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Power of real gurus

CHEMISTRY

TARGET : JEE Advanced - 2023

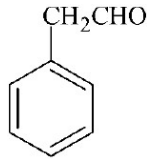
CAPS – 14

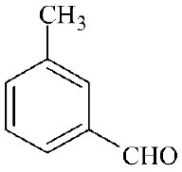
Haloalkanes and Haloarenes

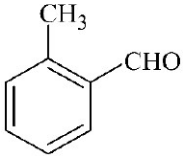
1. An organic compound A ($C_7H_6Br_2$) gives a pale yellow ppt with warm alc. $AgNO_2$ solution. A on treatment with dil. $KMnO_4$ gives a compound B($C_7H_5O_2Br$). B on treatment with AgOH followed by heating with Br_2/CCl_4 gives a compound of which only two mono nitro isomers are possible. A upon treatment with $LiAlH_4$ gives C (C_7H_7Br).

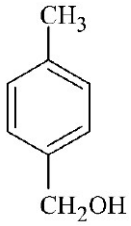
$$C \xrightarrow[\text{ether}]{Mg} \xrightarrow[\text{II.H3O}^{\oplus}]{\text{I.HCHO}} \xrightarrow{PCC} X$$

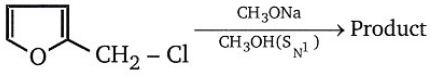
The product 'X' would be

(A) 

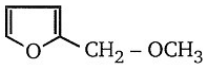
(B) 

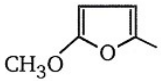
(C) 

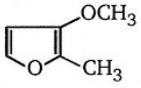
(D) 

2. 

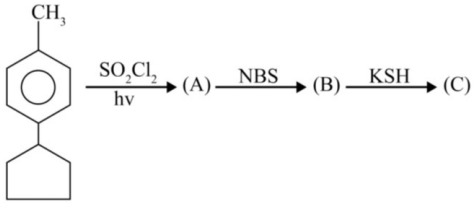
Which of the following products can be obtained from above reaction?

(A) 

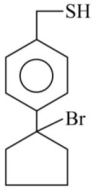
(B) 

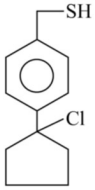
(C) 

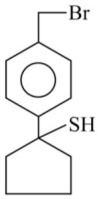
(D) All of these

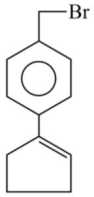
3. 

Product (B) is:

(A) 

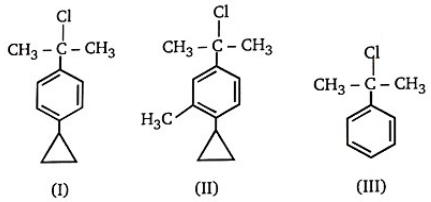
(B) 

(C) 

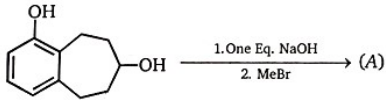
(D) 

(A) A > B > C (B) A > C > B (C) B > C > A (C) B > A > C

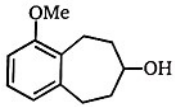
4. The decreasing order of reactivity of the compounds given below towards solvolysis under identical conditions is:

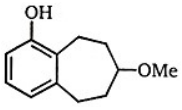


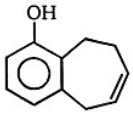
(A) II > III > I (B) I > II > III (C) III > II > I (D) II > I > III

5. 

Product (A) is:

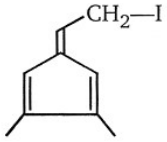
(A) 

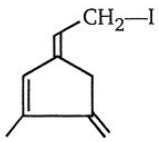
(B) 

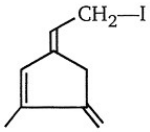
(C) 

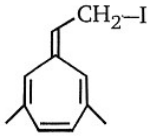
(D) None of these

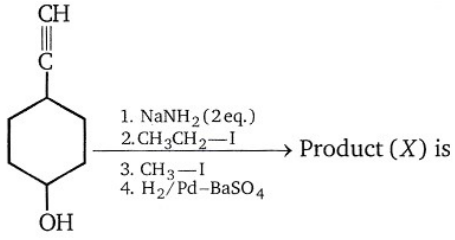
6. Most reactive compound toward S_N1 is

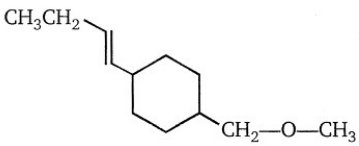
(A) 

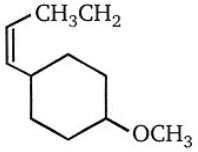
(B) 

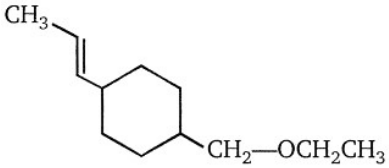
(C) 

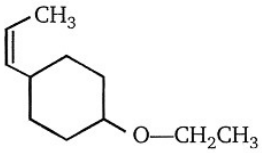
(D) 

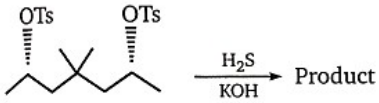
7. 

(A) 

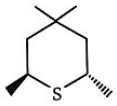
(B) 

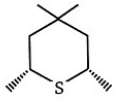
(C) 

(D) 

8. 

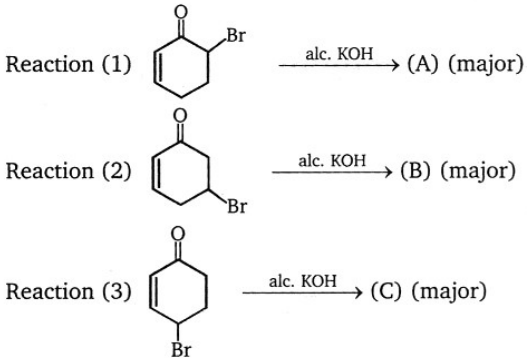
Product of above reaction will be:

(A) 

(B) 

(C) 

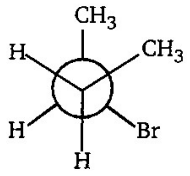
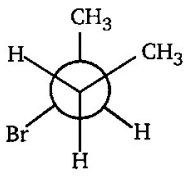
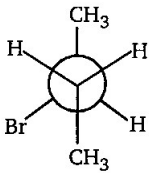
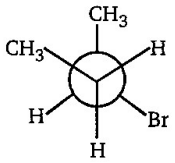
(D) 

9. 

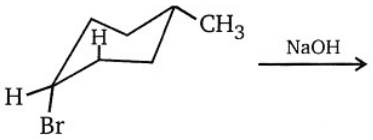
Product obtained in above reactions (1), (2) & (3) is:

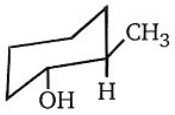
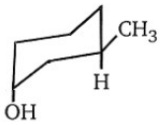
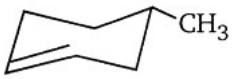
(A) A = B but C is different
(B) A = C, but B is different
(C) B = C, but A is different
(D) A = B = C all product are identical

10. In the dehydrohalogenation of 2-bromobutane; which conformation leads to the formation of cis-2-butene?

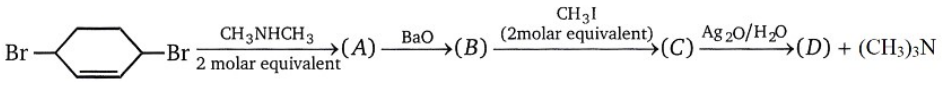
(A)  (B)  (C)  (D) 

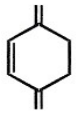
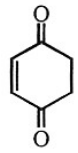
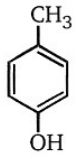
11. The E_2 product of the following reaction will be?

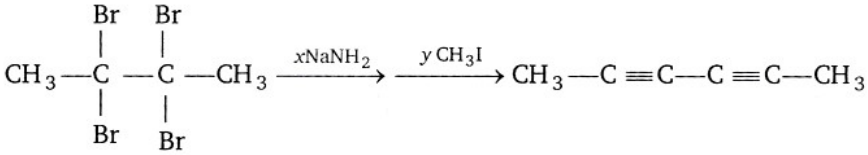


(A)  (B)  (C)  (D) 

12. End product (D) in the given sequence is:



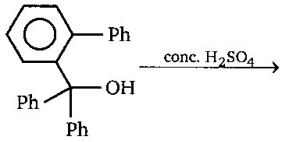
(A)  (B)  (C)  (D) 

13. 

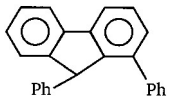
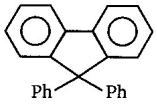
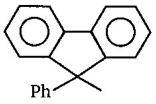
x and y mole consumed.

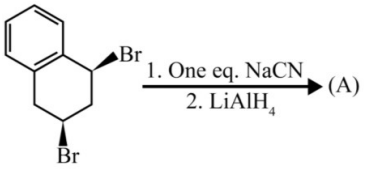
Value of x + y =

(A) 5 (B) 6 (C) 7 (D) 8

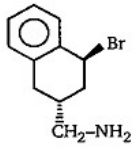
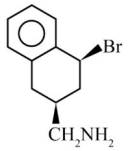
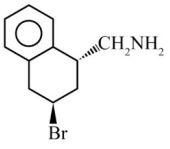
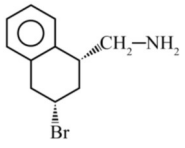
14. 

Major product of the reaction is

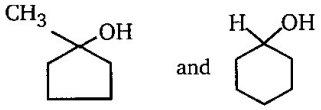
(A)  (B)  (C)  (D) None of these

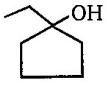
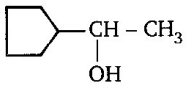
15. 

Product (A) is

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

16. In the given pair of alcohols, in which pair second alcohol is more reactive than first towards hydrogen bromide?

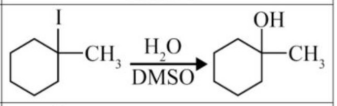
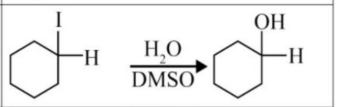
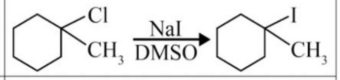
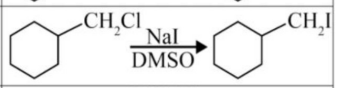
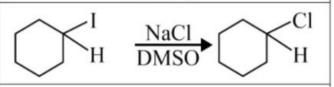
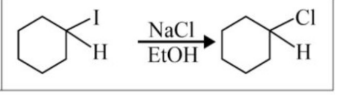
(A)  and

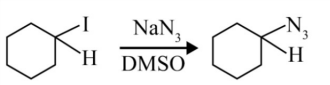
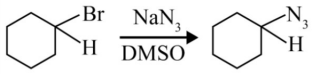
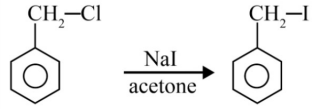
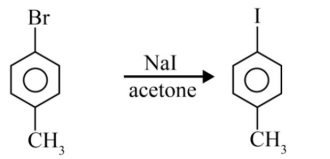
(B)  and 

(C) $CH_3-\underset{\underset{OH}{|}}{CH}-CH_2-CH_3$ and $CH_3-CH_2-\underset{\underset{CH_3}{|}}{CH}-CH_2-OH$

(D) $CH_3-\underset{\underset{OH}{|}}{CH}-CH_2-CH_3$ and $(CH_3)_2\underset{\underset{OH}{|}}{C}-CH_2-CH_3$

17. Select which reaction from the following reaction pairs will occur faster. Part and Reaction, respectively are

	PART-1
Reaction A	
Reaction B	
	PART-2
Reaction C	
Reaction D	
	PART-3
Reaction E	
Reaction F	

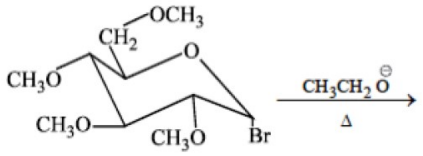
	PART-4
Reaction G	
Reaction H	
	PART-5
Reaction I	
Reaction J	

18. Match the List I (reaction) with List II (reaction intermediate) and select the correct answer using the codes given below the Lists.

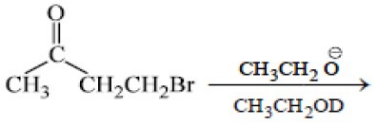
List-I	List-II
(A) $CF_3-CHCl_2 \xrightarrow{alc.KOH/\Delta} CF_2=CCl_2$	(p) Transition state
(B) $CH_3-\underset{\underset{CH_3}{|}}{\overset{CH_3}{\overset{|}{C}}}-OH \xrightarrow{H^{\oplus}} CH_3-\underset{\underset{CH_3}{|}}{\overset{CH_3}{\overset{|}{C}}}=CH_2$	(q) Carbocation
(C) $CH_3-CH_2-Br \xrightarrow[\Delta]{alc.KOH} CH_2=CH_2$	(r) Carbanion
(D) $CH_3-\underset{\underset{CH_3}{|}}{\overset{Br}{\overset{|}{C}}}-CH_3 \xrightarrow{aq.KOH/\Delta} CH_3-\underset{\underset{CH_3}{|}}{\overset{CH_3}{\overset{|}{C}}}=CH_2$	(s) Free radical

19. Match the following

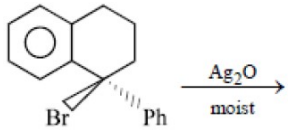
List-I List-II

(A) 

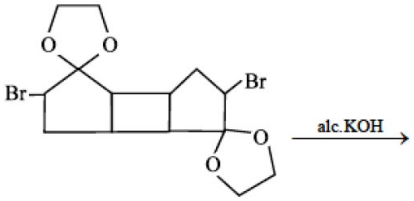
(P) E1

(B) 

(Q) E2

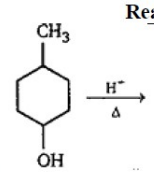
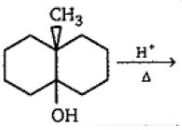
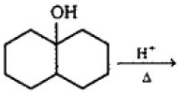
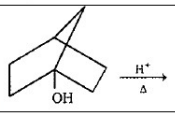
(C) 

(R) E1cb

(D) 

(S) Ei

20. Match the column (I) and (II).

Column I Reaction	Column II Comment on product
A. 	**P.** Racemic mixture
B. 	**Q.** Major product consist of even number of α-hydrogen
C. 	**R.** Will not undergo dehydration
D. 	**S.** Major product consist of odd number of α-hydrogen

21. Choose the one compound within each set that meets the indicated criterion :

Compound I

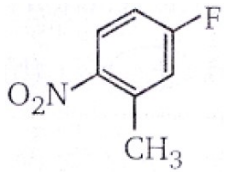
A. The compound that reacts with alcoholic KOH to liberate Halide ion through substitution reaction

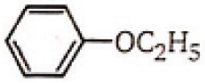
B. The compound that cannot be prepared by a Williamson ether synthesis.

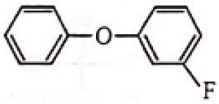
C. The compound that gives an acidic solution when allowed to stand in aqueous ethanol.

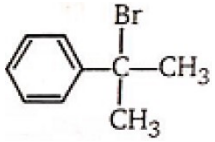
D. The ether that cleaves more rapidly in HI.

Compound II

P. 

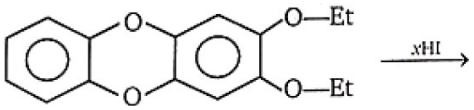
Q. 

R. 

S. 

22. A hydrocarbon C_8H_{10} (A) on ozonolysis gives compound $C_4H_6O_2$ (B) only. The compound (B) can also be obtained from the alkyl bromide C_3H_5Br (C) upon treatment with magnesium in dry ether followed by CO_2 and acidification. Identify (A), (B) and (C) and also give equations for the reactions.

23. How many (x) moles of HI consumed?



24. Sum of X + Y + Z + P =