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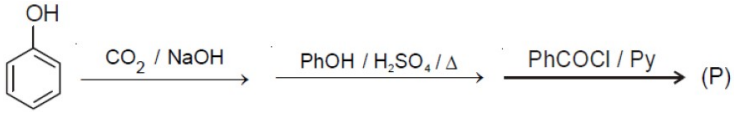
CHEMISTRY

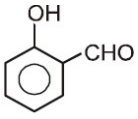
TARGET : JEE Advanced - 2023

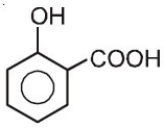
CAPS – 16

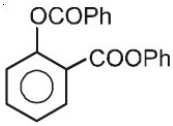
Alcohols, Phenols and Ethers

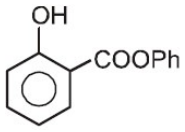
1. 

Give the product (P) of the above reaction sequence :

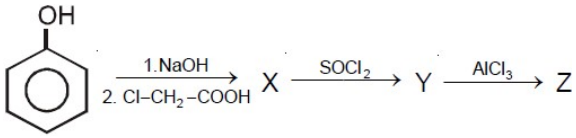
(A) 

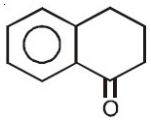
(B) 

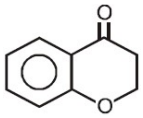
(C) 

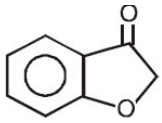
(D) 

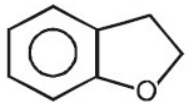
2. Identify 'Z' in the given sequence of reaction.

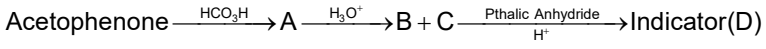


(A) 

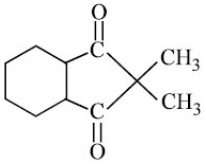
(B) 

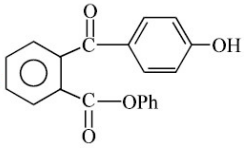
(C) 

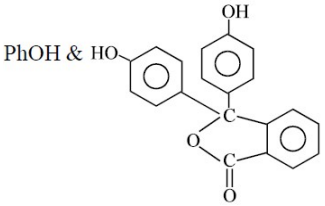
(D) 

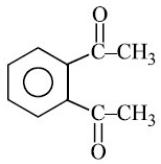
3. 

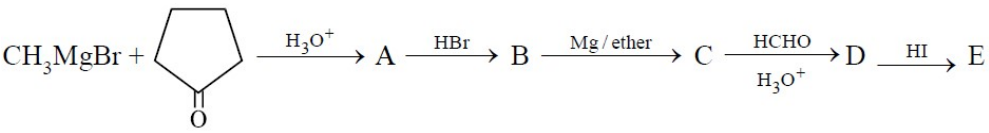
C & D are

(A) CH_3OH & 

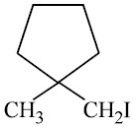
(B) PhOH & 

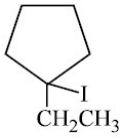
(C) 

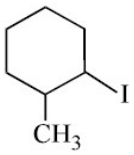
(D) CH_3OH & 

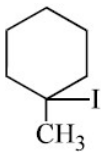
4. 

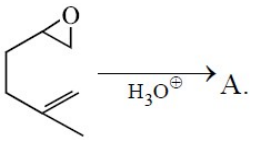
E is

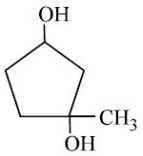
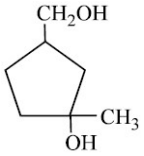
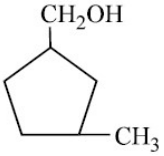
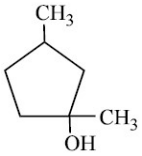
(A) 

(B) 

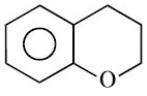
(C) 

(D) 

5.  'A' is

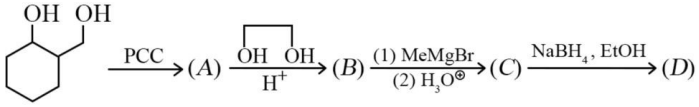
(A)  (B)  (C)  (D) 

6. Consider the reaction of HI with the following:

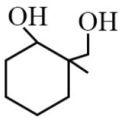
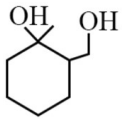
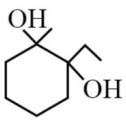
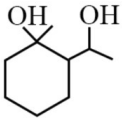
I  **II** 

Which forms di-iodide on reaction with HI (excess)?

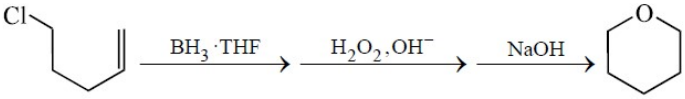
(A) I and II both (B) II only (C) I only (D) none

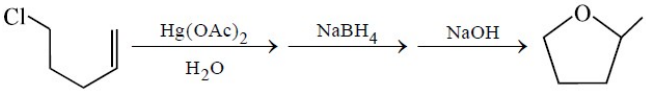
7. 

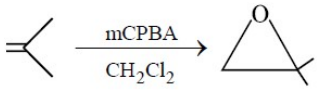
Product (D) in above reaction is:

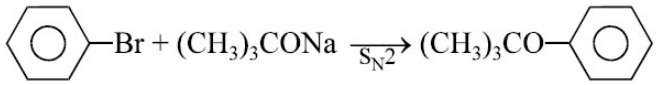
(A)  (B)  (C)  (D) 

8. Select the correct synthesis products

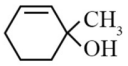
(A) 

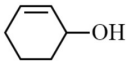
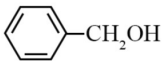
(B) 

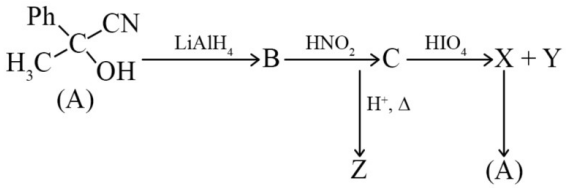
(C) 

(D) 

9. Which of the following are converted to aldehydes or ketones by MnO2 ?

(A) $CH_2 = CH - CHOH - CH$ (B) 

(C)  (D) 

10. 

Correct statements are among the following

(A) X gives yellow precipitate with I_2 in presence of NaOH

(B) Y is reduced by Fehling's solution

(C) Z gives silver mirror with $[Ag(NH_3)_2]^+$

(D) X reduces Tollen's reagent.

11. Which of the following is true for 3-methyl-2-butanone?

(A) It may be prepared by CrO_3 oxidation of 2-methyl-2-butanol.

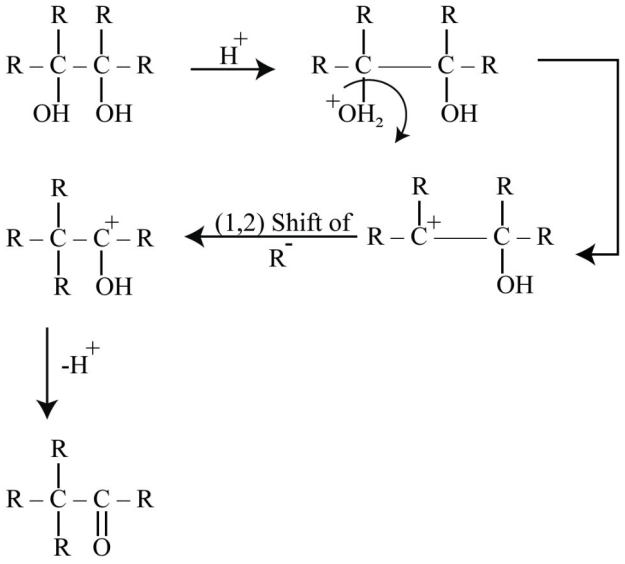
(B) Its reaction with $NaBH_4$ gives a secondary alcohol.

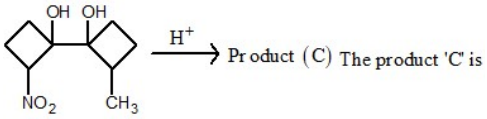
(C) It may be prepared by acidic Hg^{2+} catalyzed hydration of 3-methyl-1-butyne

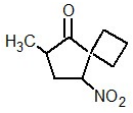
(D) This compound is an isomer of 4-penten-1-ol.

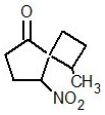
Comprehension for 12 to 14

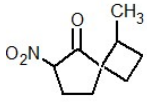
Pinacol is a 1,2, diol which on treating with acid produces pinacalone(ketone). It is an intramolecular rearrangement. The reaction starts with the protonation of hydroxyl group followed by elimination of water and formation of carbocation. The carbocation is then stabilized by With 1,2 shift.

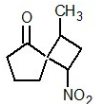


12. 

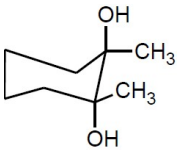
(A) 

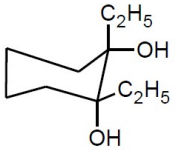
(B) 

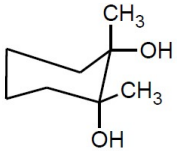
(C) 

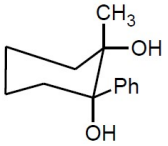
(D) 

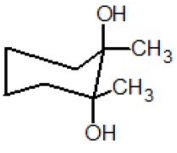
13. Which of the following a compounds, on pinacol-pinacalone rearrangement produces a compound which gives a precipitate with KOI ?

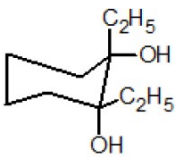
(a) 

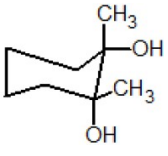
(b) 

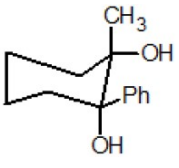
(c) 

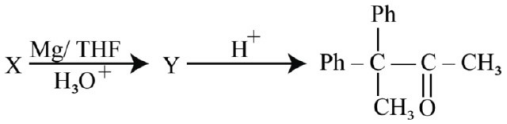
(d) 

(A) 

(B) 

(C) 

(D) 

14. 

Which of the following is not correct about the compound X and Y ?

(A) (X) is can be reduced to 1-phenylethane on treating with N_2H_4/ $C_2H_5O^-$

(B) (X) on treating with H_2N–OH / H^+ followed by treating with PCl_5 produces two amides.

(C) (Y)- may be obtained by the crossed reductive coupling between acetone and benzophenone.

(D) (X) gives yellow precipitate with NaOI.

15. How many of the following methods would serve to prepare 1-phenyl-2-propanol?

(a) Addition of benzyl Grignard reagent to acetaldehyde (ethanal).

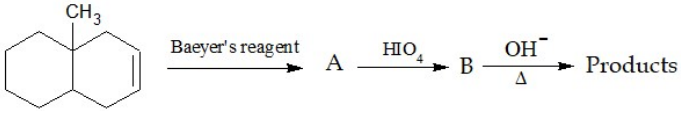
(b) Addition of phenyl lithium to propylene oxide (methyloxirane)

(c) Addition of phenyl Grignard reagent to acetone (2-propanone).

(d) Acid-catalyzed hydration (addition of water to) of 2—phenyl-1-propene.

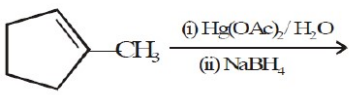
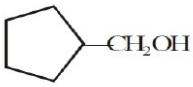
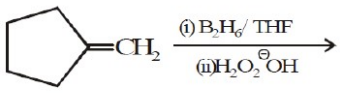
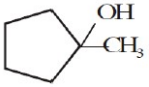
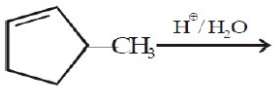
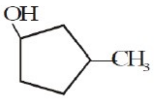
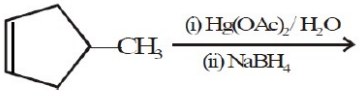
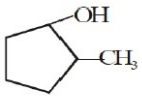
(e) Addition of methyl Grignard reagent to acetophenone (methyl phenyl ketone).

(f) Addition of methyl Grignard reagent to phenylacetaldehyde.

16. 

The number of possible products is:

17. Match the column I with column II.

	Column-I (Reaction)		Column-II (Possible products)
(A)		(p)	
(B)		(q)	
(C)		(r)	
(D)		(s)	

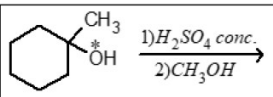
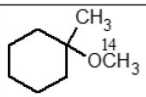
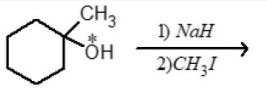
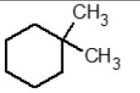
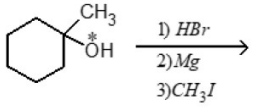
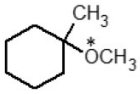
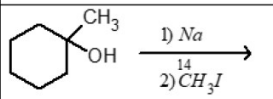
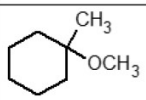
(A) A → q ; B → p ; (C) → r; (D) → r

(B) A → p ; B → q ; (C) → s; (D) → r

(C) A → q ; B → p ; (C) → r; (D) → s

(D) A → p ; B → q ; (C) → s; (D) → s

18. Match the Following:

Column I		Column II	
(A)		(p)	
(B)		(q)	
(C)		(r)	
(D)		(s)	

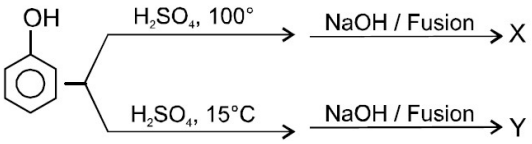
(A) (A-s; B-r; C-q; D-p) (B) (A-r; B-q; C-s; D-p)

(C) (A-p; B-r; C-q; D-q) (D) (A-q; B-r; C-q; D-s)

Subjective

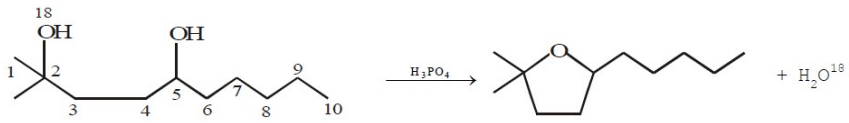
19. An organic compound 'A' having molecular formula C_6H_6O gives a characteristic colour with aqueous $FeCl_3$ solution. When 'A' is treated with CO_2 and NaOH at 400 K under pressure, 'B' is obtained. B on acidification gives C when C treated with CH_3COCl gives a popular pain killer D. Deduce the structures of A, B, C and D.

20. Complete the reaction equations :



21. Compound (A) $C_4H_{10}O$ reacts rapidly with metallic sodium, but undergoes almost no reaction with Lucas reagent. When (A) is treated with hot concentrated sulphuric acid, a new compound (B) C_4H_8 is formed. If C_4H_8 is hydrated with sulphuric acid a new compound (C) C_4H_9OH is formed, which is almost inert to metallic sodium but reacts rapidly with Lucas reagent. What are (A), (B) and (C)?

22. In the following dehydration of diol with H_3PO_4, the following product is formed such that isotopic O^{18} goes with H_2O. Explain.



23. How can you convert PhCH = CH $COCH_3$ to

(i) PhCH = $CHCO_2H$ (ii) PhCH = $CHCH_2CH_3$

(iii) $PhCH_2CH_2CH_2CH_3$ (iv) PhCH = $CHCH(OH)CH_3$

(v) $PhCH_2CH_2COCH_3$