EXERCISE - O

SINGLE CORRECT TYPE QUESTIONS

Preparation of Grignard reagent & Acid Base Reaction

1. Grignard reagent can be prepared by

(A) $CH_3—CH_2—Cl + Mg \xrightarrow[\text{ether}]{\text{dry}}$

(B) $CH_3—\underset{\underset{Cl}{|}}{CH}—\underset{\underset{OH}{|}}{CH_2} + Mg \xrightarrow[\text{ether}]{\text{dry}}$

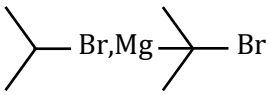
(C) $CH_3—\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}—OH + Mg \longrightarrow$

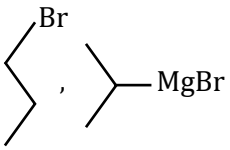
(D) All of them

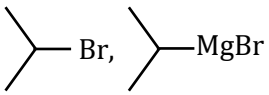
CGR060

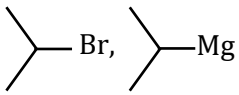
2. $X + Mg \xrightarrow{\text{dry ether}} Y \xrightarrow{D_3O^{\oplus}} CH_3\underset{\underset{D}{|}}{C}HCH_3$

Identify X and Y –

(A) 

(B) 

(C) 

(D) 

CGR061

3. The correct order of reactivity of halides with Mg for the formation of Grignard reagents :-

(A) RI > RCl > RBr (B) RBr > RCl > RI (C) RI > RBr > RCl (D) RCl > RBr > RI

CGR062

4. Propane is not formed when C_3H_7MgBr is treated with :-

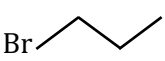
(A) H_2 (B) Phenol (C) Ethanoic acid (D) 1–Butyne

CGR063

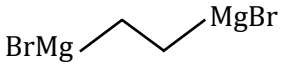
5.  $+ CH_3OH \longrightarrow$ (X) , product (X) is:

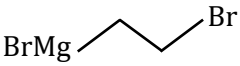
(A)Propane (B) Ethane (C) Butane (D) Propan–2–ol

CGR064

6.  $\xrightarrow[\text{ether}]{\text{Mg}}$ (P)

(P) is :-

(A) 

(B) 

(C) $H_2C{=}CH_2$

(D) All

CGR065

7. $C_2H_5MgBr + CH_3—NH_2 \longrightarrow (P)$

Product (P) is :-

(A) C_2H_6 (B) C_3H_8 (C) $C_2H_5NH_2$ (D) No reaction

CGR066

8. Which gas is released during the following reaction :-

$HC\equiv CH + MeMgBr \longrightarrow$

(A) Ethane (B) Propane (C) Methane (D) Butane

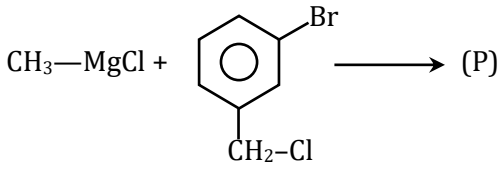
CGR067

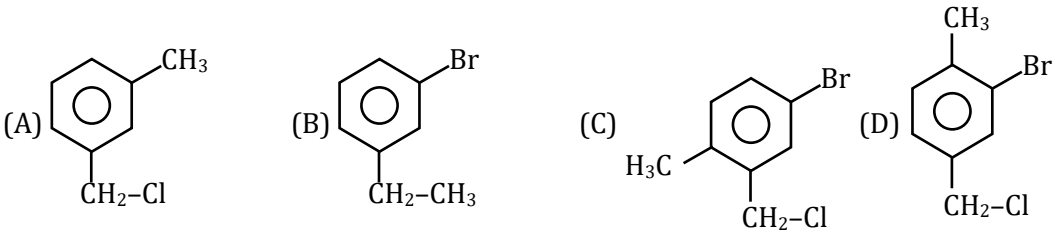
9. Which of the following will undergo acid-base reaction with Grignard reagent :-

(A) $HC\equiv CH$ (B) R–OH (C) $R–CO_2H$ (D) All of these

CGR068

10. Find the major product for the given following reaction :

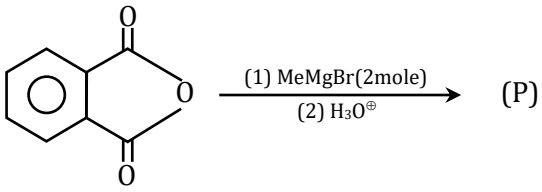


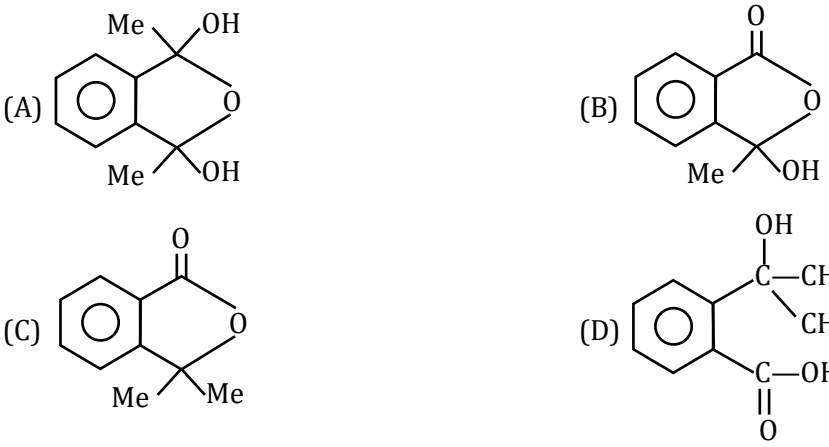


CGR069

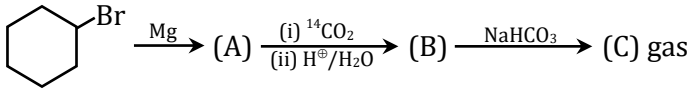
Chemical Reaction of Grignard Reagents (NAER, NAR, SN Reaction)

11. For the reaction the product expected is :





CGR070

12. 

Product C is

(A) CO (B) $^{14}CO_2$

(C) CO_2 (D) A mixture of $^{14}CO_2$ and CO_2

CGR073

Miscellaneous

13. $Br-CH_2C\equiv C-CH_2-Br \xrightarrow[Et_2O]{Mg\ (1mole)}$ Product.

The major product is ?

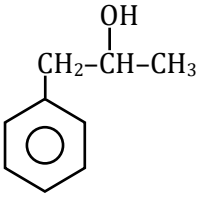
(A) $Br-Mg-CH_2-C\equiv C-CH_2-Br$ (B) Cyclobutyne

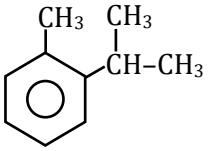
(C) $-\{CH_2-C\equiv C-CH_2\}-n$ (D) $CH_2=C=C=CH_2$

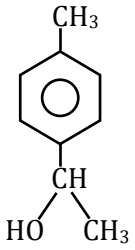
CGR071

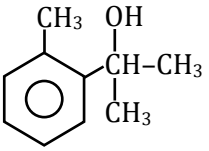
14. Find product C of the following reaction :

$PhCH_3 \xrightarrow[h\nu]{Cl_2}$ (A) $\xrightarrow[ether]{Mg}$ (B) $\xrightarrow[NH_4Cl]{CH_3CHO}$ (C)

(A) 

(B) 

(C) 

(D) 

CGR078

MULTIPLE CORRECT TYPE QUESTIONS

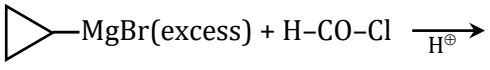
Miscellaneous

15. From which compound Alcohol is formed when RMgX in presence of $H_3O^{\oplus}$is treated with :

(A) Ethanoyl chloride (B) O_2 (C) oxirane (D) trimethyl orthoformate

CGR079

16. In which of the following reactions 3° alcohol will be obtained as a product.

(A) 

(B) $PhMgBr(excess) + CH_3-CO-Cl \xrightarrow{H^{\oplus}}$

(C) $CH_3MgBr(excess) + CH_3-CO-O-CO-CH_3 \xrightarrow{H^{\oplus}}$

(D) $CH_3MgBr(excess) + Cl-CO-OEt \xrightarrow{H^{\oplus}}$

CGR080

17. Select the correct statement :

(A) 1,4–dibromo butane react with excess of magnesium in ether to generate di–Grignard reagent.

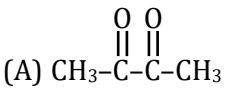
(B) 1,2–dichlorocyclohexane treated with excess of Mg in ether produces cyclohexene.

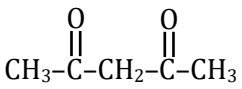
(C) Vicinal dihalides undergo dehalogenation to give alkene when heated with Zn dust or Mg.

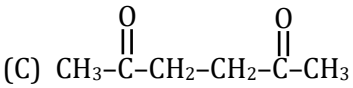
(D) 1,3–dichloropropane by treatment with Zn dust or Mg forms cyclopropane.

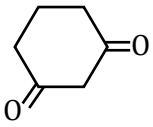
CGR081

18. Nucleophilic addition of Grignard reagent can not occur in

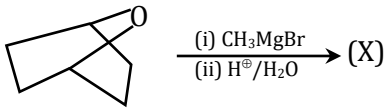
(A) 

(B) 

(C) 

(D) 

CGR082

19. 

Correct statement about X is

(A) The product is optically active.

(B) The product contains plane of symmetry.

(C) The product shown geometrical isomerism.

(D) The product shown optical isomerism.

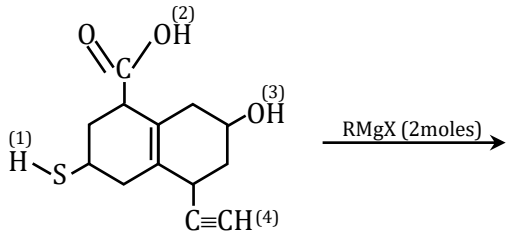
CGR083

EXERCISE - S

Preparation of Grignard reagent & Acid Base Reaction

1. How many total possible Grignard reagent can give 3–methylpentane on treatment with $H^{\oplus}$?

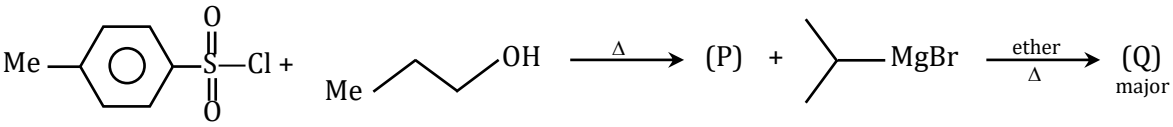
CGR084

2. 

The sum of the positions from where deprotonation will occur is

CGR076

Miscellaneous

3. 

No. of chiral centre in product (Q).

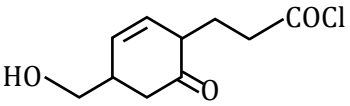
CGR074

4. Compounds are shown with the no. of RMgX required for complete reaction as (x), (y) and (z). what is x+y+z ?

(i) $CH_3COOC_2H_5$ (x) (ii) CH_3COCl (y) (iii) $HOCH_2COOC_2H_5$ (z)

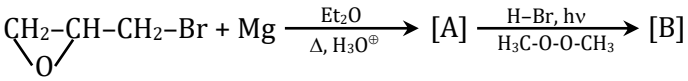
CGR075

5. Number of moles of RMgX required for complete reaction with one mole of the following compound is ?

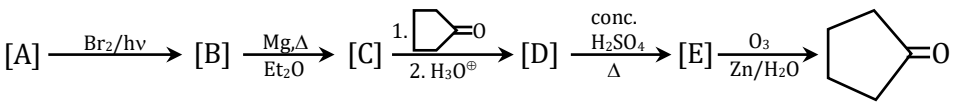


CGR077

6. Choose the final product (B) of the following reaction.

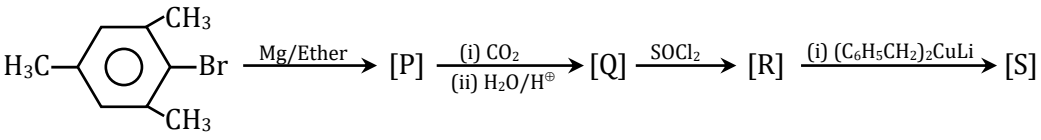


CGR085

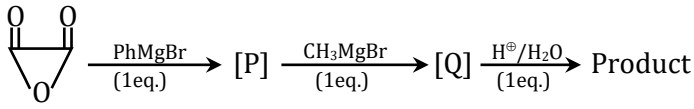
7. 

Select the correct structure of 'A'.

CGR086

8. 

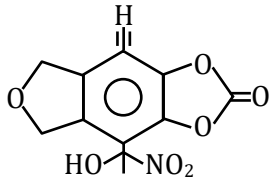
CGR087

9. 

The product formed in the reaction is

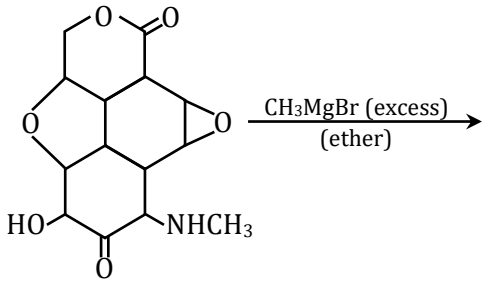
CGR088

10. Calculate the number of molecules of Grignard reagent consumed by 1 molecule of following compound.



CGR089

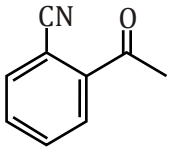
11. Find the number of CH_3MgBr molecules used the given reactant, to react completely.

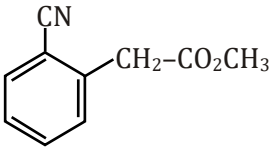


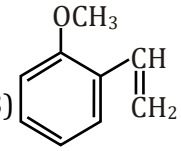
CGR090

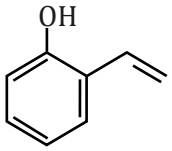
EXERCISE - JEE (Main) PYQ

1. Which of the following compounds reacts with ethylmagnesium bromide and also decolourizes bromine water solution :- **[JEE (Main) 2019]**

(1) 

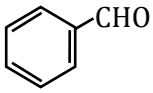
(2) 

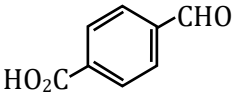
(3) 

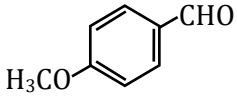
(4) 

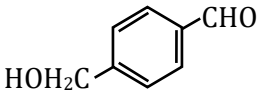
CGR091

2. The aldehydes which will not form Grignard product with one equivalent Grignard reagents are : **[JEE (Main) 2019]**

(A) 

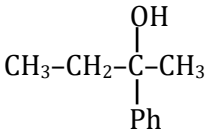
(B) 

(C) 

(D) 

(1) (B), (C), (D) (2) (B), (D) (3) (B), (C) (4) (C), (D)

CGR033

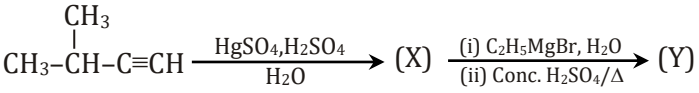
3.  cannot be prepared by : **[JEE (Main) 2019]**

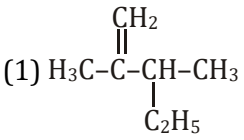
(1) $HCHO + PhCH(CH_3)CH_2MgX$ (2) $PhCOCH_2CH_3 + CH_3MgX$

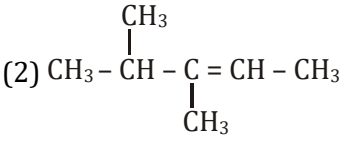
(3) $PhCOCH_3 + CH_3CH_2MgX$ (4) $CH_3CH_2COCH_3 + PhMgX$

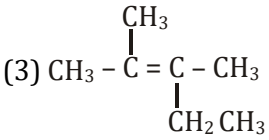
CGR034

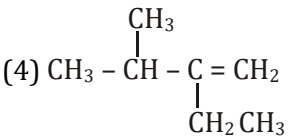
4. The major product (Y) in the following reactions is : **[JEE (Main) 2020]**



(1) 

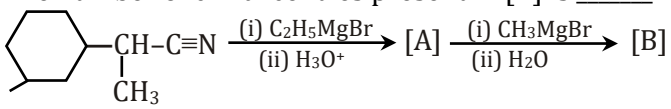
(2) 

(3) 

(4) 

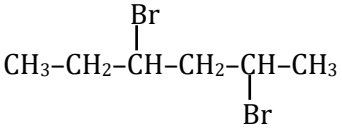
CGR092

5. The number of chiral centres present in [B] is _____. **[JEE (Main) 2020]**

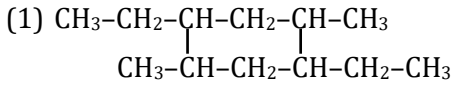


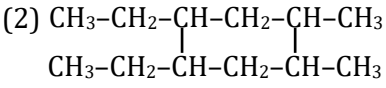
CGR093

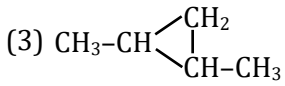
6. The product formed in the first step of the reaction of **[JEE (Main) 2021]**

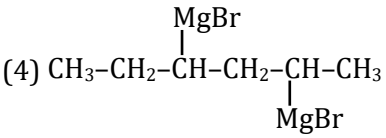


with excess $Mg/Et_2O(Et=C_2H_5)$ is:

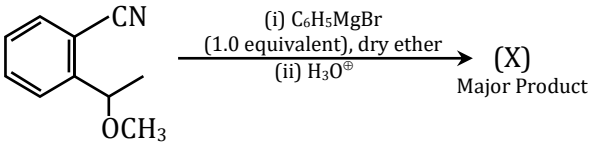
(1) 

(2) 

(3) 

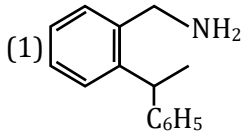
(4) 

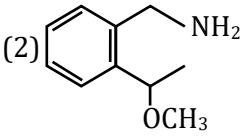
CGR035

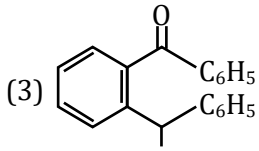
7. 

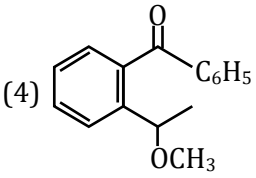
[JEE (Main) 2021]

The structure of X is :

(1) 

(2) 

(3) 

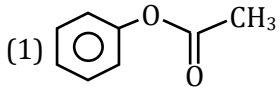
(4) 

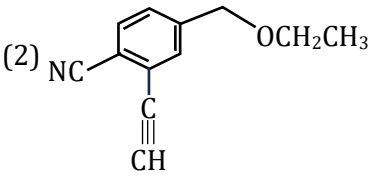
CGR036

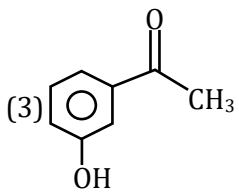
8. To synthesise 1.0 mole of 2-methylpropan-2-ol from Ethylethanoate _____ equivalents of CH_3MgBr reagent will be required. **[JEE (Main) 2021]**

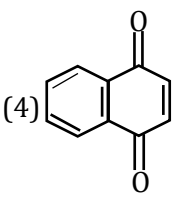
CGR037

9. Which of the following compounds will provide a tertiary alcohol on reaction with excess of CH_3MgBr followed by hydrolysis? **[JEE (Main) 2021]**

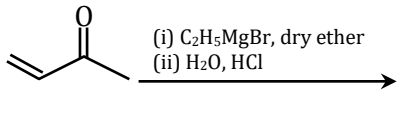
(1) 

(2) 

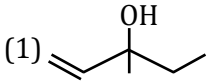
(3) 

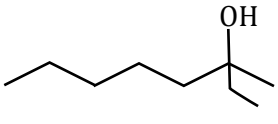
(4) 

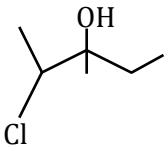
CGR094

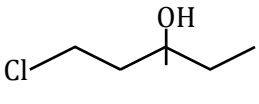
10. 

Consider the above reaction, the major product 'P' is: **[JEE (Main) 2021]**

(1) 

(2) 

(3) 

(4) 

CGR095

11. The correct sequential addition of reagents in the preparation of 3-nitrobenzoic acid from benzene is: **[JEE (Main) 2021]**

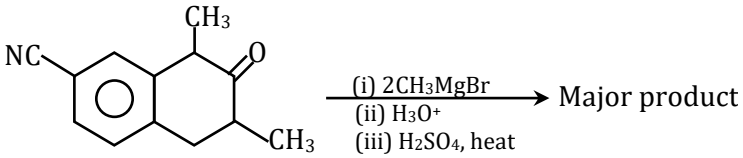
(1) $Br_2/AlBr_3$, HNO_3/H_2SO_4, Mg/ ether, CO_2, H_3O^+
(2) $Br_2/AlBr_3$, NaCN, H_3O^+, HNO_3/H_2SO_4
(3) $Br_2/AlBr_3$, HNO_3/H_2SO_4, NaCN, H_3O^+
(4) HNO_3/H_2SO_4, Br_2/ $AlBr_3$, Mg/ether, CO_2, H_3O^+

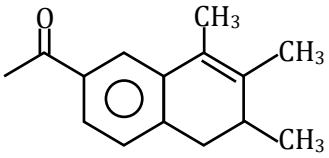
CGR096

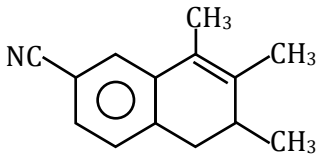
12. Given below are two statements : **[JEE (Main) 2021]**
Statement I : Ethyl pent–4–yn–oate on reaction with CH_3MgBr gives a 3°–alcohol.
Statement II : In this reaction one mole of ethyl pent–4–yn–oate utilizes two moles of CH_3MgBr.
In the light of the above statements, choose the **most appropriate** answer from the options given below :
(1) Both **Statement I** and **Statement II** are false.
(2) **Statement I** is false but **Statement II** is true.
(3) **Statement I** is true but **Statement II** is false.
(4) Both **Statement I** and **Statement II** are true.

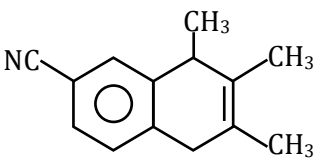
CGR039

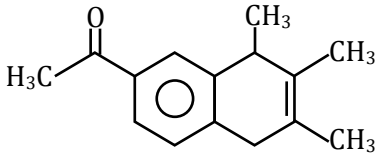
13. Which one of the following is the major product of the given reaction? **[JEE (Main) 2021]**



(1) 

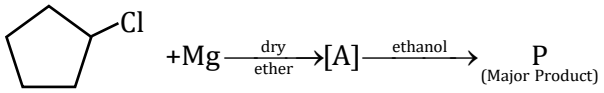
(2) 

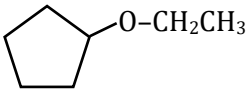
(3) 

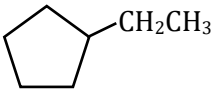
(4) 

CGR097

14. In the following sequence of reactions the P is : **[JEE (Main) 2021]**



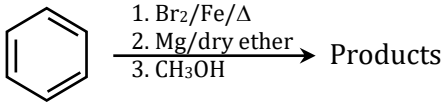
(1) 
(2) 

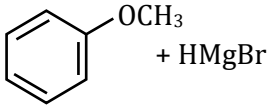
(3) 

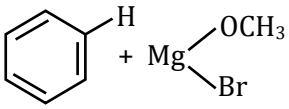
(4) 

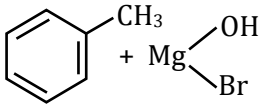
CGR038

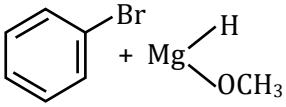
15. For the following : **[JEE (Main) 2021]**



(1) 

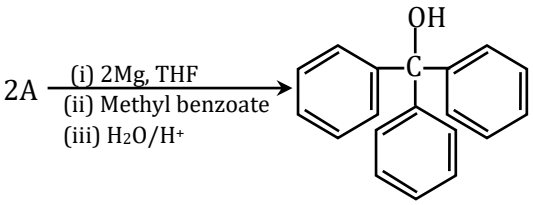
(2) 

(3) 

(4) 

CGR098

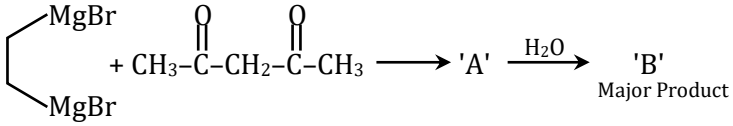
16. In the given reaction **[JEE (Main) 2021]**



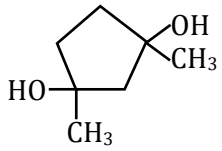
'A' can be

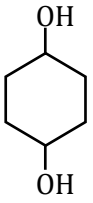
(1) benzyl bromide
(2) bromobenzene
(3) cyclohexyl bromide
(4) methyl bromide

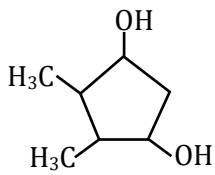
CGR099

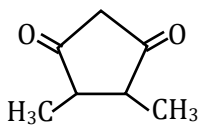
17. 

Consider the above reaction sequence and identify the product B. **[JEE (Main) 2022]**

(1) 

(2) 

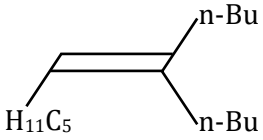
(3) 

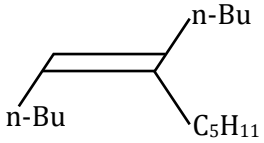
(4) 

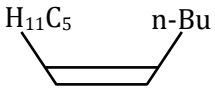
CGR100

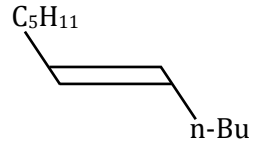
18. What will be the major product of following sequence of reactions? **[JEE (Main) 2022]**

$$n-Bu-\equiv \xrightarrow[(ii)\ Lindlar\ cat,\ H_2]{(i)\ n-BuLi,\ n-C_5H_{11}Cl}$$

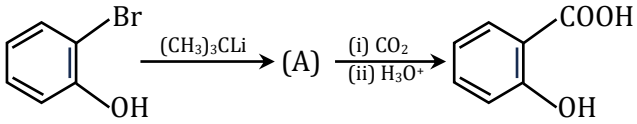
(1) 

(2) 

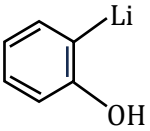
(3) 

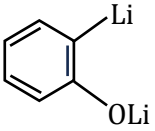
(4) 

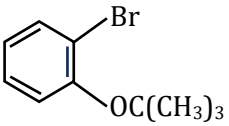
CGR101

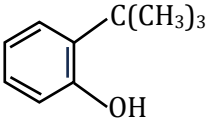
19. 

In the given conversion the compound A is: **[JEE (Main) 2022]**

(1) 

(2) 

(3) 

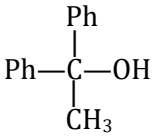
(4) 

CGR102

20. A sample of 4.5 mg of an unknown monohydric alcohol, R–OH was added to methylmagnesium iodide. A gas is evolved and is collected and its volume measured to be 3.1 mL. The molecular weight of the unknown alcohol is ___ g/mol. [Nearest integer] **[JEE (Main) 2022]**

CGR103

21. Which reactant will give the following alcohol on reaction with one mole of phenyl magnesium bromide (PhMgBr) followed by acidic hydrolysis ? **[JEE (Main) 2022]**



(1) $CH_3-C\equiv N$

(2) $Ph-C\equiv N$

(3) $CH_3-\overset{\overset{O}{\|}}{C}-O-Ph$

(4) $Ph-\overset{\overset{O}{\|}}{C}-CH_3$

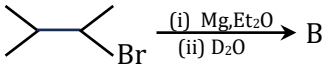
CGR104

22. A 100 mL solution of CH_3CH_2MgBr on treatment with methanol produces 2.24 mL of a gas at STP. The weight of gas produced is _____ mg. [nearest integer] **[JEE (Main) 2022]**

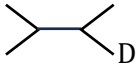
CGR105

23. Compound 'A' undergoes following sequence of reactions to give compound 'B'. The correct structure and chirality of compound 'B' is: **[JEE (Main) 2022]**

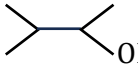
[where Et is $-C_2H_5$]



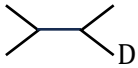
Compound 'A'

(1) 

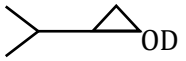
, Achiral

(2) 

, Chiral

(3) 

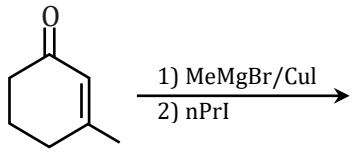
, Chiral

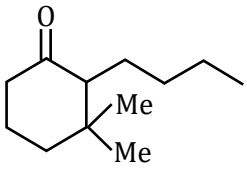
(4) 

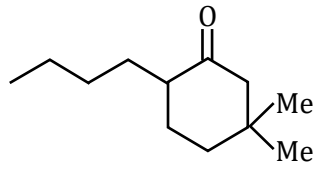
, Achiral

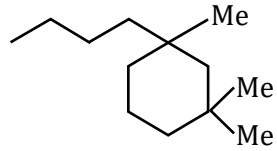
CGR106

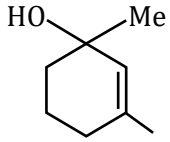
24. Find out the major product from the following reaction **[JEE (Main) 2023]**



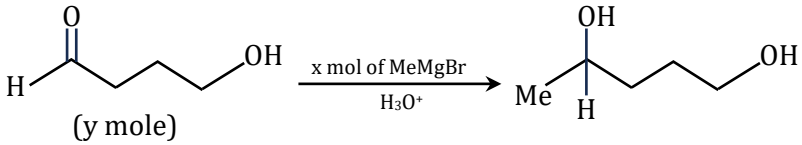
(1) 

(2) 

(3) 

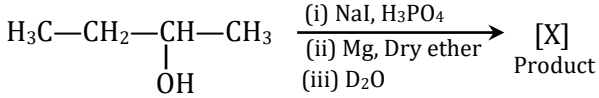
(4) 

CGR107

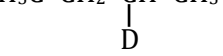
25. 

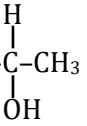
The ratio x/y on completion of the above reaction is _____. **[JEE (Main) 2023]**

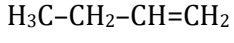
CGR108

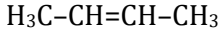
26. 

Product [X] formed in the above reaction is : **[JEE (Main) 2023]**

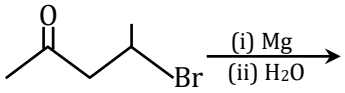
(1) 

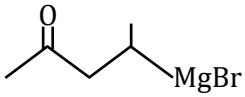
(2) 

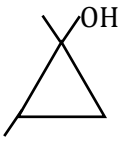
(3) 

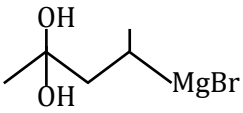
(4) 

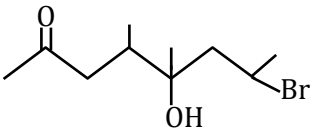
CGR109

27.  'A' (Major Product) A is **[JEE (Main) 2023]**

(1) 

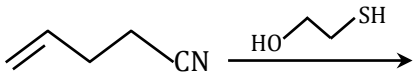
(2) 

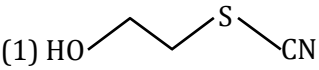
(3) 

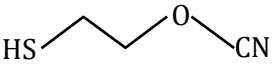
(4) 

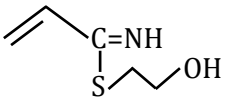
CGR110

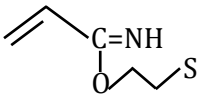
28. The major product for the following reaction is: **[JEE (Main) 2023]**



(1) 

(2) 

(3) 

(4) 

CGR111

EXERCISE - JEE (Advanced) PYQ

1. $(CH_3)_3CMgCl$ reaction with D_2O produces:

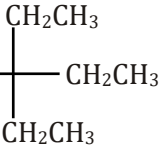
[IIT 1997]

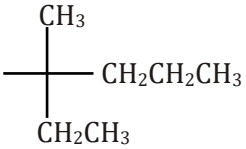
(A) $(CH_3)_3CD$ (B) $(CH_3)_3OD$ (C) $(CD_3)_3CD$ (D) $(CH_3)_3OD$

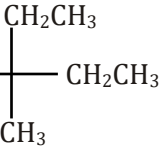
CGR058

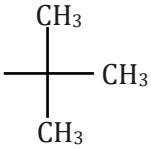
2. CH_3MgBr + Ethyl ester $\rightarrow$ which can be formed as product?
(excess)

[IIT 2003]

(A) 

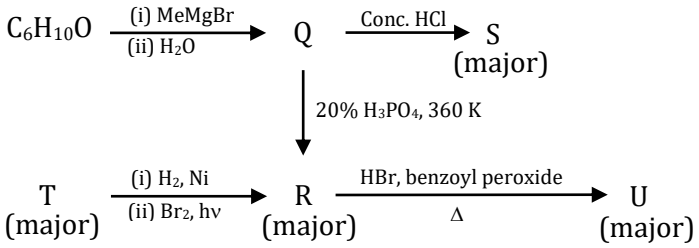
(B) 

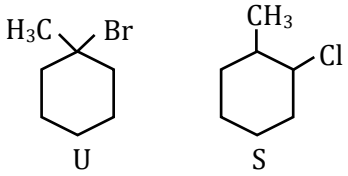
(C) 

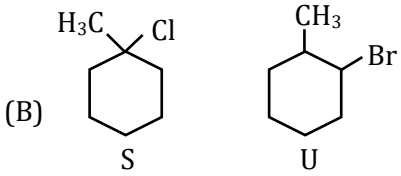
(D) 

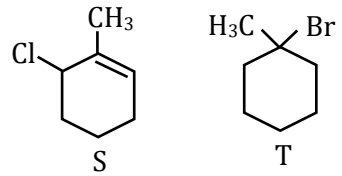
CGR059

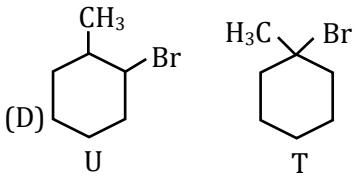
3. Choose the correct option(s) for the following set of reactions **[JEE (Advanced) 2019]**



(A) 

(B) 

(C) 

(D) 

CGR112

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

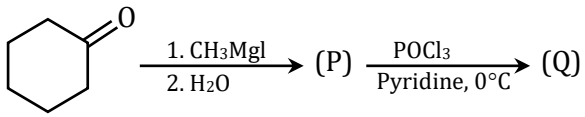
1. Compound P and R in the following reaction are

$$CH_3CHO \xrightarrow[(ii)\ H_2O]{(i)\ CH_3MgBr} (P) \xrightarrow[\Delta]{H_2SO_4} (Q) \xrightarrow[oxidation]{Hydroboration} (R)$$

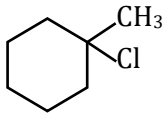
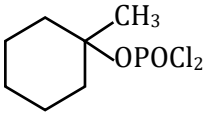
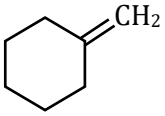
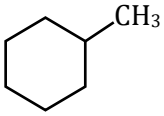
(1) identical
(2) positional isomer
(3) functional isomers
(4) optical isomers

CGR001

2. Consider the following reaction sequence,

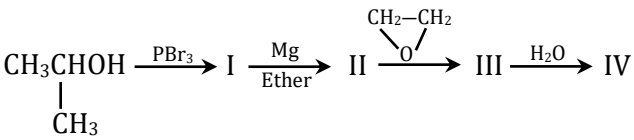


The product (Q) is-

(1) 
(2) 
(3) 
(4) 

CGR002

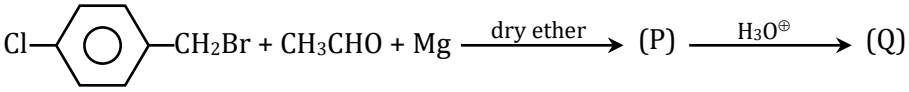
3. The final product (IV) in the sequence of reactions is :



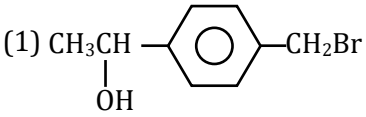
(1) $CH_3—\underset{\displaystyle CH_3}{\underset{|}{C}}HOCH_2CH_2OH$
(2) $CH_3—\underset{\displaystyle CH_3}{\underset{|}{C}}HCH_2CH_2Br$
(3) $CH_3—\underset{\displaystyle CH_3}{\underset{|}{C}}H—CH_2CH_2OH$
(4) $CH_3—\underset{\displaystyle CH_3}{\underset{|}{C}}HOCH_2CH_3$

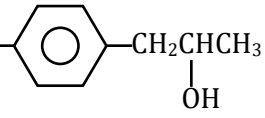
CGR003

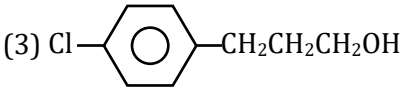
4. In the reaction

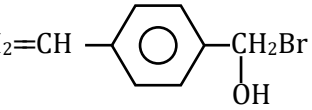


the product (Q) is:

(1) 

(2) 

(3) 

(4) 

CGR004

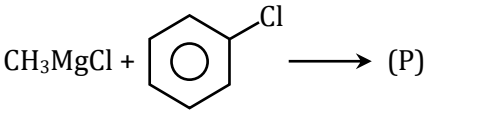
5. Find the major product for the given following reaction :

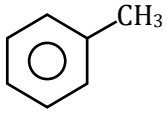
$CH_3—MgCl + SnCl_4 \longrightarrow (P)$

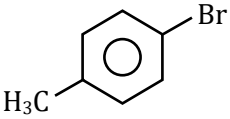
(1) $Sn(CH_3)$ (2) $Sn(CH_3)_2$ (3) $Sn(CH_3)_3$ (4) $Sn(CH_3)_4$

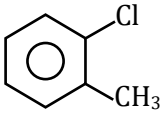
CGR005

6. Find the major product for the given following reaction :



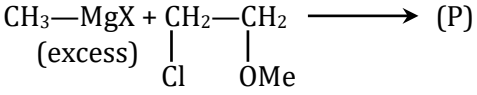
(1) 

(2) 

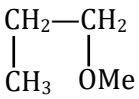
(3) 

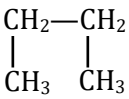
(4) No reaction

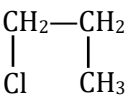
CGR006

7. 

Find product (P)

(1) 

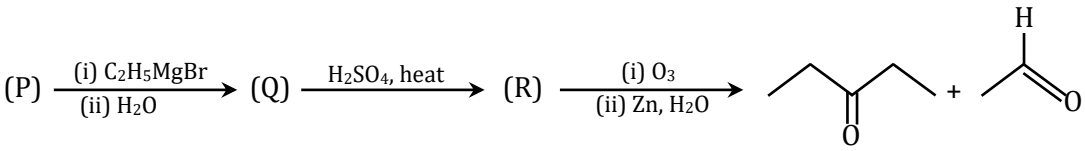
(2) 

(3) 

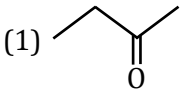
(4) None of these

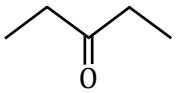
CGR007

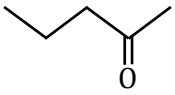
8. Consider the following sequence of reactions.



The ketone (P) is :

(1) 

(2) 

(3) 

(4) 

CGR008

9. Reactivity of EtMgBr with the following in the decreasing order is:

(i) HCHO (ii) MeCHO (iii) Me–CO–Me (iv) Cl_3C–CHO

(1) (i) > (ii) >(iii) > (iv) (2) (iv) > (iii) > (ii) > (i)

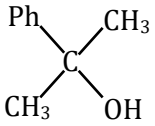
(3) (iv) > (i) > (ii) > (iii) (4) (iii) > (ii) > (i)> (iv)

CGR009

10. In the following reaction sequence

$Ph-C\equiv CH \xrightarrow[Hg^{2\oplus}]{aq.H_2SO_4} (P) \xrightarrow[2.\ H_2O]{1.\ CH_3MgI} (Q)$ the product (Q) is:

(1) $PhCOCH_3$ (2) $PhCH_2CHOHCH_3$

(3)  (4) $PhCH_2COCH_3$

CGR010

11. Which of the following products is formed when benzaldehyde is treated with CH_3MgBr and the addition product so obtained is subjected to acid hydrolysis

(1) Secondary alcohol (2) A primary alcohol

(3) Phenol (4) Tert-Butyl alcohol

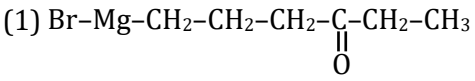
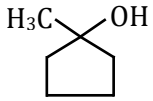
CGR011

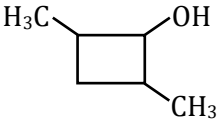
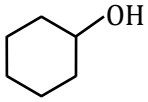
12. Which carbonyl compound (s) can be used to produce 2-Phenylbutan-2-ol on reaction with a suitable Grignard reagent?

(1) CH_3–CO–CH_2–CH_3 (2) Ph–CO–CH_3 (3) Ph–CO–CH_2–CH_3 (4) All of these

CGR012

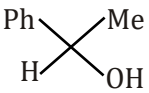
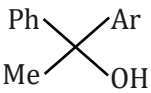
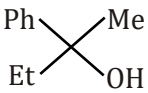
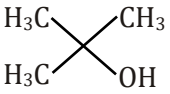
13. 6-Bromo-2-hexanone is treated with magnesium in presence of THF produce X as major product. What is X.

(1)  (2) 

(3)  (4) 

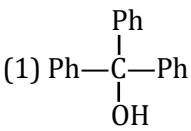
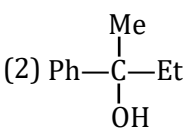
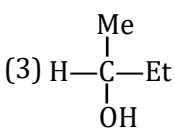
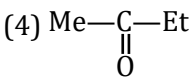
CGR013

14. Phenyl acetate $\xrightarrow[(ii)\,H^{\oplus}]{(i)\,CH_3MgBr(excess)}$ 'P', 'P' can be

(1)  (2)  (3)  (4) 

CGR014

15. An acid halide (X) reacts with excess of Grignard reagent (Y), the product can be

(1)  (2)  (3)  (4) 

CGR015

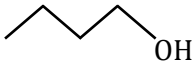
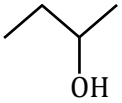
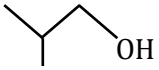
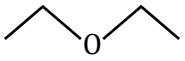
16. Which of the following can not react with Grignard reagent:

(1)  (2) D_2O (3) $CH_2=CH_2$ (4) Phenol

CGR016

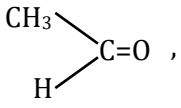
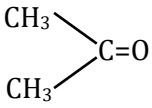
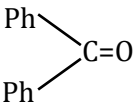
17. $C_4H_{10}O + CH_3MgBr \longrightarrow$ No Reaction
(Y) (Excess)

Y is :

(1)  (2)  (3)  (4) 

CGR017

18. The order of reactivity of phenyl magnesium bromide (PhMgBr) with the following compounds :

 ,  and 

I II III

(1) III > II > I (2) II > I > III (3) I > III > II (4) I > II > III

CGR018

19. Arrange the following compounds in decreasing order of nucleophilic addition reaction ?

(P) $CH_3–CHO$ (Q) $CH_3–CO–CH_3$ (R) $COCl_2$ (S) Ph–CHO

(1) R>P>S>Q (2) P>Q>R>S (3) Q>R>S>P (4) R>S>P>Q

CGR019

20. Which of the following can give a Grignard reagent when reacted with magnesium in dry ether?

(1) C_2H_6 (2) C_2H_5Cl (3) C_2H_5OH (4) C_2H_5CN

CGR020

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

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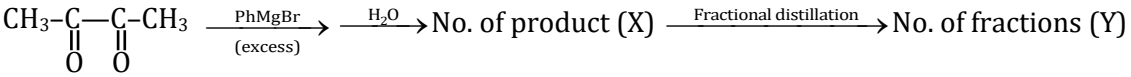
1. How many carbonyl compounds will give secondary alcohol with molecular formula $C_5H_{12}O$ after reaction with CH_3MgBr followed by hydrolysis.

CGR021

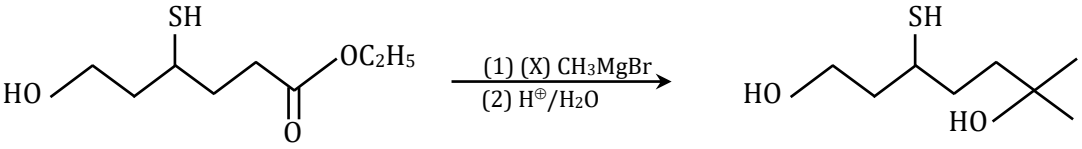
2. 

Report your answer as XY.

CGR022

3. How many butyl bromide can be converted into Grignard reagent followed by their reaction with acid to form n-Butane.

CGR023

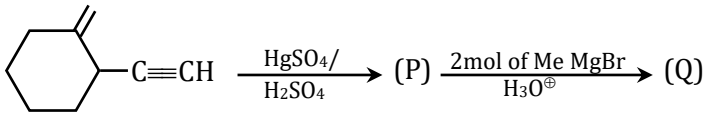
4. 

Determine the value of X

CGR024

5. How many alkyl chlorides would yield 3-methylpentane on conversion into the Grignard reagent followed by treatment with absolute ethanol?

CGR025

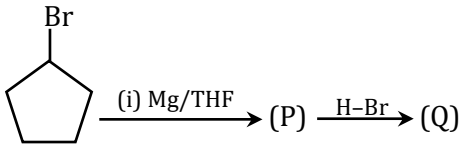
6. 

Number of 3° Alcohol formed in product Q

CGR026

7. How many carbonyl isomers of $C_5H_{10}O$ reacts with PhMgBr to give racemic mixture (excluding steroisomer).

CGR027

8. 

No. of sp^3 hybridized carbon in (Q) is :–

CGR028

9. How many moles of methane is formed when one mole of lactic acid reacts with excess methyl magnesium chloride ?

CGR029

10. The number of moles of Grignard reagent consumed per mole of the compound is

$CH_2(OH)–CH_2–CO–CH_2–CH_2–COEt$

CGR030

JEE (Advanced) Practice Paper

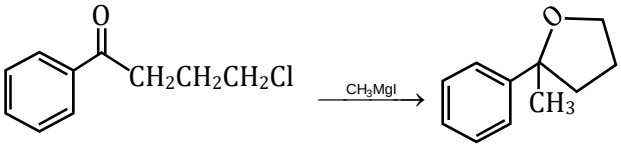
This paper is for yourself practice and assessment the discussion of this paper is optional though you can see PDF solutions or video solutions or solutions in hardcopy whichever is provided.

SECTION–I

- This section contains **FOUR** 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:

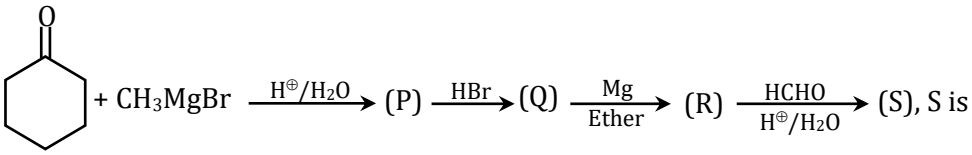
Full Marks : +3, if only the bubble corresponding to the correct option is darkened.
Zero Marks : 0, if none of the bubbles is darkened.
Negative Marks : –1, in all other cases

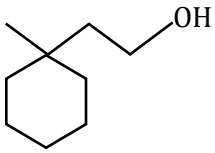
1. Which of the following is incorrect regarding the given reaction?

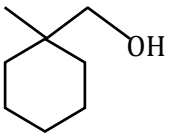


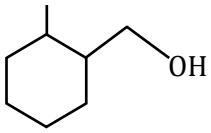
(A) Nucleophilic substitution
(B) Intramolecular nucleophilic attack
(C) Dehydration
(D) Nucleophilic addition

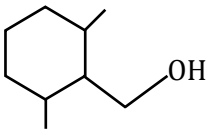
CGR040

2. 

(A) 

(B) 

(C) 

(D) 

CGR041

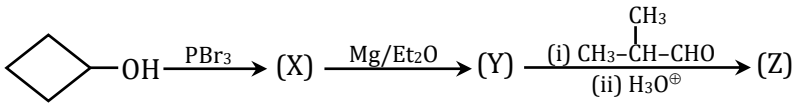
3. Arrange these compounds in decreasing order of reactivity for the nucleophilic attack :

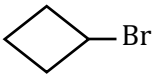
(I) Acid chloride (II) Aldehyde (III) Ketone (IV) Ester

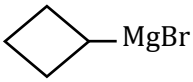
Select the correct answer from the codes given below:

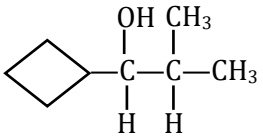
(A) I > II > III > IV
(B) IV > III > II > I
(C) III > II > I > IV
(D) I > IV > II > III

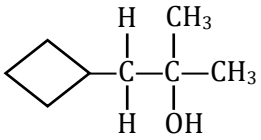
CGR042

4. 

(I) Y is 

(II) Y is 

(III) Z is 

(IV) Z is 

Select the correct code for given reaction.

(A) I and III (B) II and IV (C) I and IV (D) II and III

CGR043

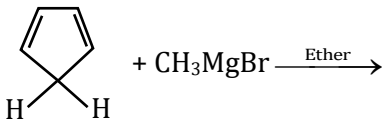
SECTION-II

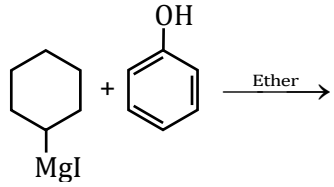
- This section contains **SIX** questions.
- Each question has **FOUR** options for correct answer(s). **ONE OR MORE THAN ONE** of these four option(s) is (are) correct option(s).
- For each question, choose the correct option(s) to answer the question.
- Answer to each question will be evaluated according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

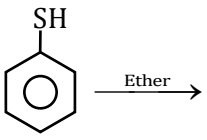
Full Marks	: +4, if only (all) the correct option(s) is (are) chosen.
Partial Marks	: +3, if all the four options are correct but ONLY three options are chosen.
Partial Marks	: +2, if three or more options are correct but ONLY two options are chosen, both of which are correct options.
Partial Marks	: +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	: –2, in all other cases.

5. Select the reaction in which one organometallic compound produces another organometallic compound.

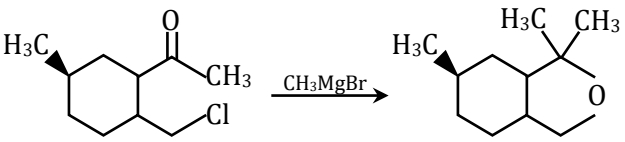
(A) $CH_3MgBr + HC{\equiv}C{-}Ph \xrightarrow{Ether}$

(B) 

(C) 

(D) $CH_3CH_2Na +$ 

CGR044

6. 

Correct statement(s) is/are

(A) Nucleophilic addition (B) Nucleophilic substitution reaction

(C) Carbanion is intermediate (D) Product obtained is chiral

CGR045

7. Select the correct statement about Grignard reagent.

(A) In Grignard reagent 3 and 4 membered cyclic ethers can not be used as a solvent.

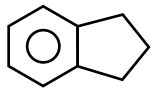
(B) In case of Grignard reagent any alkyl, aryl, vinyl, allyl group can not be taken as organic part.

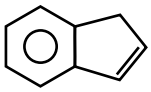
(C) Grignard reagent can not be prepared from alkyl or aryl fluorides.

(D) The role of ether is to solvolyse RMgX and also provide medium for reaction.

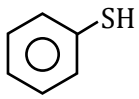
CGR046

8. Which of the following compound gives methane on treatment with CH_3MgI?

(A) 

(B) 

(C) 

(D) 

CGR047

9. Phenyl magnesium bromide reacts with phenyl acetylene, which of the following is/are expected as the product.

(A) Benzene (B) Hydrocarbon (C) Grignard reagent (D) Alkyne

CGR048

10. Compound $CH_3-CH_2-\underset{\underset{Ph-CH-OH}{|}}{CH}-CH_3$ can be prepared by

(A) $CH_3-CH_2-\underset{\underset{CH_3}{|}}{CH}-CHO \xrightarrow[(ii)\ H_3O^{\oplus}]{(i)\ PhMgBr}$

(B) $CH_3-\underset{\underset{MgBr}{|}}{CH}-CH_3 \xrightarrow[(ii)\ H_3O^{\oplus}]{(i)\ PhCH_2CHO}$

(C) $Ph-COCH_3 \xrightarrow[(ii)\ H_3O^{\oplus}]{(i)\ CH_3CH_2-\underset{\underset{MgBr}{|}}{\overset{\overset{CH_3}{|}}{C}}H}$

(D) $PhCHO \xrightarrow[(ii)\ H_3O^{\oplus}]{(i)\ CH_3-CH_2-\underset{\underset{MgBr}{|}}{\overset{\overset{CH_3}{|}}{C}}H}$

CGR049

SECTION–III

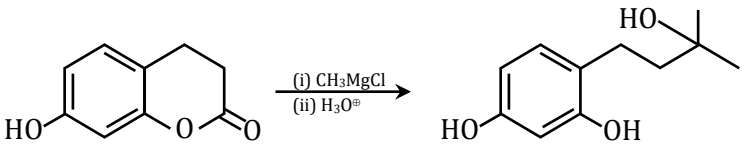
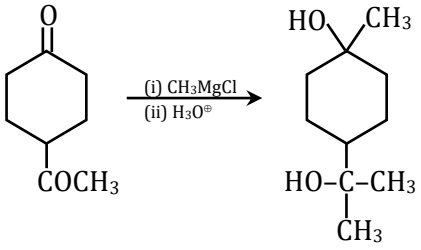
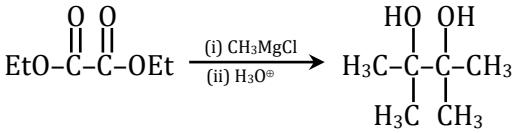
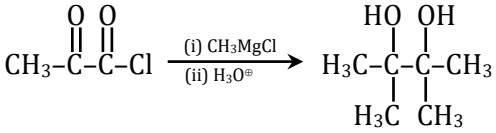
- This section contains **TWO** questions.
- **Each question has matching lists**. The codes for the lists have choices (A), (B), (C) and (D) out of which **ONLY ONE is correct**
- For each question, marks will be awarded in one of the following categories :

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.

11. Match the column–I and column–II

	Column–I (Reaction)		**Column–II (No. of moles of CH_3MgCl reacted)**
(A)		(p)	4
(B)		(q)	3
(C)		(r)	2
(D)		(s)	5
		(t)	1

(A) A-q, B–r, C–p, D–q

(B) A-t, B–r, C–p, D–s

(C) A-s, B–t, C–p, D–q

(D) A-q, B–r, C–t, D–s

CGR050

12. Match the List–I and List–II

	List–I		**List–II**
(A)	C_2H_5Cl	(1)	Williamson synthesis
(B)	R–X+Mg+dry ether	(2)	Wurtz reaction
(C)	$C_2H_5Cl+C_2H_5ONa$	(3)	Anaesthetic
(D)	RX+Na+dry ether	(4)	Antiseptic
		(5)	Grignard reagent

The correct match is

	A	B	C	D
(A)	4	5	1	2
(C)	3	4	1	2

	A	B	C	D
(B)	5	3	1	2
(D)	3	5	1	4

CGR051

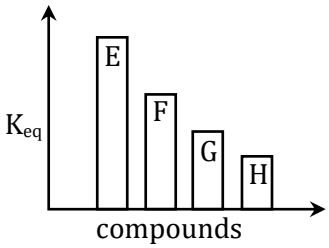
SECTION-IV

- This section contains **TWO** paragraphs.
- Based on each paragraph, there are **FOUR** 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.

Passage for Ques. 13-14

The relative comparison of equilibrium constants of addition of RMgBr on four carbonyl compounds has been shown by the graph below.



13. Which compound corresponds to H if the four given compounds are:

(A) p-$NO_2C_6H_4CHO$ (B) C_6H_5CHO
(C) p-$MeOC_6H_4CHO$ (D) CH_3CH_2CHO

CGR052

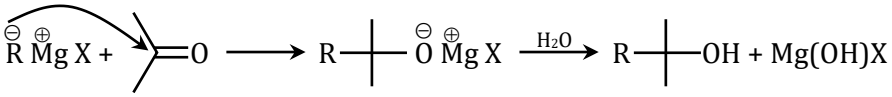
14. Which compound corresponds to G if the four given compounds are:

(A) CH_3CHO (B) $C_6H_5COCH_3$
(C) C_6H_5CHO (D) $C_6H_5COC_6H_5$

CGR053

Passage for Ques. 15-16

Grignard reagents resemble carbanion hence they act as strong nucleophiles as well as strong bases. They give nucleophilic addition reactions with compounds containing hetero multiple bonds such as carbonyl compounds. The addition products on acidic hydrolysis give alcohols. They readily take part in acid–base reactions with compounds containing acidic hydrogens.



15. Which of the following compound will not give acid–base reaction with RMgX ?

(A) $CH_3–CH_2–CN$ (B) $CH_3–CO–CH_2–CO–CH_3$
(C) $CH_3–NO_2$ (D) CH_3OH

CGR054

16. Which of the following compounds give racemic mixture on reaction with methyl magnesium bromide?

(A) HCHO (B) $CH_3–CO–CH_3$ (C) Ph–CHO (D) $CH_3–COCl$

CGR055

SECTION-V

- This section contains **TWO** questions.
- 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, –.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.

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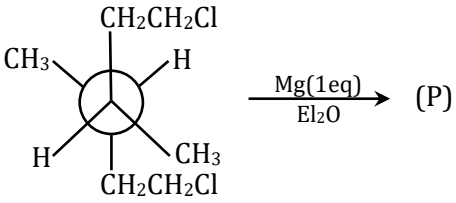
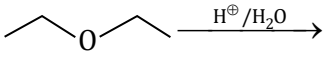
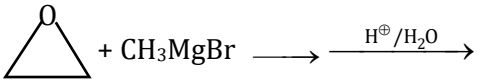
17. 

Total no. of stereoisomer in product (P)

CGR056

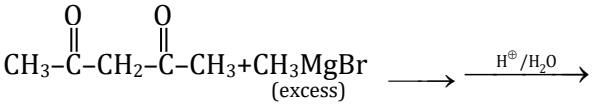
18. How many these reactions will give 1° alcohol as major product :

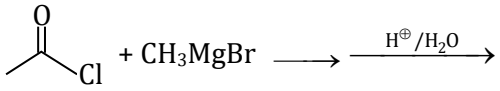
(A) 

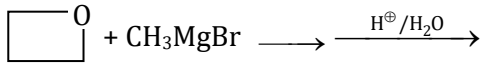
(B) 

(C) $HCHO + CH_3MgBr \longrightarrow \xrightarrow{H^{\oplus}/H_2O}$

(D) $CH_3CHO + CH_3MgBr \longrightarrow \xrightarrow{H^{\oplus}/H_2O}$

(E) 

(F) 

(G) 

(H) $CH_3CH_2Br \xrightarrow{NaOH(Aq.)}$

(I) $CH_3MgBr + CO_2 \longrightarrow \xrightarrow{H^{\oplus}/H_2O}$

CGR057

ANSWER KEY

EXERCISE - O

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	A	C	C	A	A	C	A	C	D	B
Que.	11	12	13	14	15	16	17	18	19	
Ans.	D	C	D	A	ABC	BCD	ABCD	BD	BC	

EXERCISE - S

1. (8)

2. (3)

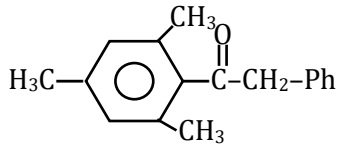
3. (0)

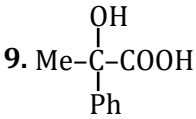
4. (7)

5. (4)

6. $HO-H_2C-CH_2-CH_2-Br$

7. 

8. 

9. 

10. (5)

11. (6)

EXERCISE - JEE (Main) PYQ

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	2	1	3	4	4	4	2	1	3
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	4	3	1	1	2	2	1	3	2	33
Que.	21	22	23	24	25	26	27	28		
Ans.	4	3	3	1	2	1	4	1		

EXERCISE - JEE (Advanced) PYQ

Que.	1	2	3	
Ans.	A	D	BD	

JEE (Main) Practice Paper

Section-A	**Q.**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	A.	2	1	3	2	4	4	1	2	3	3
	Q.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
	A.	1	4	2	4	1	3	4	4	1	2
Section-B	**Q.**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	A.	2	32	3	4	8	2	6	5	2	3

JEE (Advanced) Practice Paper

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

Important Notes