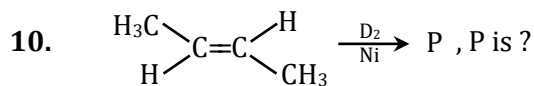
(D) No reaction

CRD116

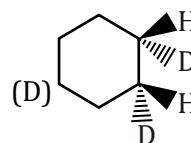
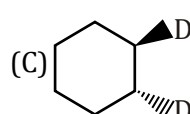
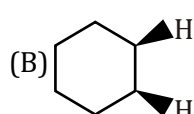
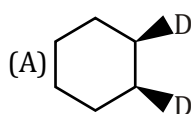
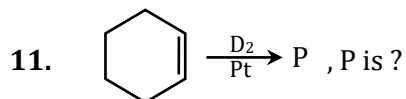
SECTION-II

- This section contains **FOUR** question.
- Each question has **FOUR** options for correct answer(s). **ONE OR MORE THAN ONE** of these four option(s) is (are) correct option(s).
- For each question, choose the correct option(s) to answer the question.
- Answer to each question will be evaluated according to the following marking scheme:

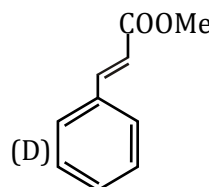
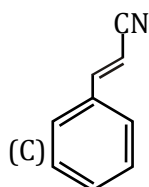
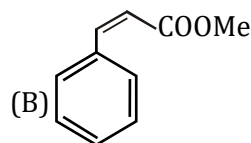
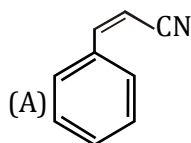
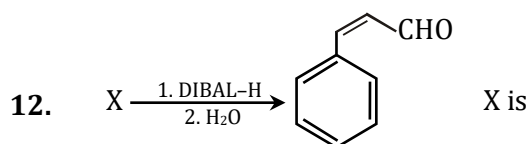
<i>Full Marks</i>	: +4, if only (all) the correct option(s) is (are) chosen.
<i>Partial Marks</i>	: +3, if all the four options are correct but ONLY three options are chosen.
<i>Partial Marks</i>	: +2, if three or more options are correct but ONLY two options are chosen, both of which are correct options.
<i>Partial Marks</i>	: +1, if two or more options are correct but ONLY one option is chosen and it is a correct option.
<i>Zero Marks</i>	: 0, if none of the options is chosen (i.e. the question is unanswered).
<i>Negative Marks</i>	: -2 in all other cases.



CRD061

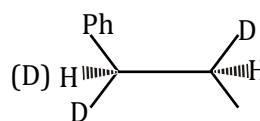
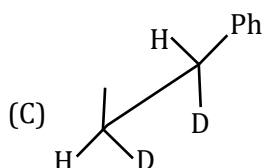
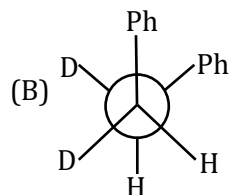
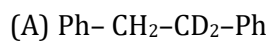
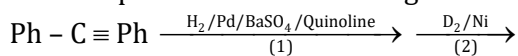


CRD062



CRD063

13. The end product of the following reactions is / are

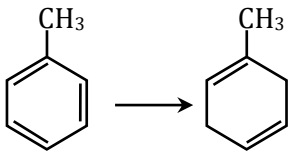


CRD117

SECTION-III

- This section contains **TWO** question.
- Each question has matching lists.** The codes for the lists have choices (A), (B), (C) and (D) out of which **ONLY ONE is correct**
- For each question, marks will be awarded in one of the following categories :
 Full Marks : +3, if only the bubble corresponding to the correct option is darkened.
 Zero Marks : 0, if none of the bubbles is darkened.
 Negative Marks : -1, in all other cases.

14. Match the Column-I and Column-II

Column-I (Conversion)		Column-II (Required Reagent)	
(A)	$\text{H}_3\text{C}-\text{C}\equiv\text{C}-\text{CH}_3 \longrightarrow \begin{array}{c} \text{H}_3\text{C} \quad \text{CH}_3 \\ \diagdown \quad \diagup \\ \text{C}=\text{C} \\ \diagup \quad \diagdown \\ \text{H} \quad \text{H} \end{array}$	(P)	$\text{H}_2, \text{Pd}-\text{BaSO}_4$
(B)	$\text{H}_3\text{C}-\text{C}\equiv\text{C}-\text{CH}_3 \longrightarrow \begin{array}{c} \text{H}_3\text{C} \quad \text{H} \\ \diagdown \quad \diagup \\ \text{C}=\text{C} \\ \diagup \quad \diagdown \\ \text{H} \quad \text{CH}_3 \end{array}$	(Q)	$\text{Li}, \text{Liq. NH}_3$
(C)	$\text{H}_3\text{C}-\text{CH}=\text{CH}-\text{CH}_3 \longrightarrow \text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_3$	(R)	$\text{N}_2\text{H}_4 / \text{H}_2\text{O}_2$ (1 eq.)
(D)		(S)	$\text{B}_2\text{H}_6, \text{CH}_3\text{COOH}$

(A) (A)→P, Q, S; (B)→R; (C)→R, S; (D)→Q (B) (A)→P, R, S; (B)→Q; (C)→R, S; (D)→Q

(C) (A)→P, R, Q; (B)→Q; (C)→R, S; (D)→S (D) (A)→R, S; (B)→Q; (C)→P, R, Q; (D)→Q

CRD064

15. Match the column-I and Column-II

Column-I (Conversion)		Column-II (Required Reagent)	
(A)	$\begin{array}{c} \text{O} \\ \\ -\text{C}-\text{OH} \end{array} \longrightarrow -\text{CH}_2-\text{OH}$	(P)	LiAlH_4
(B)	$\begin{array}{c} \text{O} \\ \\ -\text{C}-\text{Cl} \end{array} \longrightarrow -\text{CH}_2-\text{OH}$	(Q)	NaBH_4
(C)	$\begin{array}{c} \text{O} \\ \\ -\text{C}-\text{OR}' \end{array} \longrightarrow -\text{CH}_2-\text{OH}$	(R)	$\text{B}_2\text{H}_6 / \text{THF}$
(D)	$\begin{array}{c} \text{O} \\ \\ \text{R}-\text{C} \\ \\ \text{R}-\text{C} \\ \\ \text{O} \end{array} \longrightarrow \text{R}-\text{CH}_2\text{OH}$	(S)	$\text{H}_2 / \text{Catalyst}, \Delta$

(A) (A)→P, R, S; (B)→P, Q, S; (C)→P, R, S; (D)→P, R, S)

(B) (A)→P, Q, S; (B)→P, Q, S; (C)→P, Q, S; (D)→P, R, S)

(C) (A)→P, R, S; (B)→P, R, S; (C)→P, R, S; (D)→P, Q, R)

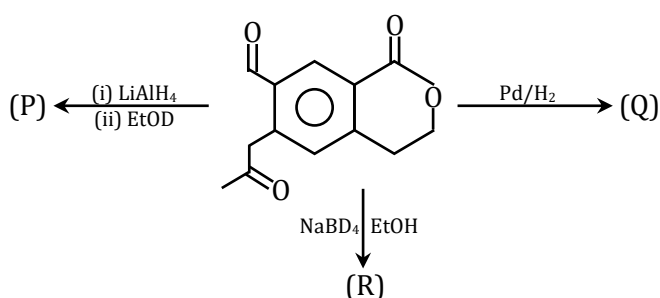
(D) (A)→P, R, S; (B)→P, Q, R; (C)→P, R, S; (D)→Q, R, S)

CRD065

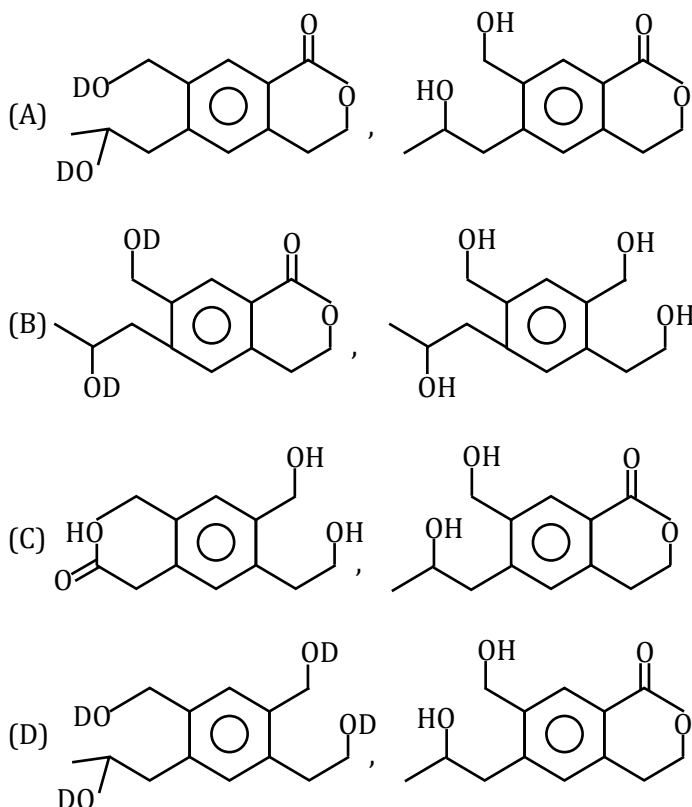
SECTION-IV

- This section contains **ONE** paragraph.
- Based on each paragraph, there are **TWO** questions.
- Each question has **FOUR** options (A), (B), (C) and (D) **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories :
 Full Marks : +3, if only the bubble corresponding to the correct answer is darkened.
 Zero Marks : 0, in all other cases.

Paragraph for Q. 16 and 17

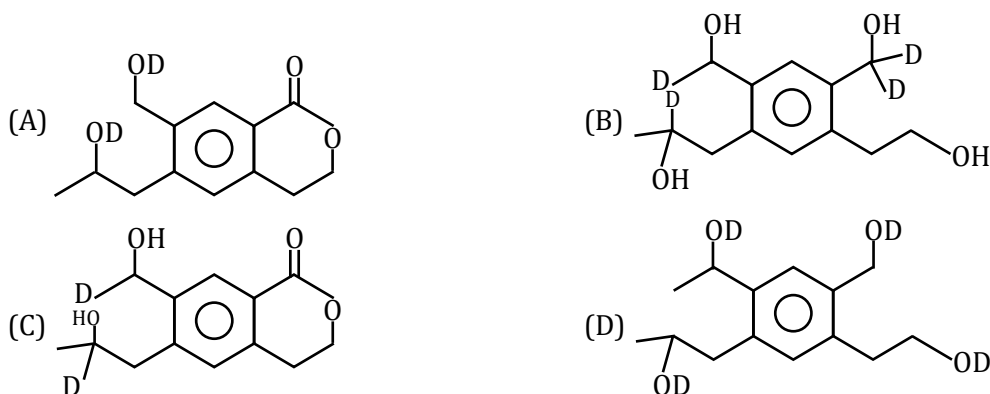


16. (P) and (Q) respectively are



CRD066

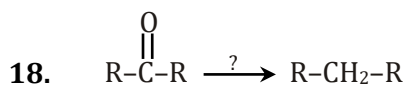
17. (R) is :



CRD067

SECTION-V

- This section contains **THREE** question.
- The answer to each question is a **NUMERICAL VALUE**.
- For each question, enter the correct numerical value (in decimal notation, truncated/rounded-off to the second decimal place; e.g. 6.25, 7.00, -0.33, -0.30, 30.27, -127.30, if answer is 11.36777..... then both 11.36 and 11.37 will be correct).
- Answer to each question will be evaluated according to the following marking scheme:
 Full Marks : +3, if **ONLY** the correct numerical value is entered as answer.
 Zero Marks : 0 in all other cases.



Identify numbers of reagent that can be used for above conversion.

(i) Zn-Hg / HCl

(ii) LiAlH₄

(iii) N₂H₄ / O[⊖]H

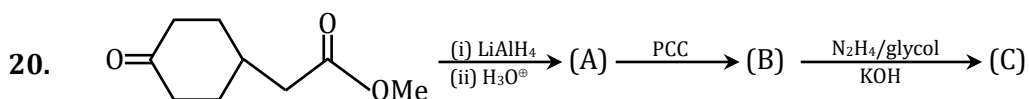
(iv) $\begin{array}{c} \text{CH}_2-\text{SH} \\ | \\ \text{CH}_2-\text{SH} \end{array}, \text{H}_2/\text{Ni}$

CRD068

19. How many alkene on catalytic reduction gives following product.



CRD069



No. of DOU in C is.

CRD070

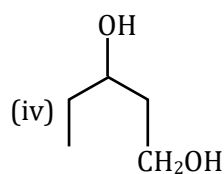
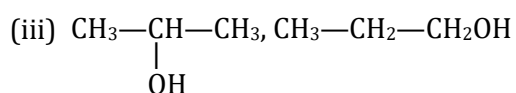
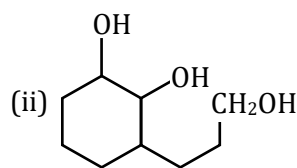
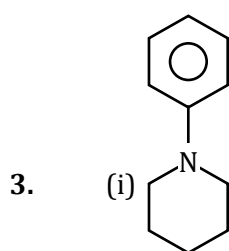
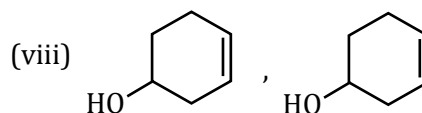
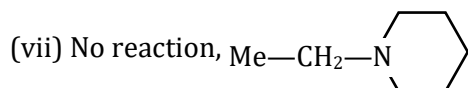
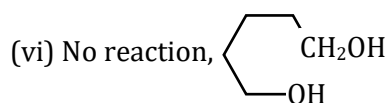
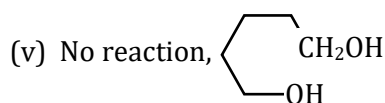
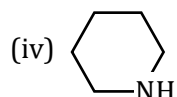
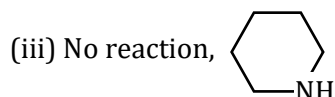
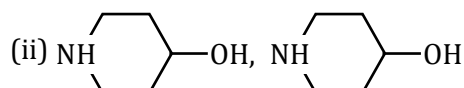
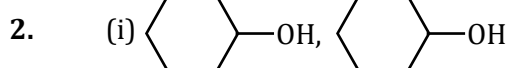
ANSWER KEY

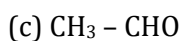
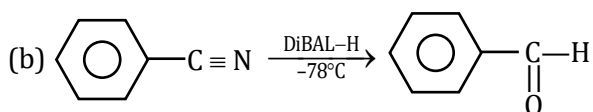
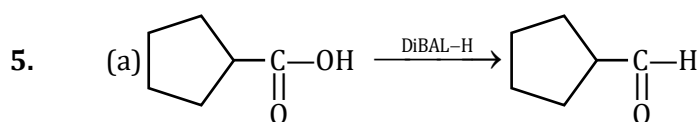
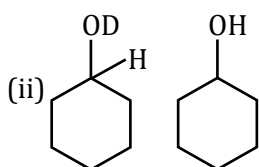
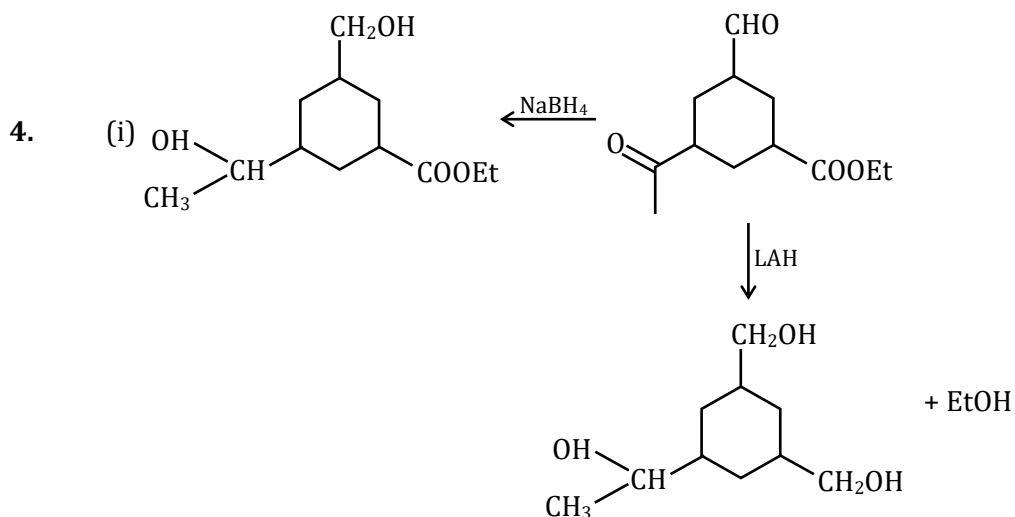
EXERCISE - O

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	A	B	A	B	D	A	A	D	C	D
Que.	11	12	13	14	15	16	17			
Ans.	ABCD	ABC	ABC	ABC	ABD	A	C			
Que.	18				19					
Ans.	(A → S), (B → R), (C → P), (D → Q)				(A→ R), (B→ P), (C→ S), (D→ Q)					

EXERCISE - S

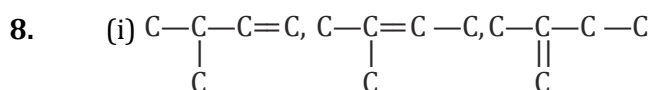
1. 5





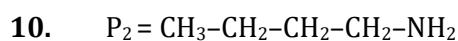
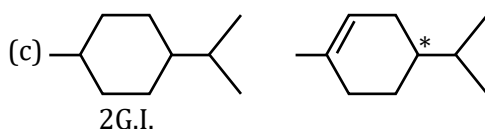
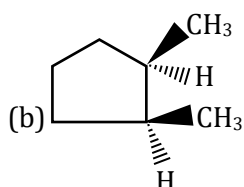
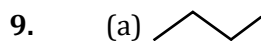
6. 3

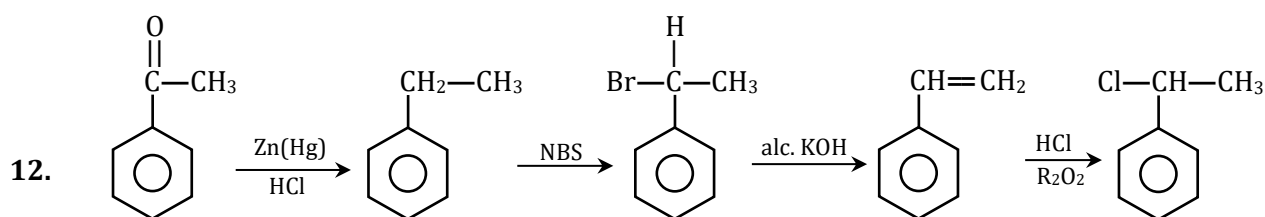
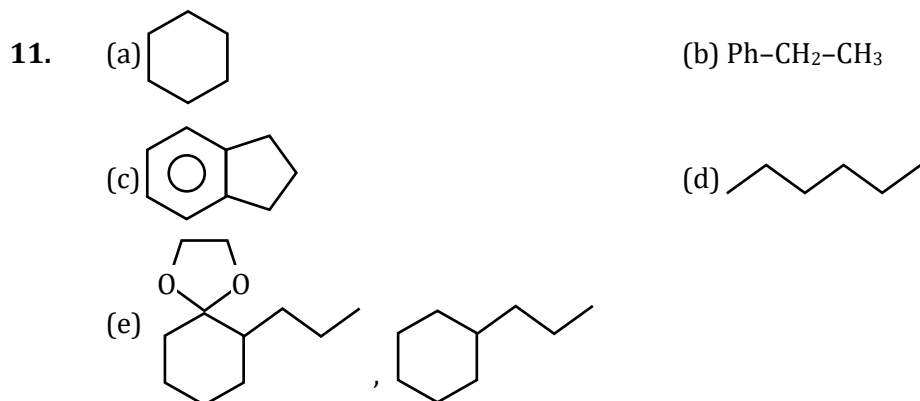
7. 3



(ii) Zero (Neo-pentane cannot be prepared by catalytic hydrogenation of alkene) ;

(iii) One





EXERCISE - JEE (Main) PYQ

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	4	2	2	1	4	2	3	1	4
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	2	3	4	3	2	1	4	1	3	3

EXERCISE - JEE (Advanced) PYQ

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	B	D	A	B	B	D	B	D	A	C
Que.	11	12	13	14	15					
Ans.	5	A	D	B	2					

JEE (Main) Practice Paper

Section-A	Q.	1	2	3	4	5	6	7	8	9	10
	A.	2	1	3	2	2	3	2	3	4	4
	Q.	11	12	13	14	15	16	17	18	19	20
	A.	2	4	2	1	1	4	4	1	3	3
Section-B	Q.	1	2	3	4	5	6	7	8	9	10
	A.	3	2	3	3	3	6	5	6	3	5

JEE (Advanced) Practice Paper

Section-I	Q.	1	2	3	4	5	6	7	8	9	
	A.	C	C	B	D	B	D	D	B	B	
Section-II	Q.	10	11	12	13						
	A.	AB	AD	AB	BC						
Section-III	Q.	14	15								
	A.	B	A								
Section-IV	Q.	16	17								
	A.	D	C								
Section-V	Q.	18	19	20							
	A.	3	4	1							

Important Notes