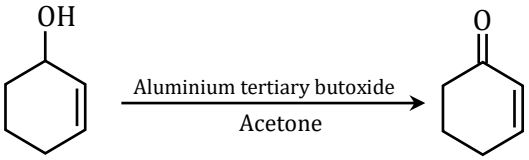
EXERCISE - O

SINGLE CORRECT TYPE QUESTIONS

Oxidation of Alcohol

1. The given reaction

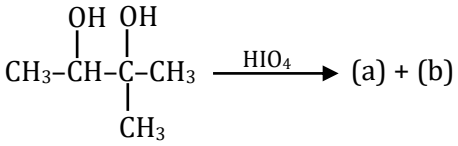


is knows as :

(A) Kolbe reaction
(B) Tischenko reaction
(C) MPV reaction
(D) Oppeneur oxidation

COX001

2. In the given reaction :



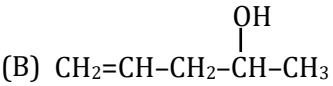
(a) and (b) respectively be :

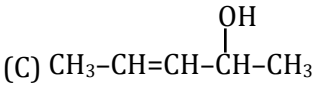
(A) CH_3CHO and CH_3CHO
(B) CH_3COCH_3 and CH_3CHO
(C) CH_3COCH_3 and CH_3COCH_3
(D) CH_3COOH and CH_3COCH_3

COX002

3. Which one of the following alcohols are oxidised by MnO_2?

(A) $C_6H_5–CH_2–CH_2–OH$

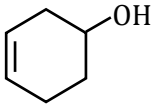
(B) 

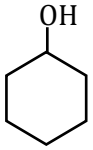
(C) 

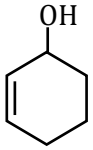
(D) $CH_3–CH_2 – CH_2 –OH$

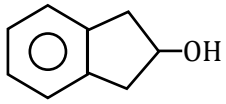
COX007

4. Which of the following can be oxidised by MnO_2:

(A) 

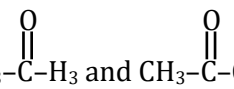
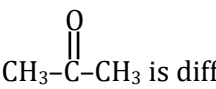
(B) 

(C) 

(D) 

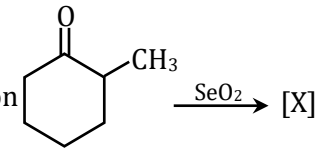
COX009

Oxidation of Aldehyde and ketone

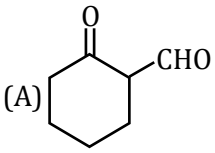
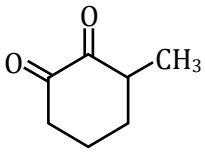
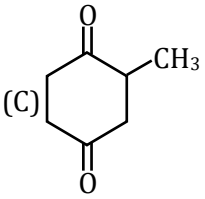
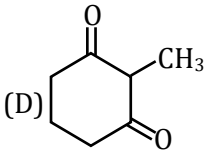
5.  and  is differentiated by

(A) Tollen's reagent (B) Lucas test (C) Iodoform test (D) $NaHSO_3$ test

COX003

6. In the given reaction  [X]

[X] will be :

(A) 
(B) 
(C) 
(D) 

COX004

7. Which will give silver mirror test with Tollens reagent :

(A) C_6H_5CHO (B) $CH_3–CHO$ (C) HCOOH (D) All of these

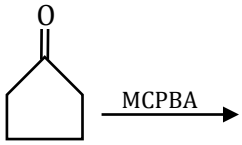
COX005

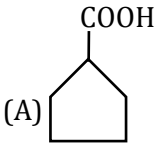
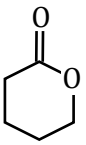
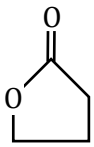
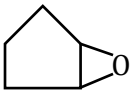
8. Which one of the following compounds will give dimethyl glyoxal with SeO_2:

(A) Acetone (B) Acetophenone
(C) Ethyl methyl ketone (D) Propanaldehyde

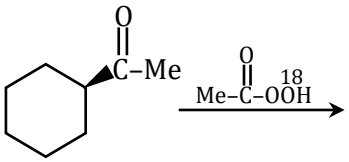
COX006

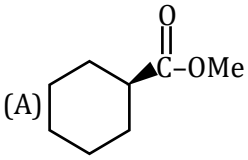
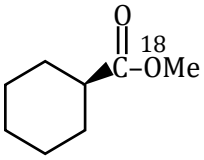
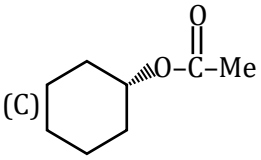
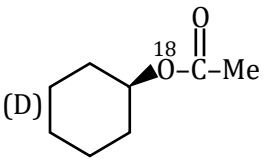
Miscellaneous Oxidising agent

9.  Major product is :

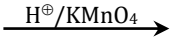
(A) 
(B) 
(C) 
(D) 

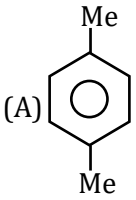
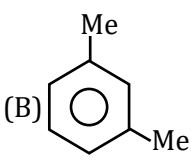
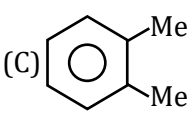
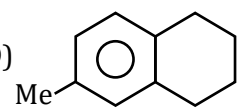
COX008

10.  Major product is :

(A) 
(B) 
(C) 
(D) 

COX010

11. A  B  Phthalic Anhydride ; A is :

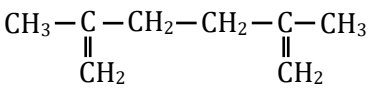
(A) 
(B) 
(C) 
(D) 

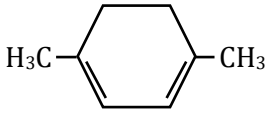
COX011

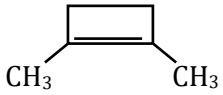
MULTIPLE CORRECT TYPE QUESTIONS

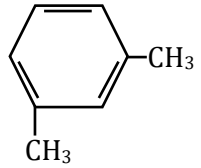
Oxidation of Alkene

12. An organic compound on reaction with O_3 followed by Zn and H_2O gives $CH_3COCH_2CH_2COCH_3$. The structure(s) is/are

(A) 

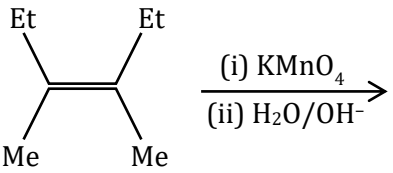
(B) 

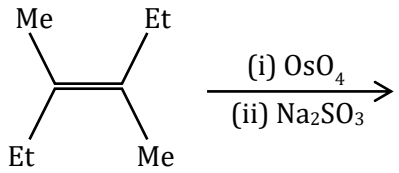
(C) 

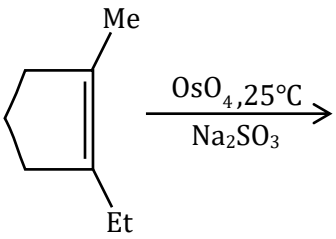
(D) 

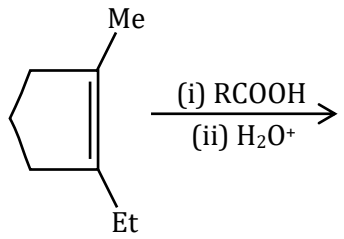
COX076

13. Which of the following give syn addition ?

(A) 

(B) 

(C) 

(D) 

COX077

14. On oxidation, an unknown alkane C_8H_{16} gives a mixture of propanoic acid and pentanoic acid. The unknown alkene can be

(A) cis-3-octene
(B) trans-3-octene
(C) cis-4-octene
(D) trans-4-octene

COX078

Oxidation of Alcohol

15. Propan-1-ol and Propan-2-ol can be best distinguished by

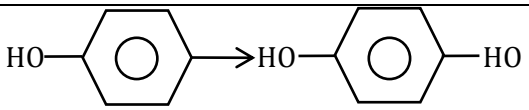
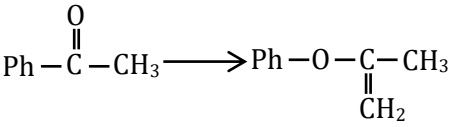
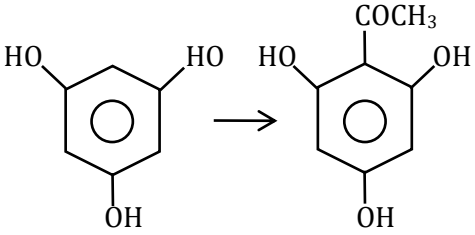
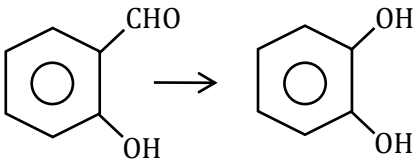
(A) oxidation with alkaline $KMnO_4$ followed by reaction with H_2O
(B) oxidation with PCC followed by reaction with Tollen's reagent
(C) oxidation by heating with copper followed by reaction with iodoform test
(D) reaction with cone. H_2SO_4 followed by reaction with Fehling solution.

COX079

MATRIX MATCH TYPE QUESTION

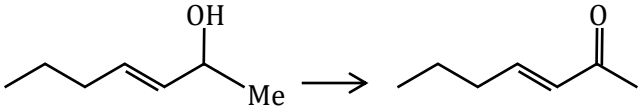
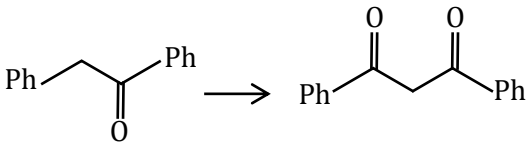
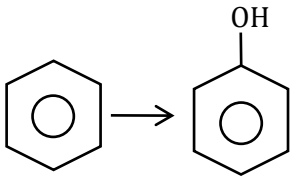
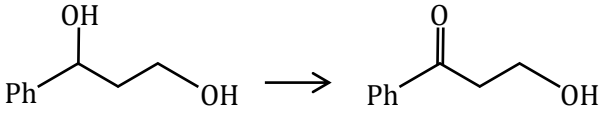
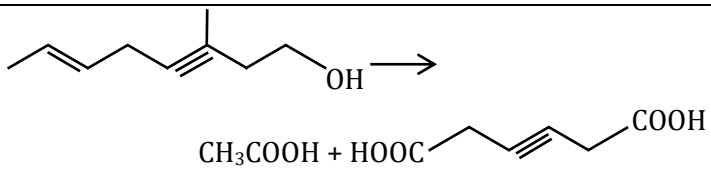
Oxidation of Alcohol

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

Column I		Column II		Column III	
a.		p.	H_2O_2 + NaOH	i.	Elbs persulphate oxidation
b.		q.	$CH_3 - C \equiv N$, $ZnCl_2/HCl$	ii.	Baeyer-Villiger oxidation
c.		r.	$K_2S_2O_8$ + NaOH	iii.	Houben-Roesch synthesis
d.		s.	Per acid	iv.	Dakin reaction

COX080

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

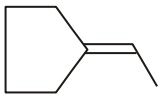
Column I		Column II	
a.		p.	MnO_2
b.		q.	$FeSO_4$ and H_2O_2 (fenton's reagent)
c.		r.	Jones reagent (H_2CrO_4 in aq. acetone)
d.		s.	$CrCO_3$ in glacial acetic acid
e.		t.	SeO_2/MeCOOH

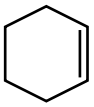
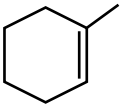
COX081

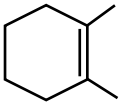
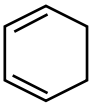
EXERCISE - S

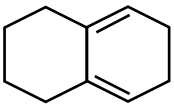
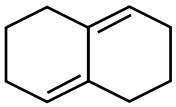
Oxidation of Alkene

1. (i) $CH_2 = CH_2 \xrightarrow{H^{\oplus}/KMnO_4}$ (ii) $CH_3–CH= CH_2 \xrightarrow{H^{\oplus}/KMnO_4}$

(iii)  $\xrightarrow{H^{\oplus}/KMnO_4}$ (iv)  $\xrightarrow{H^{\oplus}/KMnO_4}$

(v)  $\xrightarrow{H^{\oplus}/KMnO_4}$ (vi)  $\xrightarrow{H^{\oplus}/KMnO_4}$

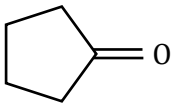
(vii)  $\xrightarrow{H^{\oplus}/KMnO_4}$ (viii)  $\xrightarrow{H^{\oplus}/KMnO_4}$

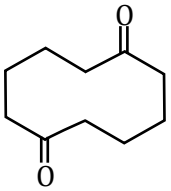
(ix)  $\xrightarrow{H^{\oplus}/KMnO_4}$ (x)  $\xrightarrow{H^{\oplus}/KMnO_4}$

COX082

2. A to D alkenes with minimum possible carbon.

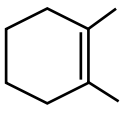
(i) A $\xrightarrow[\Delta]{H^{\oplus}/KMnO_4}$ MeCOOH as the only product

(ii) B $\xrightarrow[\Delta]{H^{\oplus}/KMnO_4}$  as the only product

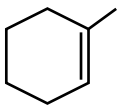
(iii) C $\xrightarrow[\Delta]{H^{\oplus}/KMnO_4}$ 

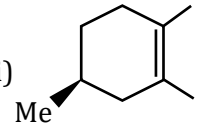
(iv) D $\xrightarrow[\Delta]{H^{\oplus}/KMnO_4}$ Acetone + Ethanoic acid

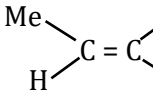
COX083

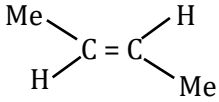
3. (i)  $\xrightarrow[KMnO_4]{1\%\text{ alkaline}}$ A

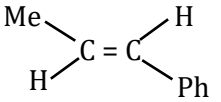
 $\xrightarrow{m\text{-CPBA}/H_3O^+}$ B

(ii)  $\xrightarrow{m\text{-CPBA}}$

(iii)  $\xrightarrow[\text{hydrolysis}]{m\text{-CPBA}}$

(iv)  $\xrightarrow[\text{hydrolysis}]{m\text{-CPBA}}$

(v)  $\xrightarrow[\text{hydrolysis}]{m\text{-CPBA}}$

(vi)  $\xrightarrow[\Delta]{Ag_2O \text{ or } 2Ag\frac{1}{2}O_2}$

COX084

Oxidation of Alcohol

4. (i) $CH_3-CH_2-CH_2-OH \xrightarrow{KMnO_4/OH^-,\Delta} ?$

$\xrightarrow[\text{or conc. } HNO_3,\ \Delta \text{ or } KMnO_4/H^+,\Delta]{K_2Cr_2O_7/H^+,\Delta}$

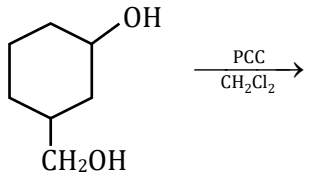
(ii) $CH_3-\underset{OH}{\underset{|}{CH}}-\underset{OH}{\underset{|}{CH}}-CH_2-CH_3 \xrightarrow[\text{or } K_2Cr_2O_7,H^\oplus]{KMnO_4,H^\oplus} ?$

COX085

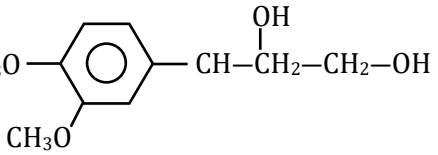
5. (i) $CH_2=CH-(CH_2)_3-CH_2-OH \xrightarrow[\text{in glacial acetic acid}]{\text{Chromic anhydride}}$

(ii) $C_6H_5-CH=CH-CH_2-OH \xrightarrow[\text{in glacial acetic acid}]{\text{Chromic anhydride}}$

(iii) $CH_3-\underset{OH}{\underset{|}{CH}}-CH_2-CH_2-CH_2-OH \xrightarrow[CH_2Cl_2]{PCC}$ (A)

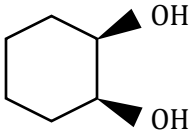
(iv)  $\xrightarrow[CH_2Cl_2]{PCC}$

(v) $CH_2=CH-CH_2-OH \xrightarrow{MnO_2} ?$

(vi)  $\xrightarrow[\text{Acetone}]{MnO_2} ?$

COX086

6. (i) $Me-\underset{OH}{\underset{|}{CH}}-CH_2-OH \xrightarrow[\Delta]{HIO_4}$

(ii)  $\xrightarrow[\Delta]{HIO_4}$

(iii) $HO-CH_2-CH_2-\underset{OH}{\underset{|}{CH}}-CH_2-OH \xrightarrow[\Delta]{HIO_4}$

(iv) $\underset{OH}{\underset{|}{CH_2}}-\underset{OH}{\underset{|}{CH}}-\underset{OH}{\underset{|}{CH}}-CH_3 \xrightarrow[\Delta]{HIO_4}$

(v) $\underset{OH}{\underset{|}{CH_2}}-\underset{OH}{\underset{|}{CH}}-\underset{OH}{\underset{|}{CH}}-\underset{OH}{\underset{|}{CH_2}} \xrightarrow[\Delta]{HIO_4}$

(vi) $Me-\underset{O}{\underset{\|}{C}}-\underset{OH}{\underset{|}{CH}}-Me \xrightarrow[\Delta]{HIO_4}$

(vii) $Me-\underset{O}{\underset{\|}{C}}-\underset{O}{\underset{\|}{C}}-Me \xrightarrow[\Delta]{HIO_4}$

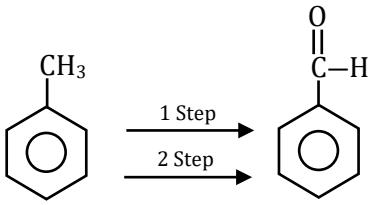
COX087

Oxidation of Aldehyde and ketone

7. (a) $CH_3-CHO \xrightarrow[\Delta]{SeO_2}$

(b) $Me_2CO \xrightarrow[\Delta]{SeO_2}$

(c) $CH_3-CH=CH_2 \xrightarrow{?}$ Acrolein

(d) 

(e) $CH_3-\overset{O}{\overset{\|}{C}}-H \xrightarrow{SeO_2} P_1 \xrightarrow{\text{Conc. NaOH}} \underset{\underset{COO^-Na^+}{|}}{CH_2OH} \xrightarrow{H^+/\Delta} P_2$

COX088

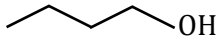
8. (a) How will you differentiate HCHO and PhCHO ?

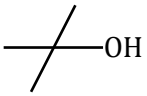
(b) How will you differentiate HCHO and MeCHO ?

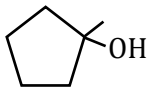
COX089

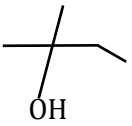
EXERCISE - JEE (Main) PYQ

1. Which of the following will change the colour of acidic dichromate solution. **[JEE (Main) 2013]**

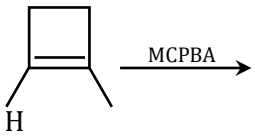
(1) 

(2) 

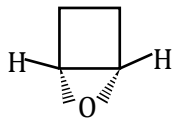
(3) 

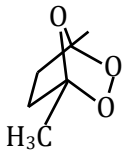
(4) 

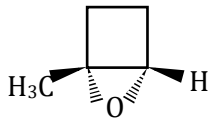
COX032

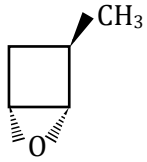
2. 

Product **[JEE (Main) 2013]**

(1) 

(2) 

(3) 

(4) 

COX033

3. The most suitable reagent for the conversion of $R–CH_2–OH \rightarrow R–CHO$ is :- **[JEE (Main) 2014]**

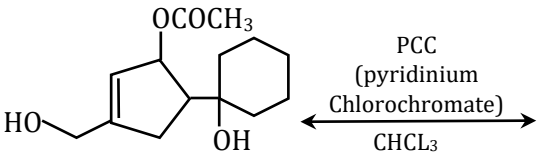
(1) CrO_3 (2) PCC (Pyridinium chlorochromate)

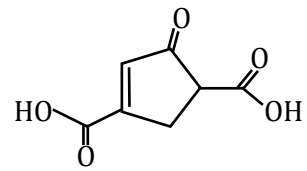
(3) $KMNO_4$ (4) $K_2Cr_2O_7$

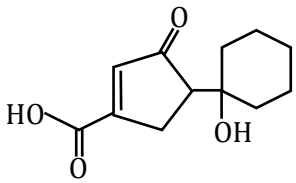
COX034

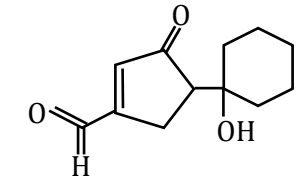
4. The major product formed in the following reaction is :-

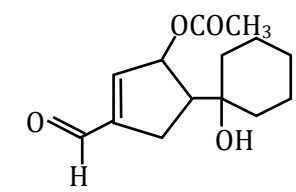
[JEE (Main) 2018]



(1) 

(2) 

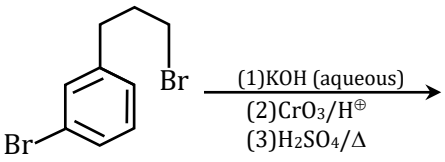
(3) 

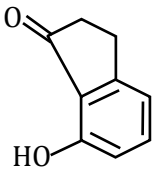
(4) 

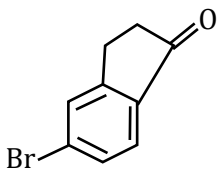
COX035

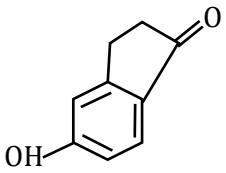
5. The major product of the following reaction is:

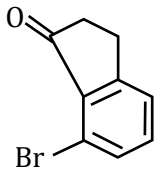
[JEE (Main) 2019]



(1) 

(2) 

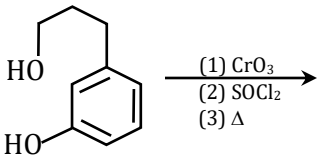
(3) 

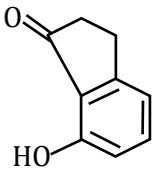
(4) 

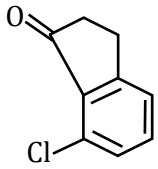
COX036

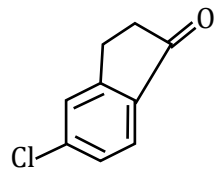
6. The major product of the following reaction

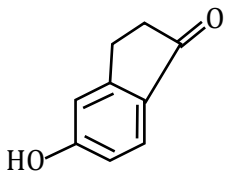
[JEE (Main) 2019]



(1) 

(2) 

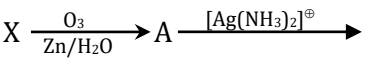
(3) 

(4) 

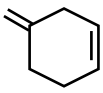
COX037

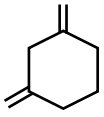
7. An unsaturated hydrocarbon X absorbs two hydrogen molecules on catalytic hydrogenattion, and also gives following reaction :

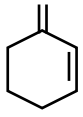
[JEE (Main) 2020]

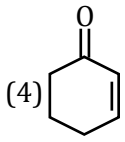


B (3-oxo-hexanedicarboxylic acid)
X will be :-

(1) 

(2) 

(3) 

(4) 

COX038

8. Which of the following reagent is used for the following reaction ? **[JEE (Main) 2021]**

$CH_3CH_2CH_3 \xrightarrow{?} CH_3CH_2CHO$

(1) Manganese acetate
(2) Copper at high temperature and pressure
(3) Molybdenum oxide
(4) Potassium permanganate

COX039

9. Which one of the following reactions will not form acetaldehyde? **[JEE (Main) 2021]**

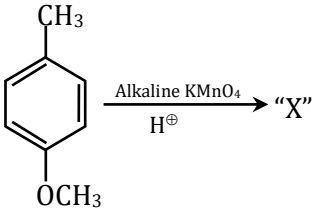
(1) $CH_3CH_2OH \xrightarrow[573K]{Cu}$
(2) $CH_3CN \xrightarrow[(ii)\ H_2O]{(i)\ DIBAL-H}$
(3) $CH_2=CH_2 + O_2 \xrightarrow[(ii)\ H_2O]{(i)\ pd\ (ii)\ /\ Cu(ii)}$
(4) $CH_3CH_2OH \xrightarrow{CrO_3-H_2SO_4}$

COX040

10. Given below are two statements : **[JEE (Main) 2021]**

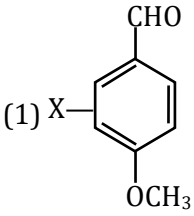
Statement-I : 2-methylbutane on oxidation with $KMnO_4$ gives 2-methylbutan-2-ol.
Statement-II : n-alkanes can be easily oxidised to corresponding alcohols with $KMnO_4$.
Choose the correct option :
(1) Both statement I and statement II are correct
(2) Both statement I and statement II are incorrect
(3) Statement I is correct but Statement II is incorrect
(4) Statement I is incorrect but Statement II is correct

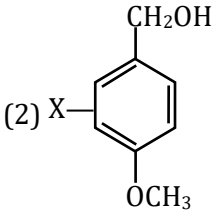
COX041

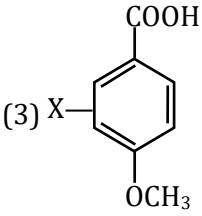
11. 

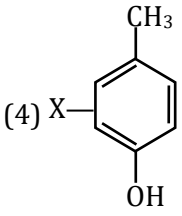
[JEE (Main) 2021]

Considering the above chemical reaction, identify the product "X" :

(1) 

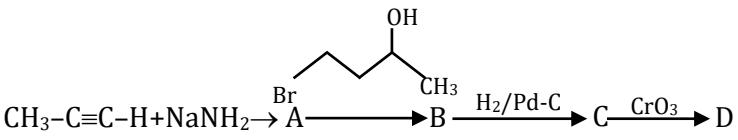
(2) 

(3) 

(4) 

COX042

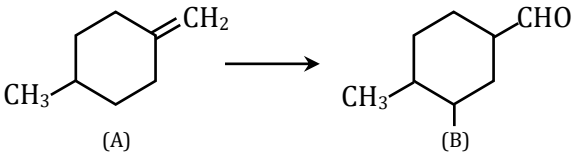
12. In the following sequence of reactions, the final product D is : **[JEE (Main) 2021]**



(1) $CH_3-CH_2-CH_2-CH_2-CH_2-\overset{O}{\overset{\|}{C}}-H$
(2) CH_3-CH=CH-CH_2-CH_2-CH_2-COOH
(3) H_3C-CH=CH-CH(OH)-CH_2-CH_2-CH_3
(4) $CH_3-CH_2-CH_2-CH_2-CH_2-\overset{O}{\overset{\|}{C}}-CH_3$

COX043

13. Which of the following reagents/ reactions will convert 'A' to 'B'? **[JEE (Main) 2022]**



(1) PCC oxidation

(2) Ozonolysis

(3) BH_3, H_2O_2 / ^-OH followed by PCC oxidation

(4) HBr, hydrolysis followed by oxidation by $K_2Cr_2O_7$

COX044

14. 'A' and 'B' respectively are: **[JEE (Main) 2022]**

$A \xrightarrow[(2)\ Zn-H_2O]{(1)\ O_3}$ Ethane-1,2-dicarbaldehyde + Glyoxal/Oxaldehyde

$B \xrightarrow[(2)\ Zn-H_2O]{(1)\ O_3}$ 5-oxohexanal

(1) 1-methylcyclohex-1, 3-diene & cyclopentene

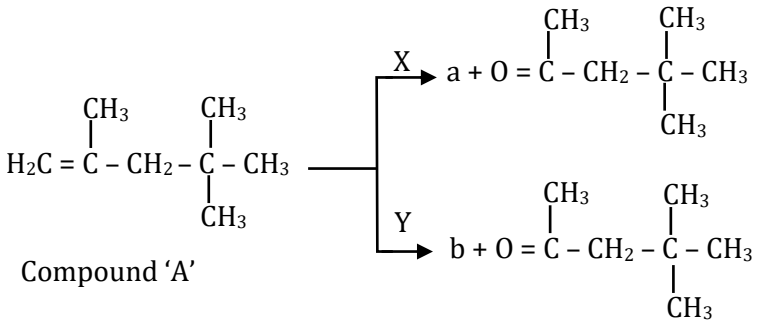
(2) Cyclohex-1, 3-diene & cyclopentene

(3) 1-methylcyclohex-1,4-diene & 1-methylcyclopent-1-ene

(4) Cyclohex-1,3-diene & 1-methylcyclopent-1-ene

COX045

15. A compound 'A' on reaction with 'X' and 'Y produces the same major product but different by product 'a' and 'b'. Oxidation of 'a' gives a substance produced by ants. **[JEE (Main) 2022]**



'X' and 'Y' respectively are :

(1) $KMnO_4/H^{\oplus}$ and dil. $KMnO_4$, 273 K

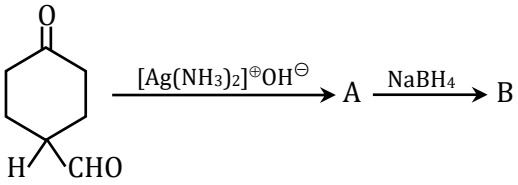
(2) $KMnO_4$,(dilute), 273 K and $KMnO_4/H^{\oplus}$

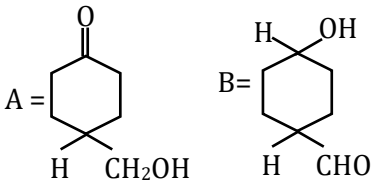
(3) $KMnO_4/H^{\oplus}$ and O_3, H_2O/Zn

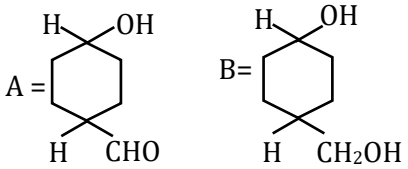
(4) O_3, H_2O/Zn and $KMnO_4/H^{\oplus}$

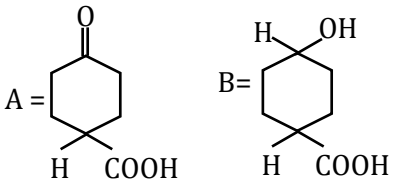
COX046

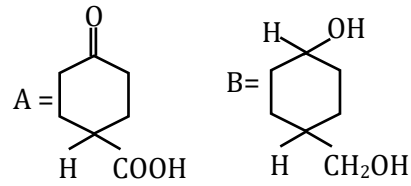
16. The products formed in the following reaction, A and B are **[JEE (Main) 2022]**



(1) 

(2) 

(3) 

(4) 

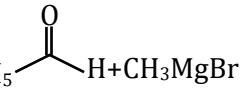
COX047

17. Hex-4-ene-2-ol on treatment with PCC gives 'A'. 'A' on reaction with sodium hypoiodite gives 'B', which on further heating with soda lime gives 'C'. The compound 'C' is **[JEE (Main) 2022]**

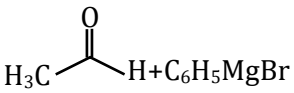
(1) 2- pentene
(2) proponaldehyde
(3) 2-butene
(4) 4-methylpent-2-ene

COX048

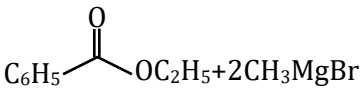
18. Which of the following conditions or reaction sequence will NOT give acetophenone as the major product ? **[JEE (Main) 2022]**

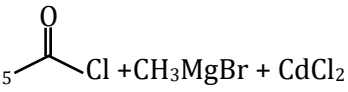
(1) (a) 

(b) $Na_2Cr_2O_7$, $H^{\oplus}$

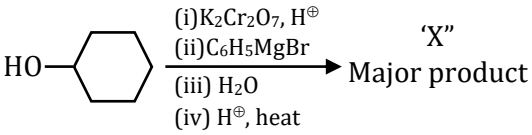
(2) (a) 

(b) PCC, DCM

(3) 

(4) 

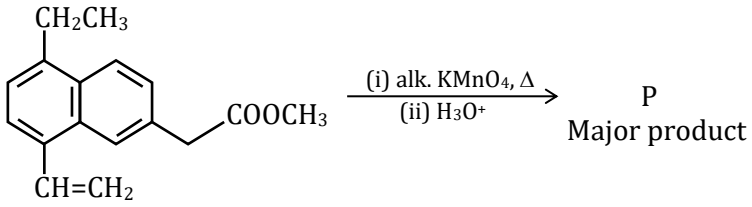
COX049

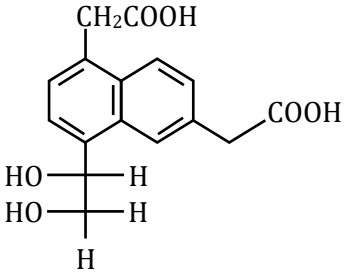
19. In the given reaction 

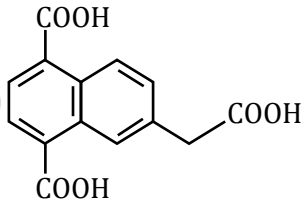
the number of sp^2 hybridised carbon (s) in compound 'X' is____. **[JEE (Main) 2022]**

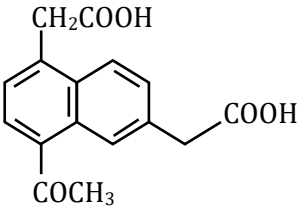
COX050

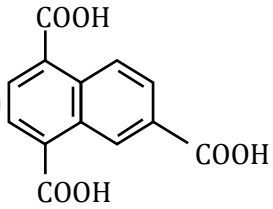
20. The major product 'P' formed in the given reaction is **[JEE (Main) 2023]**



(1) 

(2) 

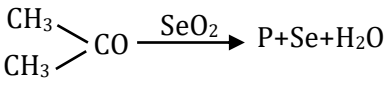
(3) 

(4) 

COX090

EXERCISE - JEE (Advanced) PYQ

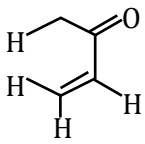
1. In the reaction, P is **[IIT 1995]**

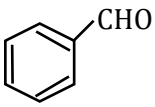


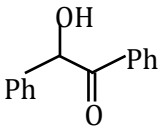
(A) CH_3COCHO (B) CH_3COOCH_3 (C) CH_3COCH_2OH (D) None

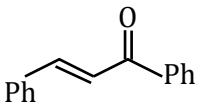
COX071

2. Positive Tollen's test is observed for **[JEE (Advanced) 2016]**

(A) 

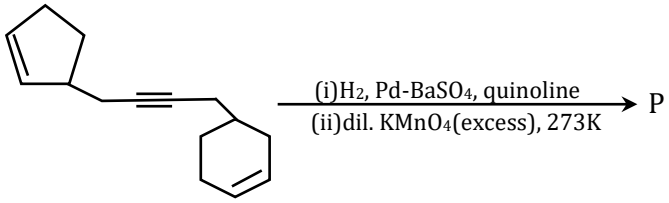
(B) 

(C) 

(D) 

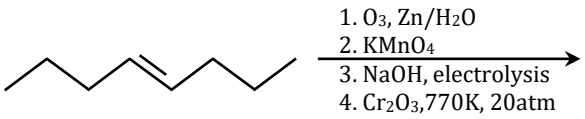
COX072

3. Total number of hydroxyl groups present in a molecule of the major product P is **[JEE (Advanced) 2019]**



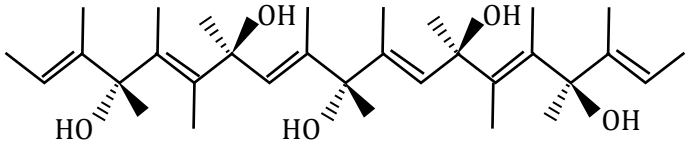
COX073

4. The number of $-CH_2-$ (methylene) groups in the product formed from the following reaction sequence is _____. **[JEE (Advanced) 2022]**



COX074

5. The total number of chiral molecules formed from one molecule of P on complete ozonolysis (O_3, Zn/H_2O) is _____. **[JEE (Advanced) 2022]**



COX075

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

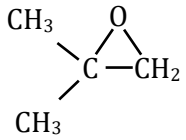
1. $(CH_3)\ CHOH \xrightarrow{\text{Mild oxid}} X \xrightarrow[(2)\ H_3O^{\oplus}]{(1)\ CH_3MgBr} Y$. Here Y is

(1) Isobutyl alcohol (2) tert-Buiyl alcohol

(3) Isobutylene (4) sec-Butyl alcohol

COX091

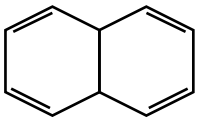
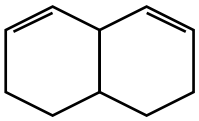
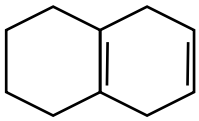
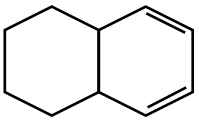
2. $CH_3)_3CCl \xrightarrow[\Delta]{\text{alc.KOH}} X \xrightarrow{CF_3CO_3H} Y$ The product 'Y' is

(1) $CH_2 = CH - CH_2OH$ (2) 

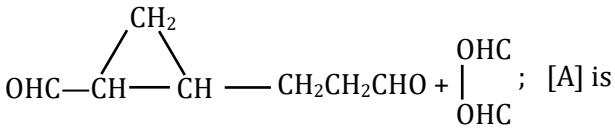
(3) $CH_3COCH_2CH_3$ (4) $(CH_3)_2CHCH_2OH$

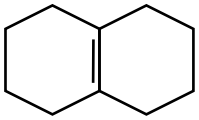
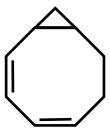
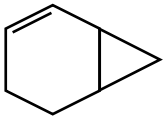
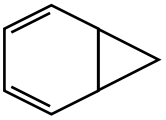
COX092

3. An unknown compound decolorizes bromine in carbon tetrachloride, and it undergoes catalytic reduction to give decalin. When treated with warm, conc. Potassium permanganate, this compound give cis-cyclohexane-1, 2-dicarboxylic acid and oxalic acid. A possible structure for the unknown compound is

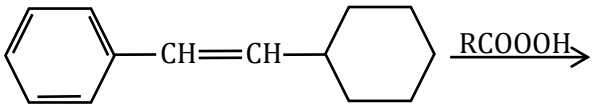
(1)  (2)  (3)  (4) 

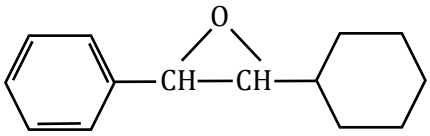
COX093

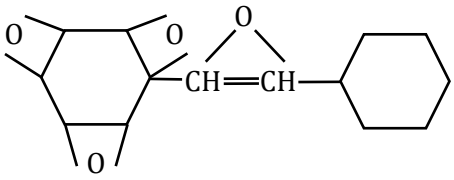
4. (A) $\xrightarrow[\text{Ozonolysis}]{\text{Reductive}}$  ; [A] is

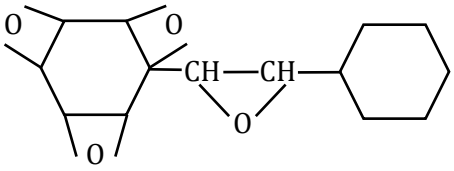
(1)  (2)  (3)  (4) 

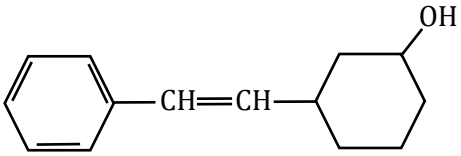
COX094

5. 

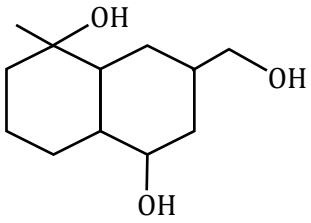
(1) 

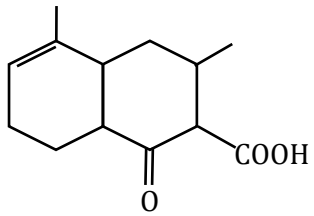
(2) 

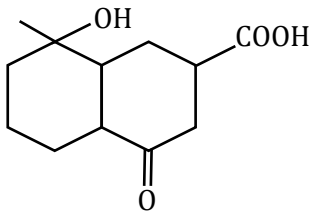
(3) 

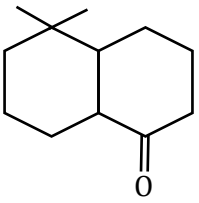
(4) 

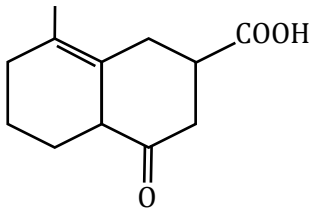
COX095

6.  $\xrightarrow{KMnO_4/H^+}$ (P), product (P) is

(1) 

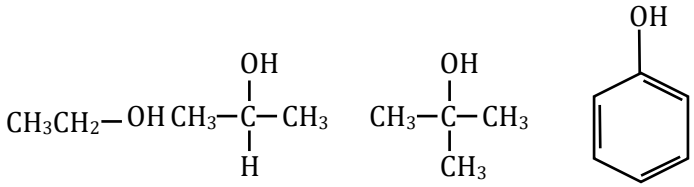
(2) 

(3) 

(4) 

COX096

7. Which of the following sets of compounds cannot turn clear orange solution of CrO_3/aq. H_2SO_4 to greenish opaque solution?

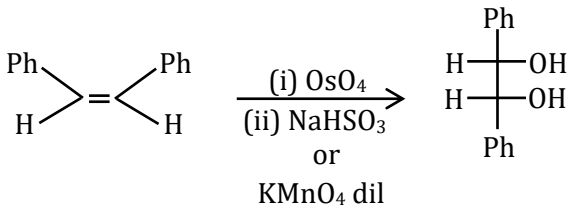


(I) (II) (III) (IV)

(1) I, IV
(2) II, III
(3) I, II
(4) III, IV

COX097

8. The given reaction,

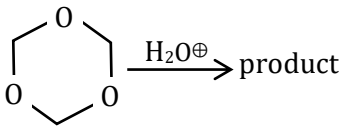


is an example of

(1) Stereospecific reaction
(2) Stereoselective reaction
(3) Both (1) and (2)
(4) Ordinary reaction

COX098

9.

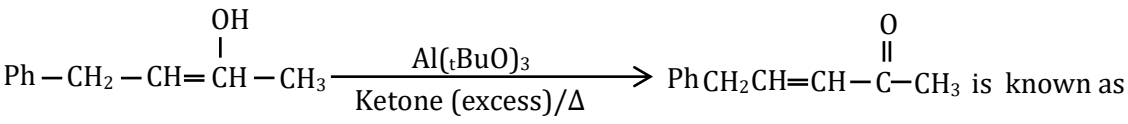


Product obtained in the above reaction is

(1) $3CH_3CHO$
(2) $3HCHO$
(3) $3HCOOH$
(4) $3CH_3OH$

COX099

10. The reaction,

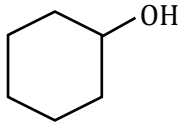


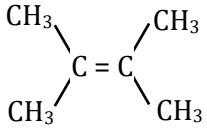
is known as

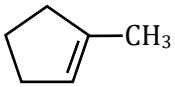
(1) Wolff-Kishner reduction
(2) Oppenauer oxidation
(3) Meerwein-Ponndorf reaction
(4) Clemmensen reduction

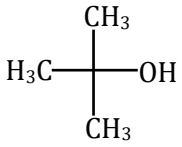
COX100

11. Which of the folloiwng can be oxidised to aldehyde or ketone by Jones reagent.

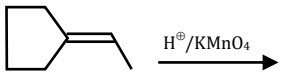
(1) 

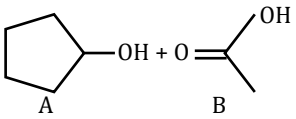
(2) 

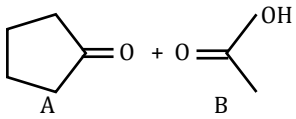
(3) 

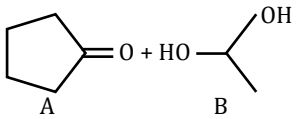
(4) 

COX101

12.  A + BA + B are

(1) 

(2) 

(3) 

(4) None of these

COX012

13. Glucose as well as fructose are oxidized by periodic acid. The number of moles of HCOOH formed from each mole of glucose and fructose are

(1) 5 and 5 (2) 5 and 4 (3) 5 and 3 (4) 4 and 3

COX013

14. Secondary alcohols on heating with copper at 300°C give

(1) Alkenes (2) Aldehydes (3) Ketones (4) tert-alcohols

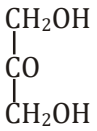
COX014

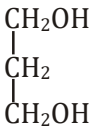
15. The reagent, with which both acetaldehyde and acetone react easily is :

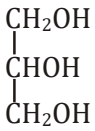
(1) Tollens reagent (2) Schiff's reagent (3) H_2 / Ni (4) Fehling's solution

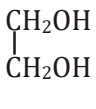
COX015

16. Which of the following compounds is resistant to periodic acid oxidation ?

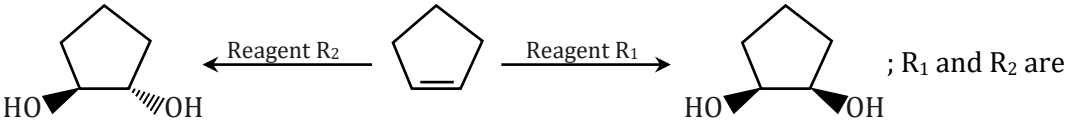
(1) 

(2) 

(3) 

(4) 

COX016

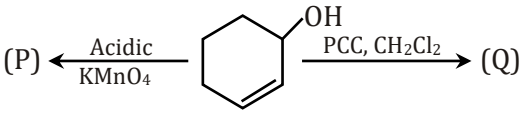
17.  ; R_1 and R_2 are

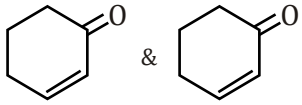
(1) Cold alkaline $KMnO_4$, OsO_4/H_2O_2 (2) Cold alkaline $KMnO_4$, HCO_3H & H_3O^+

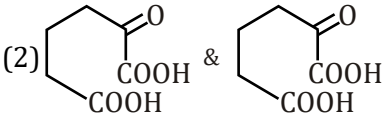
(3) Cold alkaline $KMnO_4$, $C_6H_5CO_3H$ (4) $C_6H_5CO_3H$, HCO_3H

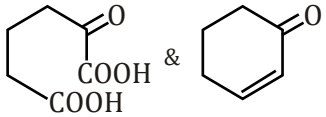
COX017

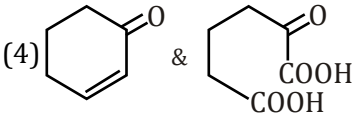
18. Identify (P) and (Q) respectively in the given reaction :



(1) 

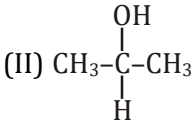
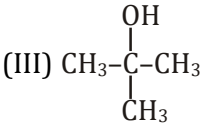
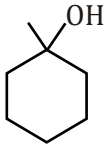
(2) 

(3) 

(4) 

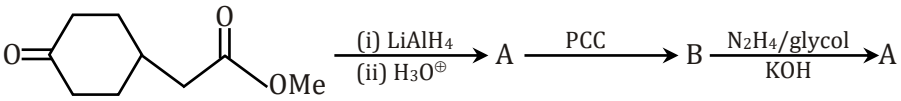
COX018

19. Which of the following sets of compounds cannot turn clear orange solution of CrO_3 / aq. H_2SO_4 to greenish opaque solution

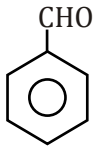
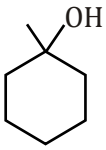
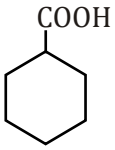
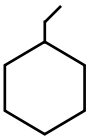
(I) CH_3CH_2-OH (II)  (III)  (IV) 

(1) I, IV (2) II, III (3) I, II (4) III, IV

COX019

20. 

Product C is :

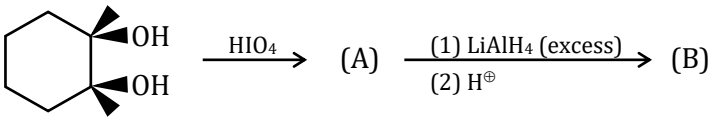
(1)  (2)  (3)  (4) 

COX020

SECTION-B

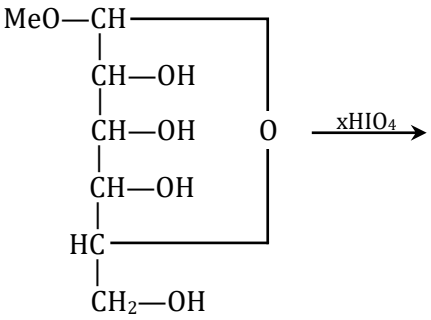
- This section will have **SIX questions**. Candidate can choose to attempt any 5 questions out of these 10 questions. In case if candidate attempts more than 5 questions, first 5 attempted questions will be considered for marking.
- The answer to each question is a **NUMERICAL VALUE.**
- For each question, 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

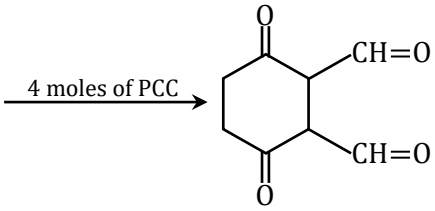
1. 

Total number of stereoisomers of product (B) will be :

COX021

2.  What is the maximum value of (x) ?

COX022

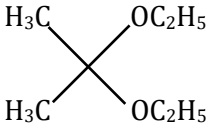
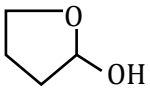
3. (A) 

Maximum number of moles of Ac_2O consumed by reactant (A) is :

COX023

4. Out of the following compounds given below, the number of compounds which given positive test with Tollen's reagent are :

I. CH_3CHO II. PhCHO III. HCOOH IV. CH_3COOH

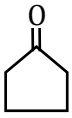
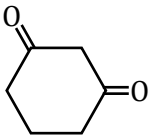
V. $CH_3CH(OH)OC_2H_5$ VI.  VII. $CH_3C{\equiv}CH$ VIII. 

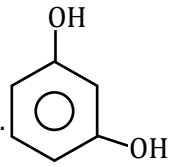
IX. CH_3COCH_3

COX024

5. Out of the following compounds given below, the number of compounds which given positive iodoform test are :

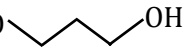
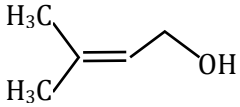
I. CH_3CHO II. CH_3COCH_3 III. $C_2H_5COC_2H_5$ IV. $PhCOC_2H_5$

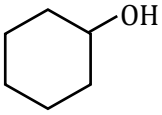
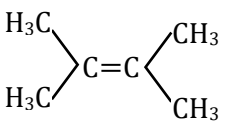
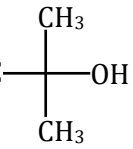
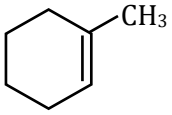
V.  VI. $PhCOCH_2COPh$ VII.  VIII. $PhCOCH_3$

IX. $CH_3COC_2H_5$ X. 

COX025

6. How many of the following can be oxidised to aldehyde or ketone by jones reagent or PCC.

a. $H_6C_6{-}CH_2OH$ b.  c. C_6H_6 d. 

e.  f.  g.  h. 

COX030

JEE (Advanced) Practice Paper

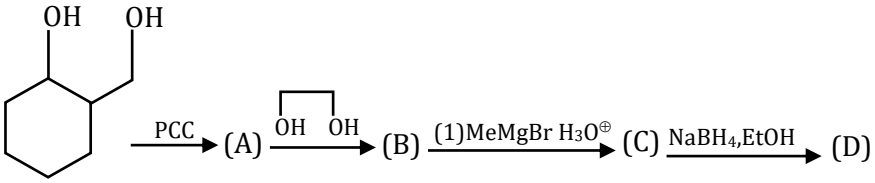
This paper is for yourself practice and assessment the discussion of this paper is optional though you can see PDF solutions or video solutions or solutions in hardcopy whichever is provided.

SECTION–I

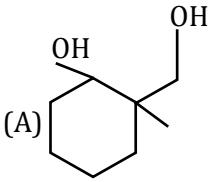
- This section contains **SEVEN** questions.
- Each question has FOUR options (A), (B), (C) and (D). ONLY ONE of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories:

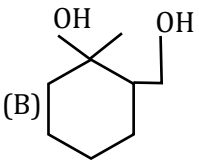
Full Marks : +3, if only the bubble corresponding to the correct option is darkened.
Zero Marks : 0, if none of the bubbles is darkened.
Negative Marks : –1, in all other cases

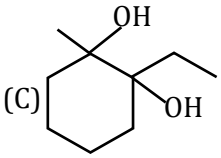
1.

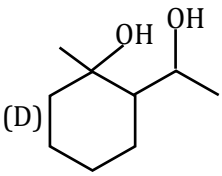


Product (D) in above reaction is :



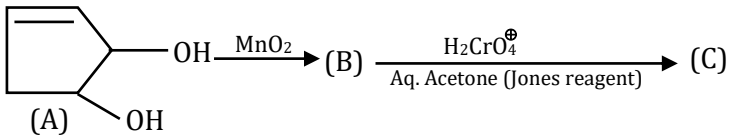






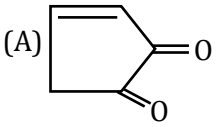
COX051

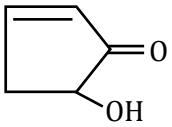
2.

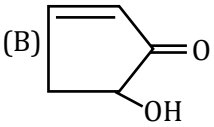


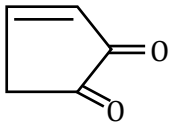
The compounds (B) and (C), respectively, are :

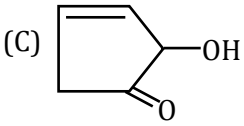
(B) (C)

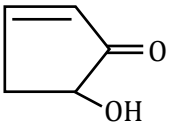


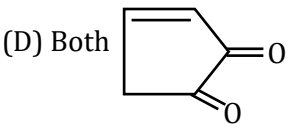




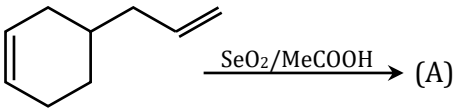




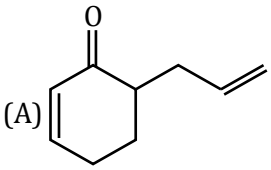


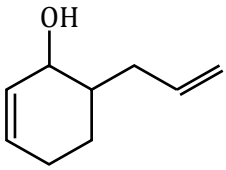


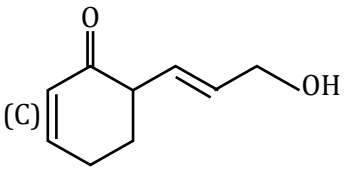
COX052

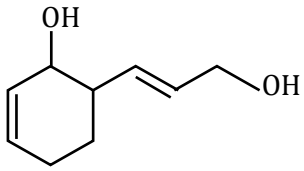
3. 

The compound (A) is

(A) 

(B) 

(C) 

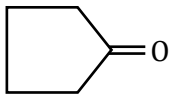
(D) 

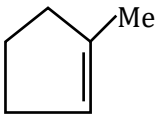
COX053

4. Acid–catalysed hydration, oxymercuration- demercuration, and hydroboration oxidation reaction will give the same product with

(A) But-2-ene

(B) But-l-ene

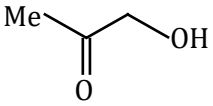
(C) 

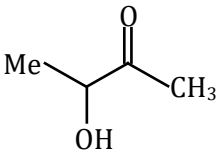
(D) 

COX054

5. Fehling's solution can make distinction between:

(A) MeCHO and PhCHO

(B) MeCHO and 

(C) 

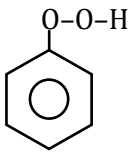
and HCHO

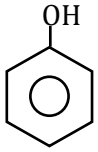
(D) MeCHO and HCHO

COX055

6. Fenton's reagent ($Fe^{2\oplus}$ + H_2O_2) with benzene gives

(A) No reaction

(B) 

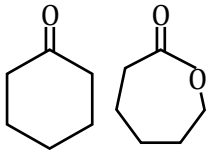
(C) 

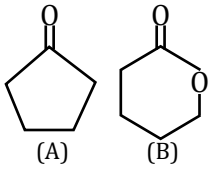
(D) 3(HOOC –COOH)

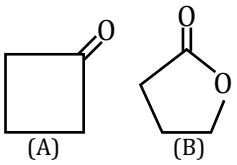
COX056

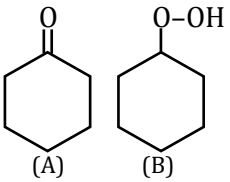
7. Barium adipate $\xrightarrow{\text{Dry distillation}}$ (A) $\xrightarrow{MeCO_3H}$ (B)

The compounds (A) and (B), respectively, are ;

(A) 

(B) 

(C) 

(D) 

COX057

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.

8. Which one of the following alcohols can be oxidised by K_2CrO_4?

(A) Ethanol (B) Tert butyl alcohol
(C) Isopropyl alcohol (D) Allyl alcohol

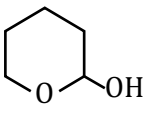
COX058

9. Fehling solution gives red precipitate with :

(A) Aromatic aldehyde (B) Aliphatic aldehyde
(C) Ketones (D) $CH_2(OH)-C(=O)-CH_3$

COX059

10. Which of the following compound will give positive Tollens test

(A) CH_3CHO (B) 

(C) $CH_3CH_2CH_2CH_2CH(OH)-OCH_3$ (D) $CH_3-CH(OCH_3)_2$

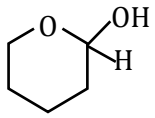
COX060

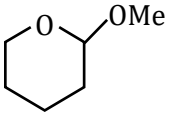
11. Schiff's reagent gives pink colour with :

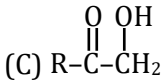
(A) Acetaldehyde (B) Formic acid (C) Acetic acid (D) Methyl acetate

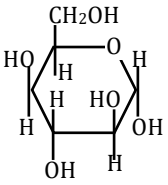
COX061

12. Which will give the Tollen test.

(A) 

(B) 

(C) 

(D) 

COX062

13. Which of the following is an example of oxidation reaction :

(A) $CH_3-CH_2-OH \xrightarrow{PCl_3}$

(B) $CH_3-CH=CH_2 \xrightarrow{Ni/N_2}$

(C) $CH_3-CH=CH_2 \xrightarrow[CCl_4]{Br_2}$

(D) $CH_2=CH_2 \xrightarrow[KMnO_4]{H^{\oplus}}$

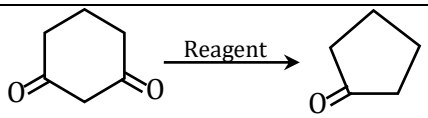
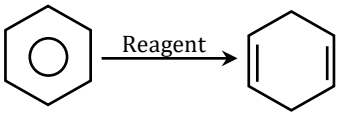
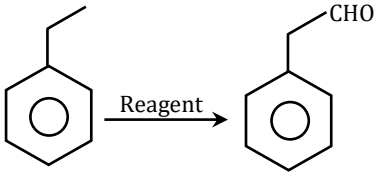
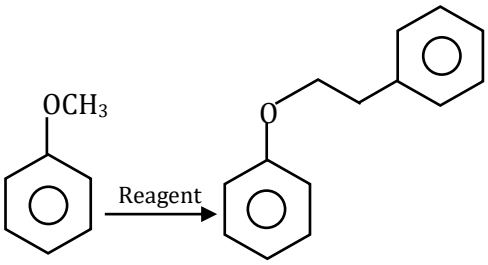
COX063

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

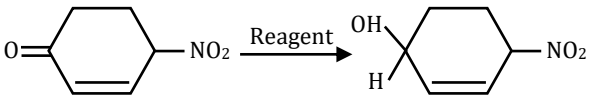
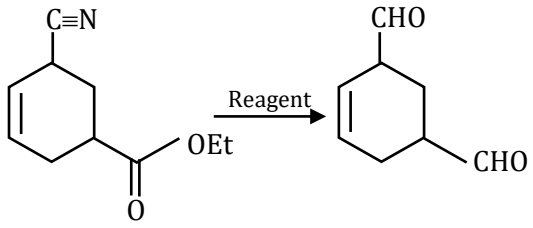
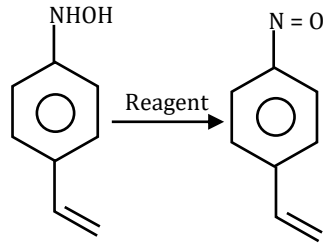
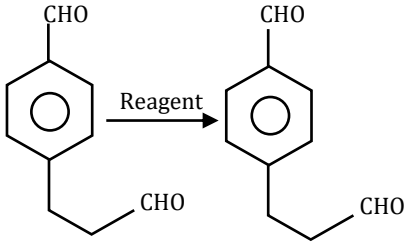
14. Match the items given in column I with that in column II and III.

	Reactions		Regents		Characteristics
a.		i	Birch reduction	p	Formed via brown complex
B		ii	Etard reaction	q	Formed via a diradical with subsequent intramolecular (C-C) bond formation
c.		iii	Fenton's reagent	r	Formed via a stable intermediate redical anion
d.		iv	Clemenson's reduction	s	Formed by radical formation

(A) (a → iv,q ; b →i,r; c → ii, p ; d → iii,s)
(B) (a → ii,q ; b →i,r; c → ii, p ; d → iii,s)
(C) (a → iv,q ; b →i,r; c → i, p ; d → iii,s)
(D) (a → iii,q ; b →i,r; c → ii, p ; d → iii,s)

COX064

15. Match the items given in column I with that in column II and III.

	Reactions		Regents		Characteristics
a.		i	DIBAL–H	p	Silver mirror
b		ii	Tollen's reagent	q	Involves a imine salt
c.		iii	MPV reduction	r	Forms solvent complex
d.		iv	Fehling's reagent	s	Involves a cycle transition state with $H^{\ominus}$ ion migration

(A) (a→iv, s ; b → I, q; c →ii,p ; d → iv, r)
(B) (a→iii, s ; b → I, q; c →ii,p ; d → iv, r)
(C) (a→ii, s ; b → I, q; c →ii,p ; d → iv, r)
(D) (a→iii, s ; b → I, q; c →ii,p ; d → iii, r)

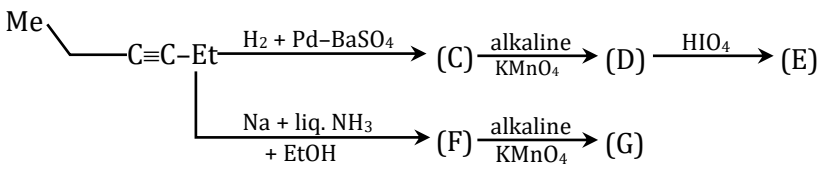
COX065

SECTION-IV

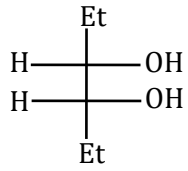
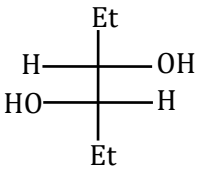
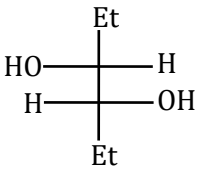
- This section contains **ONE** paragraph.
- Based on each paragraph, there are **THREE** questions.
- Each question has **FOUR** options (A), (B), (C) and (D) **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in <u>one of the following categories</u> :

Full Marks : +3, if only the bubble corresponding to the correct answer is darkened.
Zero Marks : 0, in all other cases.

Paragraphs for Q.16 to 18

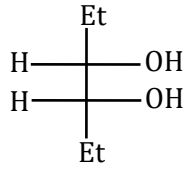
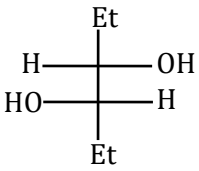
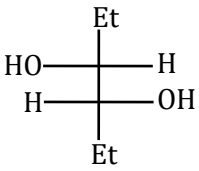


16. The compound (D) is :

(A)  (B)  (C)  (D) Both (B) and (C)

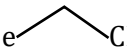
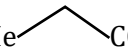
COX066

17. The compound (G) is :

(A)  (B)  (C)  (D) Both (B) and (C)

COX067

18. The compound (E) is :

(A) Two moles of Me  CHO. (B) Two moles of Me  COOH.

(C) One mole of (A) and one mole of (B) (D) No reaction.

COX068

SECTION-V

- This section contains **TWO** 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, –.30, 30.27, –127.30, if answer is 11.36777..... then both 11.36 and 11.37 will be correct) by darken the corresponding bubbles in the ORS.
  For Example : If answer is –77.25, 5.2 then fill the bubbles as follows:
- 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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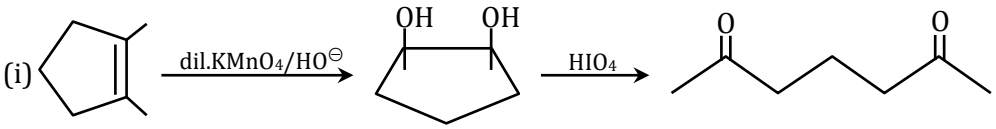
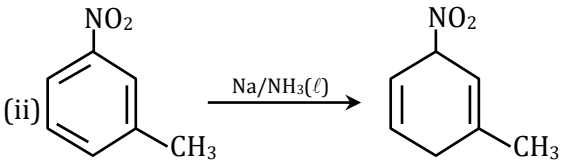
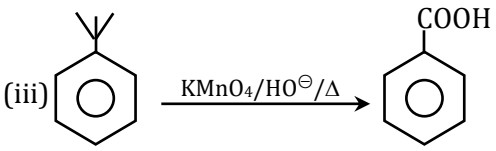
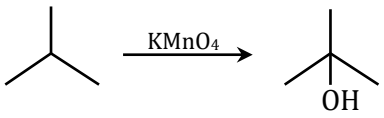
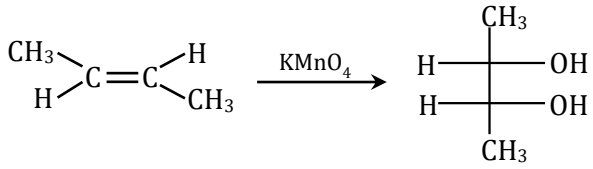
19. How many reactions are correct ?

(i) 

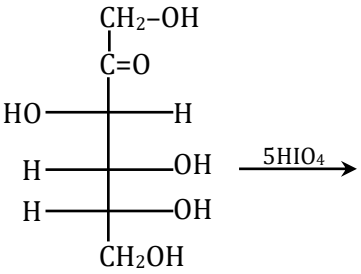
(ii) 

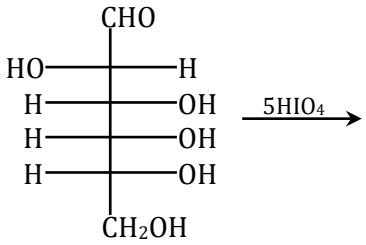
(iii) 

(iv) 

(v) 

COX069

20. (i) 

(ii) 

Sum of moles of formaldehyde obtained in the reaction (i) and reaction (ii) ?

COX070

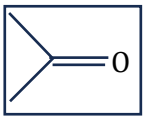
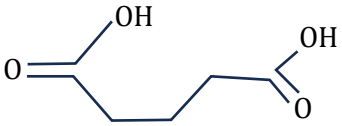
ANSWER KEY

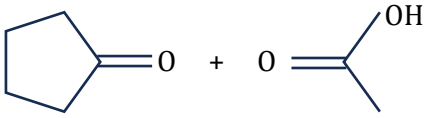
EXERCISE - O

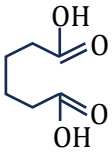
Que.	1	2	3	4	5	6	7	8	9	10
Ans.	D	B	C	C	A	B	D	C	B	D
Que.	11	12	13	14	15					
Ans.	C	ABC	ABC	AB	BC					
Que.	16					17				
Ans.	(A→ r,i), (B→ s,ii), (C→ q,iii), (D→ p,iv)					(A→ r), (B→ t), (C→ q), (d→ p) (E→S)				

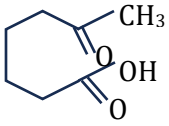
EXERCISE - S

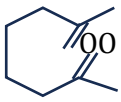
1. (i) $CO_2 + H_2O$ (ii) $O = C = O + H_2O$

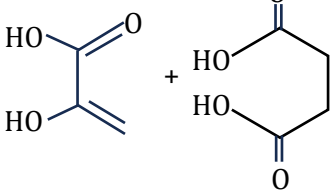
(iii)  ,  , $CO_2 + H_2O$

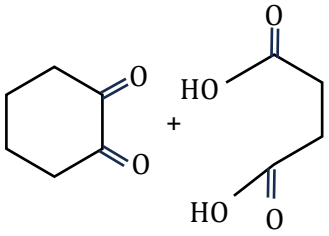
(iv) 

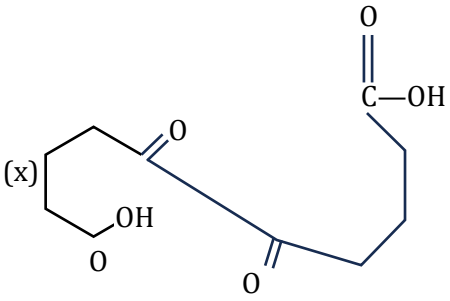
(v) 

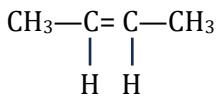
(vi) 

(vii) 

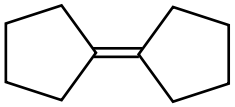
(viii) 

(ix) 

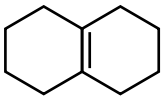
(x) 

2. (i) 

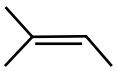
(A)

(ii) 

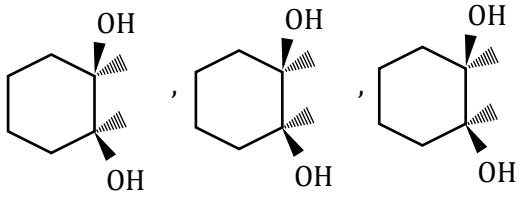
(B)

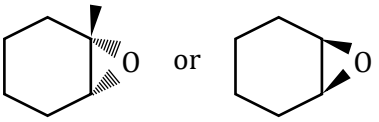
(iii) 

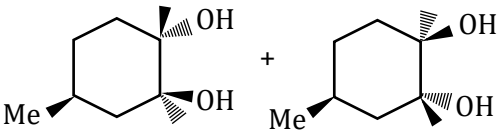
(C)

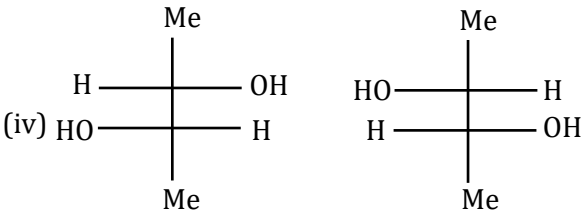
(iv) 

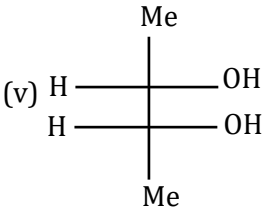
(D)

3. (i) 

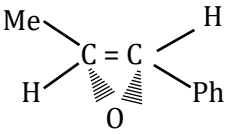
(ii) 

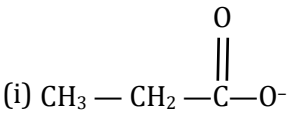
(iii) 

(iv) 

(v) 

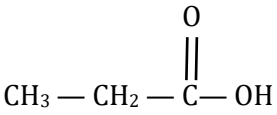
(Erythro)

(vi) 

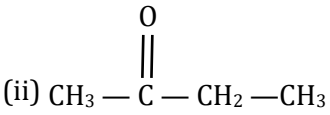
4. (i) 

(Salt for due to Basic Medium)

,



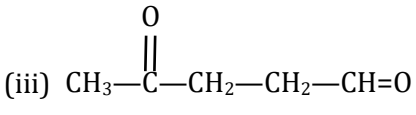
Carboxylic Acid

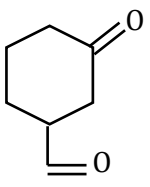
(ii) 

(Ketone)

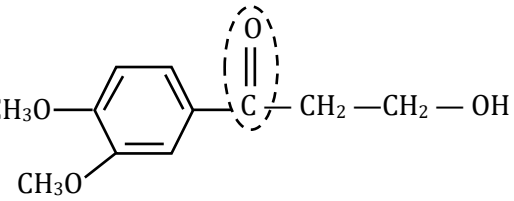
5. (i) $CH_2 = CH—(CH_2)_3—CHO$

(ii) $C_6H_5 — CH = CH — CHO$

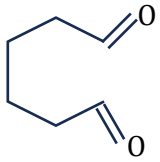
(iii) 

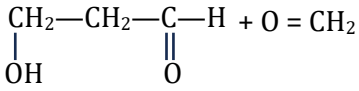
(iv) 

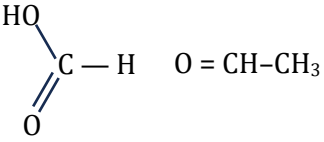
(v) $CH_2 = CH - CHO$

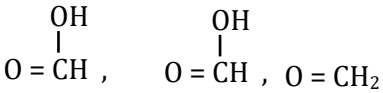
(vi) 

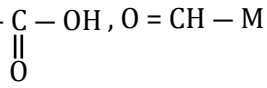
6. (i) $Me-CH = O + O = CH_2$

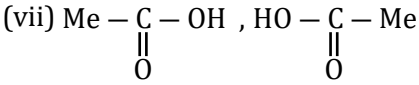
(ii) 

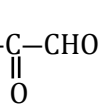
(iii) 

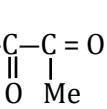
(iv) 

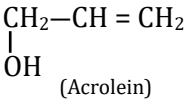
(v) $O=CH_2$, 

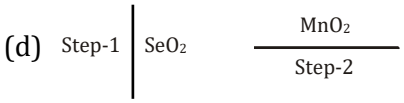
(vi) 

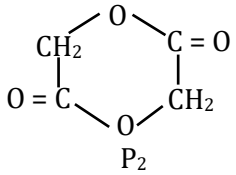
(vii) 

7. (a) 

(b) 

(c) 
(Acrolein)

(d) 

(e) 

8. (i) +Ve Fehling test –Ve Fehling test
(ii) +Ve Benedict –Ve Benedict

EXERCISE - JEE (Main) PYQ

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

EXERCISE - JEE (Advanced) PYQ

Que.	1	2	3	4	5
Ans.	A	ABC	6	0	2

JEE (Main) Practice Paper

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

JEE (Advanced) Practice Paper

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