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ELP

Educator Led Practice

SUBJECT: IIT-OC | COURSE: EXCEL (XII) | ELP NO. 1 | Topic: Alkyl Halide

SOT:

1. The incorrect order of Nucleophilicity is:

(A) $HO^{\ominus} > Ph-O^{\ominus} > CH_3-\overset{\overset{O}{\|}}{C}-O^{\ominus} > CH_3-\overset{\overset{O}{\|}}{\underset{\underset{O}{\|}}{S}}-O^{\ominus}$

(B) $\overset{\ominus}{C}H_3 > \overset{\ominus}{N}H_2 > HO^{\ominus} > F^{\ominus}$

(C) $I^{\ominus} > Br^{\ominus} > Cl^{-} > F^{\ominus}$ [In polar aprotic solvent]

(D) $F^{\ominus} > Cl^{\ominus} > Br^{\ominus} > I^{\ominus}$ [In polar aprotic solvent]

2. Which of the sequence is correct for Nucleophilicity.

(A) $CH_3-O^{\ominus} > Et-O^{\ominus} > (CH_3)_2HC-O^{\ominus} > (CH_3)_3C-O^{\ominus}$

(B) $F^{\ominus} > Cl^{\ominus} > Br^{\ominus} > I^{\ominus}$ [In polar protic Solvent]

(C) $F^{\ominus} > \overset{\ominus}{N}H_2 > HO^{\ominus} > \overset{\ominus}{C}H_3$

(D) $H_2O > OH^{\ominus}$

3. Which of the following is set of Nucleophile:

(A) $R-\overset{\overset{O}{\|}}{C}-R$, C_6H_6 , $H_2C = CH_2$

(B) $H_2C = CH_2$, C_6H_6, R—OH

(C) $\ddot{N}H_2$, $\ddot{\underset{\ddot{}}{O}}R$, CO_2

(D) $AlCl_3$, SO_3, $FeCl_3$

4. In nucleophilic substitution reaction, order of halogens incoming (attacking) nucleophile is:
$I^- > Br^- > Cl^-$
The order of halogens as departing nucleophile should be:

(A) $Br^- > I^- > Cl^-$

(B) $I^- > Br^- > Cl^-$

(C) $Cl^- > Br^- > I^-$

(D) $Cl^- > I^- > Br^-$

5. Which of the following is set of Electrophile

(A) $H_2C = CH_2$, BF_3, CO_2, $H_3O^{\oplus}$

(B) $NO_2^{\oplus}$, CO_2, $AlCl_3$, $Cl^{\oplus}$

(C) Benzene, HC≡CH, $\ddot{N}H_2$, $H_2C=CH_2$

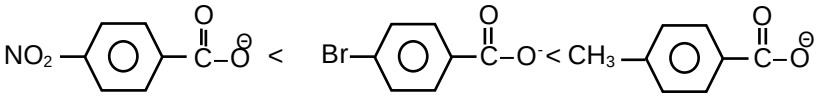
(D) R–O–R, BF_3, $I^{\ominus}$, SO_3

6. The correct order of leaving tendency of leaving group is

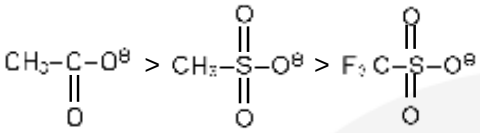
(A) $F^{\ominus} > Cl^{\ominus} > Br^{\ominus} > I^{\ominus}$

(B) $-N_2^{\oplus} > H_2O > HO^{\ominus}$

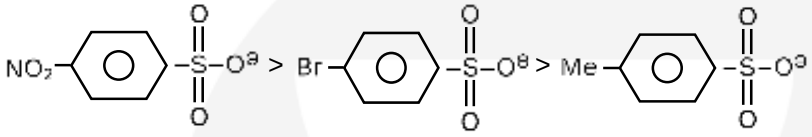
(C) $HO^{\ominus} > Ph-O^{\ominus} > CH_3-\overset{\overset{O}{\|}}{C}-O^{\ominus} > CH_3-\overset{\overset{O}{\|}}{\underset{\underset{O}{\|}}{S}}-O^{-}$

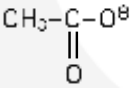
(D) 

7. Which of the sequence is correct for leaving tendency of leaving group.

(A) 

(B) $F^{\ominus} > Cl^{\ominus} > Br^{\ominus} > I^{\ominus}$

(C) 

(D) $C_2H_5\,O^{\ominus} > Ph-O^{\ominus} >$ 

Integer

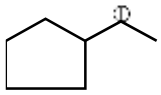
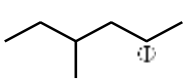
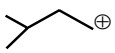
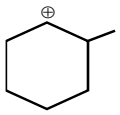
8. Find out number of nucleophilic in following:

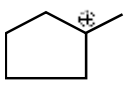
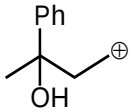
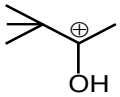
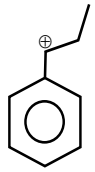
$\overset{\ominus}{N}H_2$, $RO^{\ominus}$, $F^{\ominus}$, BF_3, BH_3, $FeCl_3$, $AlCl_3$, $\overset{\oplus}{N}O_2$, H_2O, ROH, RSH, $H_2C{=}CH_2$, $RS^{\ominus}$, $D^{\ominus}$, $T^{\ominus}$, CO_2, SO_2

9. Find out number of Electrophile in given following:

$\overset{\oplus}{N}O_2$, $Br^{\oplus}$, $D^{\oplus}$, $AlCl_3$, SO_3, $Fecl_3$, CO_2,  , $SbCl_5$ RO^{-}, $NH_2{-}NH_2$, ROH, ROR, C_6H_6, $Cl^{\ominus}$

10. Find out the number of carbocation which can be rearrange

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

(5) 
(6) 
(7) 
(8) 

Answer Key

1.	(C)	2.	(A)	3.	(B)	4.	(B)	5.	(B)
6.	(B)	7.	(C)	8.	(10.00)	9.	(09.00)	10.	(04.00)

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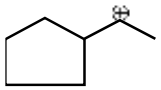
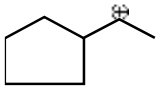
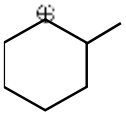
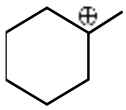
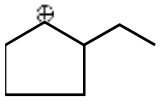
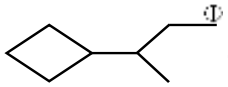
ELP

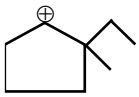
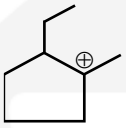
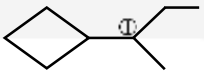
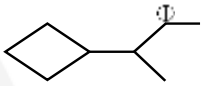
Educator Led Practice

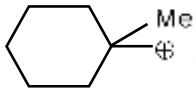
SUBJECT: IIT-OC | COURSE: EXCEL (XII) | ELP NO. 2 | Topic: Alkyl Halide

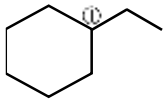
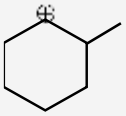
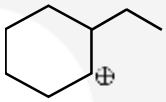
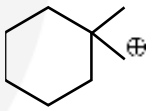
1.  , the most stable carbocation after rearrangement of above Intermediate is.

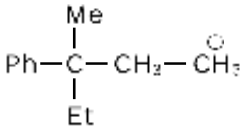
(A)  (B)  (C)  (D) 

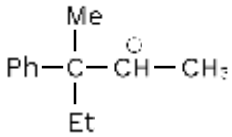
2.  , the most stable carbocation after rearrangement of above Intermediate is.

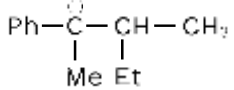
(A)  (B)  (C)  (D) 

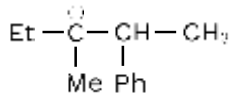
3.  , the most stable carbocation after rearrangement of above Intermediate is.

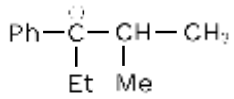
(A)  (B)  (C)  (D) 

4.  , the most stable carbocation after rearrangement of above Intermediate is.

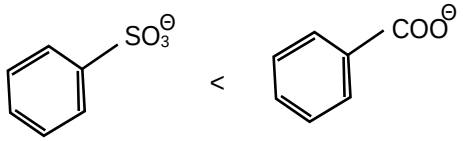
(A) 

(B) 

(C) 

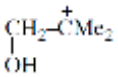
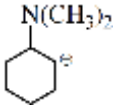
(D) 

5. The correct order of leaving group ability is:

(A)  (B) $CF_3\ SO_3^- > CCl_3\ SO_3^-$

(C) $Br^- > I^-$ (D) $NH_3 < OH^-$

6. How many carbocation does undergo re-arrangement:

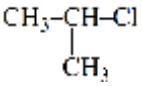
(A) $Me_3C-\overset{+}{C}=O$ (B)  (C)  (D) $CH_3-\overset{+}{C}H-CH_2-CH_2-CH_2-OH$

7. Which of the following option is/are not correct regarding $CH_3S^{\ominus}$ and CH_3O^-:

(A) CH_3O- is stronger base than $CH_3\ S^{\ominus}$.

(B) $CH_3O^{\ominus}$ is stronger nucleophile than $CH_3S^{\ominus}$ (in H_2O).

(C) CH_3O^- is weaker base than $CH_3S^{\ominus}$.

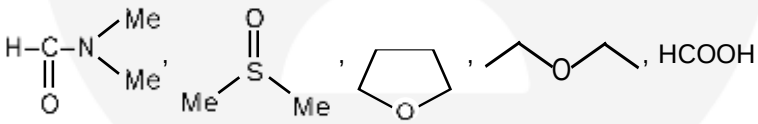
(D) CH_3O^- & $CH_3S^{\ominus}$ both give major elimination product when react with  in ether

8. Which of the following has the highest nucleophilicity?

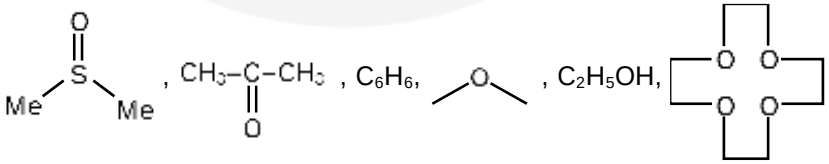
(A) F^- (B) OH^- (C) CH_3^- (D) NH_2^-

Integer:

9. Find out polar aprotic solvent in following compounds

(A) H_2O, ROH,  , HCOOH

10. Find out Number of polar solvent in following compounds

HCOOH, CCl_4, CS_2,  , C_6H_6, , C_2H_5OH,

Answer Key

1.	(C)	2.	(B)	3.	(A)	4.	(B)	5.	(B)
6.	(BC)	7.	(AD)	8.	(C)	9.	04.00	10.	05.00

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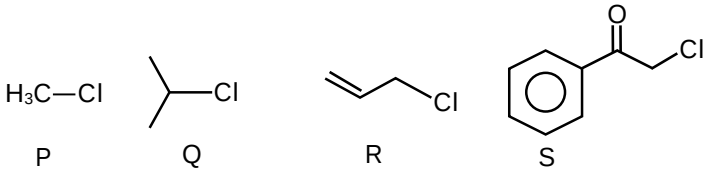
ELP

Educator Led Practice

SUBJECT: IIT-OC | COURSE: EXCEL (XII) | ELP NO. 3 | Topic: Alkyl Halide

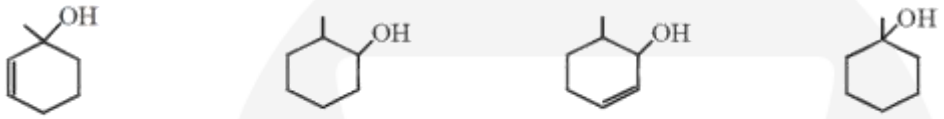
1. KI in acetone, undergoes S_N2 reaction with each of P, Q, R and S. The rates of the reaction vary as.



P Q R S

(A) P > Q > R > S
(B) S > P > R > Q
(C) P > R > Q > S
(D) R > P > S > Q

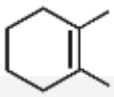
2. Find the correct order of rate of dehydration for given compounds with conc. H_2SO_4 : [3, –1]

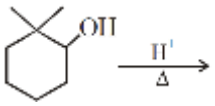


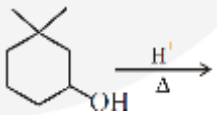
(I) (II) (III) (IV)

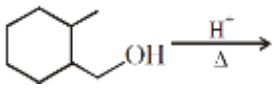
(A) I > II > III > IV
(B) I > III > II > IV
(C) I > III > IV > II
(D) III > I > II > IV

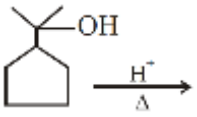
3. Which of the following reaction will not produce given alkene as major product?



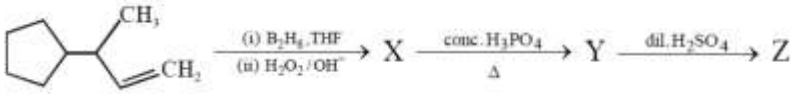
(A) 

(B) 

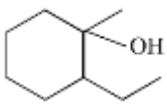
(C) 

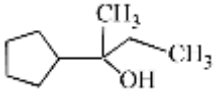
(D) 

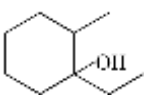
4. Identify the final product of given reaction

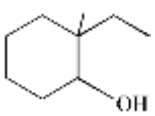


Z is :

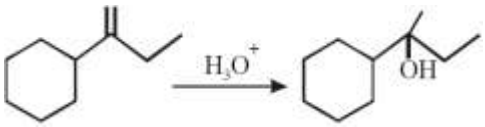
(A) 

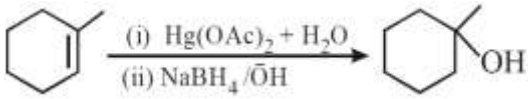
(B) 

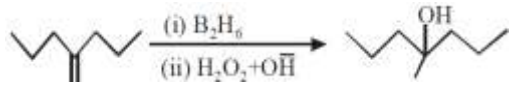
(C) 

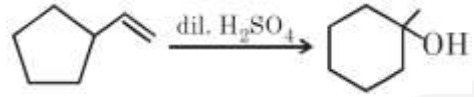
(D) 

5. Incorrect product formation takes place in which of the following reaction(s) ?

(A) 

(B) 

(C) 

(D) 

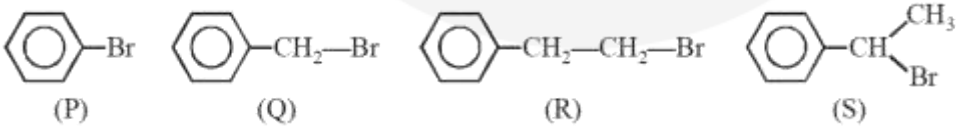
6. (i) Cis - 2-Butene $\xrightarrow[CCl_4]{Br_2}$ X

(ii) Trans-cyclo octene $\xrightarrow[CCl_4]{Br_2}$ Y

(a) Number of organic products obtained in X
(b) Number of organic products obtained in Y
(c) Number of possible stereoisomer of product X
(d) Number of possible stereoisomer of product Y

7. Assertion: Ethylidene chloride on treatment with aqueous KOH yield ethanal.
Reason: Ethylidene chloride is a vicinal dihalide.
(A) If both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.
(B) If both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.
(C) If Assertion is True but the Reason is False.
(D) If both Assertion & Reason are false.

8. Rate of S_N1 reaction is:



(P) (Q) (R) (S)

(A) S > Q > R > P (B) S > R > P > Q (C) P > Q > R > S (D) S > R > Q > P

Integer

9. How many compounds gives fastest S_N1 Reaction than $CH_3—\underset{\displaystyle CH_3}{\underset{|}{CH}}—Cl$

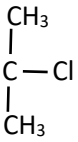
(1) $CH_3–Cl$ (2) $CH_3 – O – CH_2 – Cl$ (3) $Ph – CH_2 – Cl$

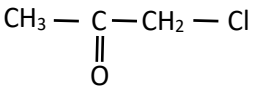
(4) $CH_3 — \underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}} — Cl$ (5) $CH_3 — \underset{\displaystyle O}{\overset{\displaystyle O}{\overset{\|}{C}}} — CH_2 — Cl$ (6) $Ph_2CH — Cl$

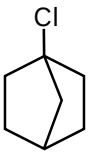
(7) $CH_3 — CH_2 — Cl$

10. How many compounds does not give S_N1 or S_N2 Reaction

(1) Ph—Cl

(2) 

(3) 

(4) 

(5) Ph – CH_2 – Cl

(6) CH_3—CH_2—Cl

(7) CH_3 – CH = CH – Cl

(8) H_3C – CH = CH – CH_2 – Cl

Answer Key

1.	(B)	2.	(C)	3.	(B)	4.	(A)	5.	(C)
6.	(2,1,3,3,)	7.	(C)	8.	(A)	9.	(04.00)	10.	(03.00)

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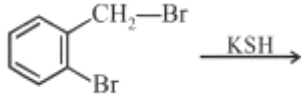
ELP

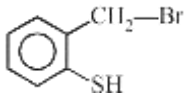
Educator Led Practice

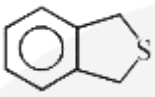
SUBJECT: IIT-OC | COURSE: EXCEL (XII) | ELP NO. 4 | Topic: Alkyl Halide

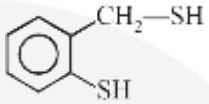
1. Which one of the following statements is correct about SN^1 reaction
   (A) Perfect racemisation is observed
   (B) Only Walden inversion is observed
   (C) Total retention of configuration is observed
   (D) Polar protic solvent is preferred

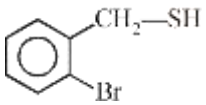
2. Find the major product of the following reaction:



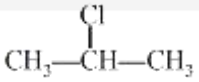
(A) 

(B) 

(C) 

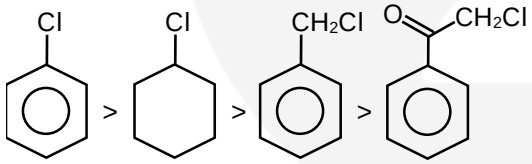
(D) 

3. Incorrect order of rate of S_N2 reaction is:

(A) $CH_3Cl > CH_3CH_2Cl > CH_3CH_2CH_2Cl >$ 

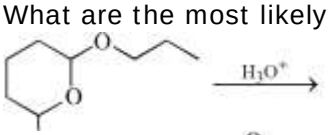
(B) 

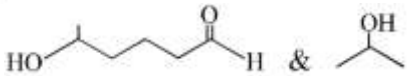
(C) 

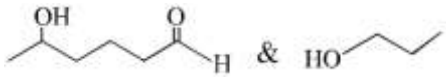
(D) 

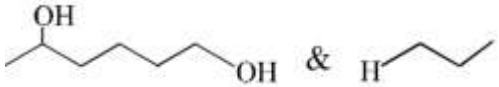
4. An unknown alcohol is treated with the "Lucas reagent' to determine whether the alcohol is primary, secondary or tertiary. Which alcohol reacts fastest and by what mechanism:
   (A) Secondary alcohol by SN^1
   (B) Tertiary alcohol by SN^1
   (C) Secondary alcohol by SN^2
   (D) Tertiary alcohol by SN^2

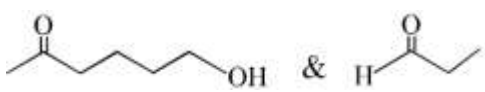
5. What are the most likely products of the reaction shown below?



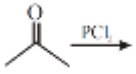
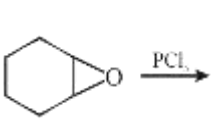
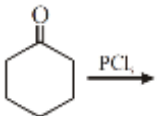
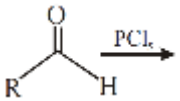
(A) 

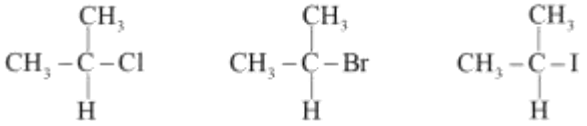
(B) 

(C) 

(D) 

6. In which of the following reaction gemdichloride will not formed:

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

7. 

From left to right incorrect statements is:

(A) Rate of S_N1 mechanism increases in polar protic solvent

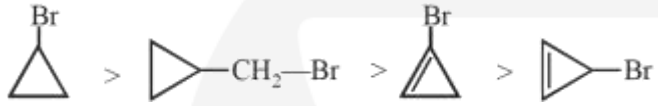
(B) Rate of S_N2 mechanism increases in DMSO

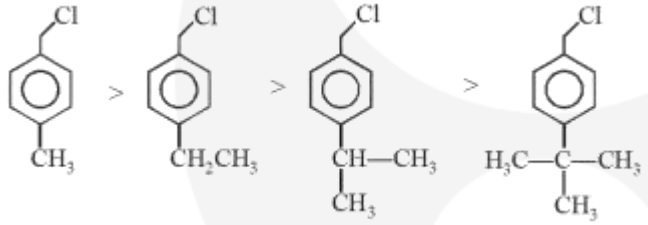
(C) Rate of E_2 mechanism increases

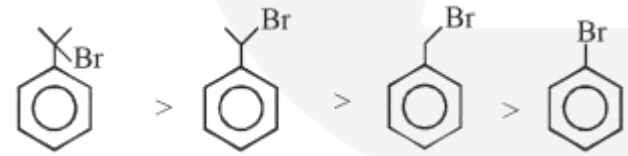
(D) Rate of E_1 mechanism decrease

8. Correct order of S_N1 reactivity is :

(A) 

(B) 

(C) 

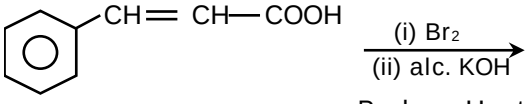
(D) 

Integer

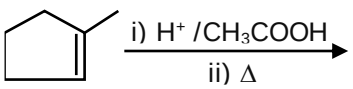
9. Hydrocarbon 'A' gives monobromo derivative on reacting with excess HBr, 1 mole of the hydrocarbon require 6 moles of O_2 for complete combustion, total number of carbon atoms present in hydrocarbon.

10. In How many Reaction decarboxylation take place.

(a) $CH_3—COOAg \xrightarrow{Br_2}$

(b) 

(c) $CH_3—CH=CH_2 \xrightarrow[\text{ii) KCN}\\\text{iii) } H_3O^+\\\text{iv) KOH/electrolysis}]{\text{i) HBr/Peroxide}}$

(d) 

Answer Key

1.	(D)	2.	(D)	3.	(D)	4.	(B)	5.	(B)
6.	(B)	7.	(D)	8.	(CD)	9.	(4)	10.	(3)

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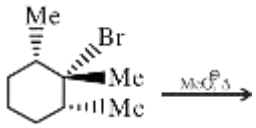
ELP

Educator Led Practice

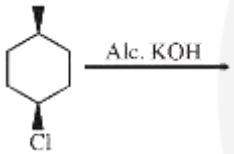
SUBJECT: IIT-OC | COURSE: EXCEL (XII) | ELP NO. 5 | Topic: Alkyl Halide

1. Reactivity towards alcoholic $AgNO_3$:
(I) 1-bromo-1-butene (II) 3-bromo-1-butene (III) 4-bromo-1-butene
(A) I > II > III (B) III > II > I (C) II > I > III (D) II > III > I

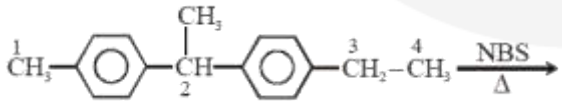
2. Reactivity towards KCN :
(I) Benzyl chloride (II) Chlorobenzene (III) Ethyl chloride
(A) I > II > III (B) III > II > I (C) I > III > II (D) III > I > II

3. 

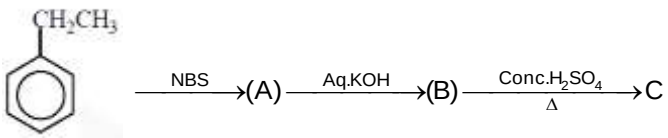
Correct statement regarding product.
(A) Only one alkene is produced
(B) Non resolvable major product
(C) Major product shows geometrical isomerism
(D) Major product can show optical isomerism

4. 

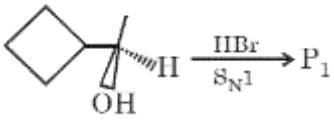
Correct statement regarding reaction.
(A) Product can show geometrical isomerism
(B) It is an example of E_2 mechanism
(C) (±) 4-methyl cyclohexene is obtained as a product
(D) Racemic mixture of alcohols are obtained as product

5. Most reactive position in the given reaction.


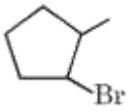
(A) 1 (B) 2 (C) 3 (D) 4

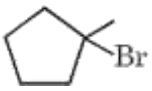
6. 

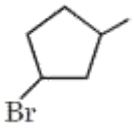
Which statement is correct regarding C:
(A) C decolorised Br_2 water
(B) C on reaction with HBr & HBr + H_2O_2 giving same product
(C) C is also formed when A undergoes reaction with alcoholic KOH
(D) C when reacts with H_3O^+, B is formed

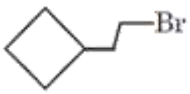
7. 

P_1 is:

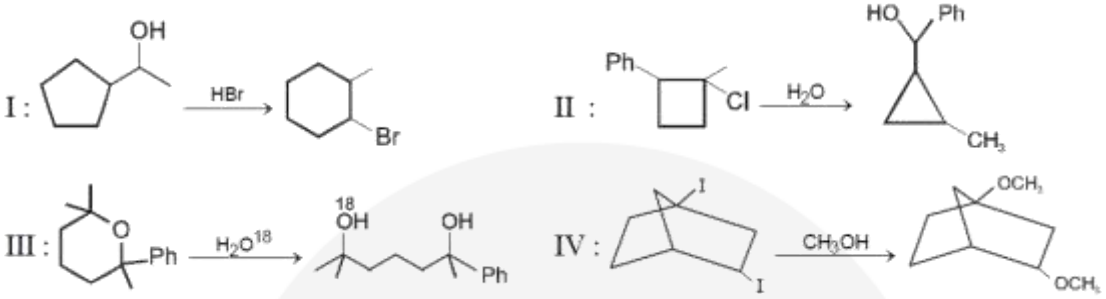
(A) 

(B) 

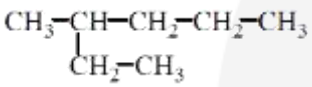
(C) 

(D) 

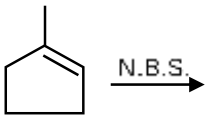
8. Which of the following reactions are not representing the correct major product :



Integer

9. 

Number of monochlorinated product when following compound undergo reaction with Cl_2/hv is:

10. 

Total number of mono substituted products possible (excluding stereoisomers)

Answer Key

1.	(D)	2.	(C)	3.	(D)	4.	(BC)	5.	(B)
6.	(ACD)	7.	(B)	8.	(I, IV)	9.	18.00	10.	(5)