WORK SHEET - 06

Single Correct

Q.1 True statements regarding S_N1 reaction is/are

(A) Perfect racemisation is observed (B) Only Walden inversion is observed

(C) Total retention of configuartion is observed (D) None of these

Q.2 Pick an ether which cannot be prepared by direct Williamson's synthesis.

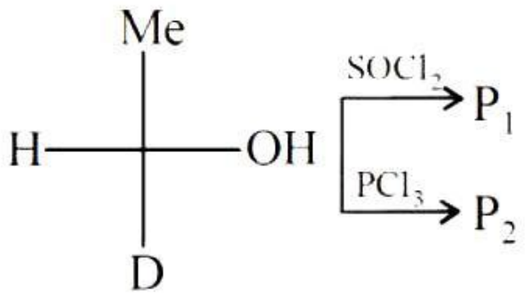
(A) $CH_3CH_2CH_2–O–CH_2CH_2CH_3$ (B) $Ph–O–CH_2CH_3$

(C) $(CH_3)_3C–O–C_2H_5$ (D) $CH_3CH=CH–O–CH=CH_2$

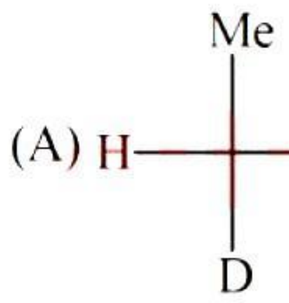
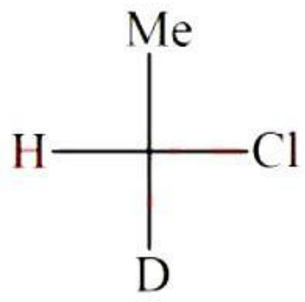
Q.3 Which of the alkyl halides will under go S_N1 reaction at a fastest rate?

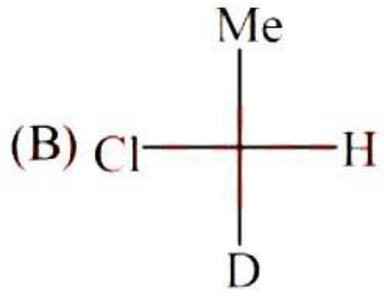
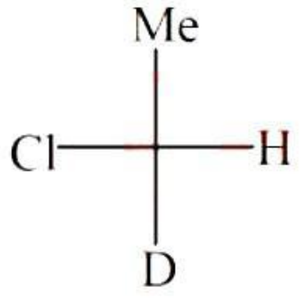
(A) $Cl–CH_2–CN$ (B) $Cl–CH_2–NO_2$ (C) $Cl–CH_2–OMe$ (D) $Cl–CH_2–CH_3$

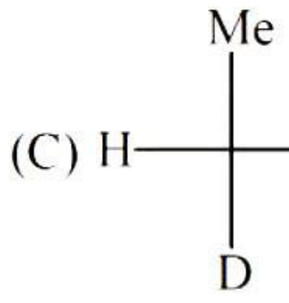
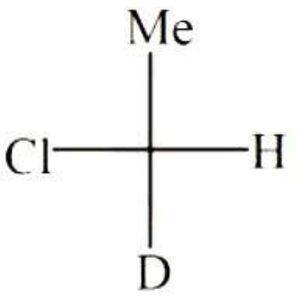
Q.4 Select the correct product from the following

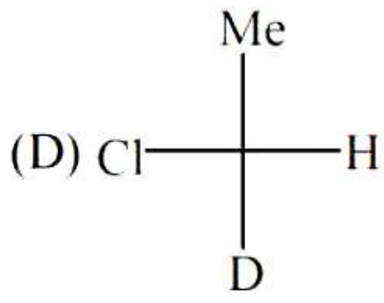
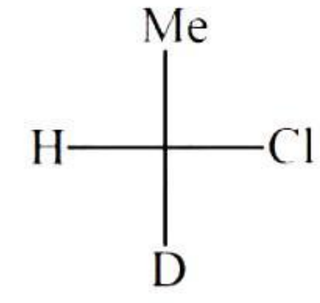


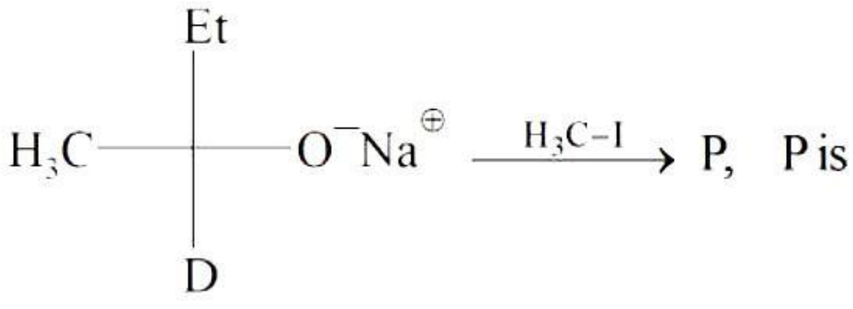
P_1 & P_2 are respectively.

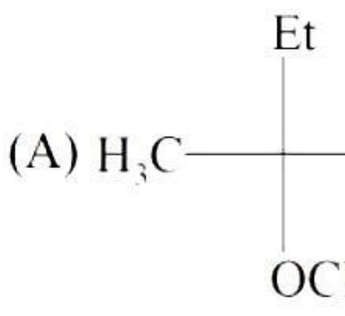
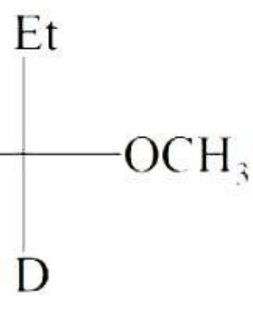
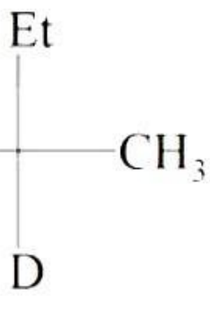
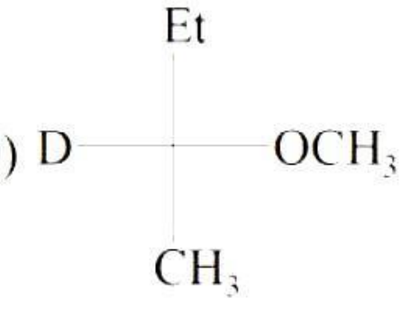
(A)  & 

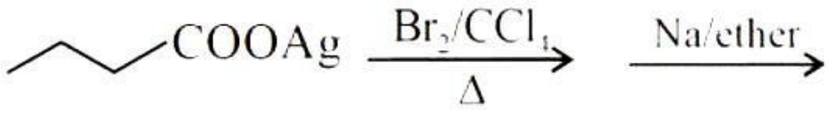
(B)  & 

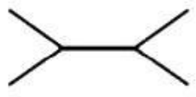
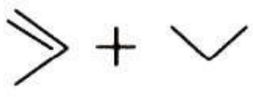
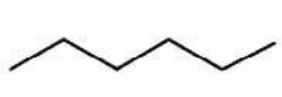
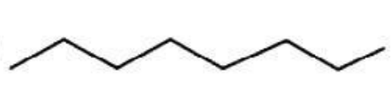
(C)  & 

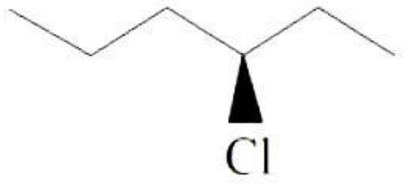
(D)  & 

Q.5 

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

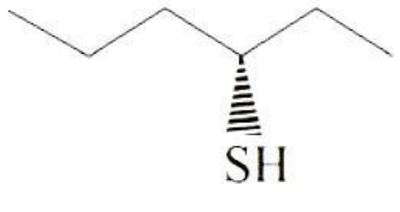
Q.6 

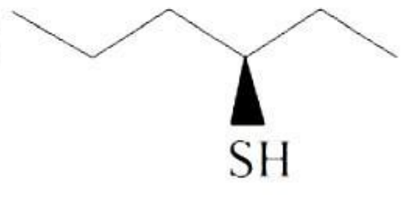
(A)  (B)  (C)  (D) 

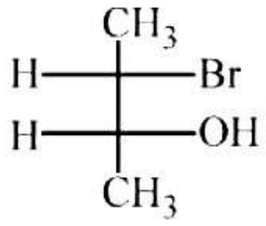
Q.7  $\xrightarrow{K^{\oplus}\,{}^{\ominus}SH\ /\ DMF}$ Major product(s)

(A) 

(B) 

(C) 

(D) 

Q.8  $\xrightarrow{HBr}$ (X) $\xrightarrow[\text{acetone}]{NaI}$ (Y) (Major)

Product (Y) is

(A) cis-2-butene (B) trans-2-butene (C) 1-butene (D) Iso-butene

Comprehension

Paragraph for question nos. 9 to 11

Wurtz reaction

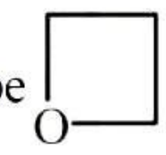
$R{-}X \xrightarrow[\text{Dry ether}]{Na} R - R + NaX +$ Disproportionation product

Wurtz reaction take place via free radical mechanism as well as ionic mechanism. Generally major product will form by radical combination reaction if radical is 1° or 2° and major product will form by disproportionation reaction if radical is 3°. If diradical generate during reaction then generally major product form by intramolecular combination.

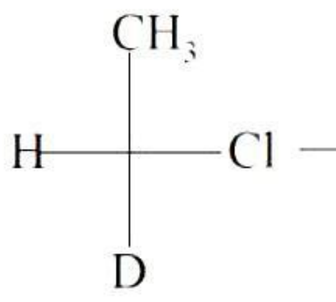
Q.9 Which statement is incorrect about Wurtz reaction.

(A) Reactivity order for halides is R–I > R–Br > R–Cl > R–F

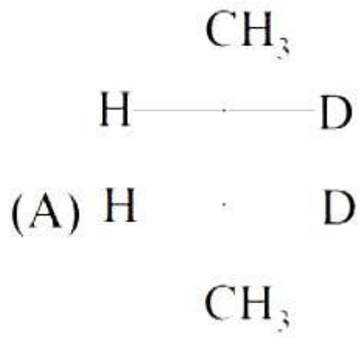
(B) If two type of halides are used then cross products also form during reaction.

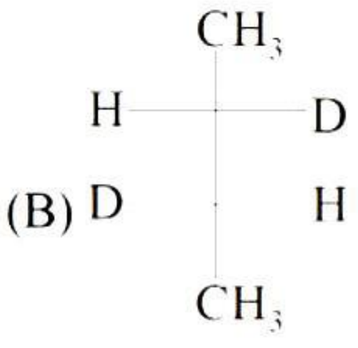
(C) If $H_2C(OH)-CH_2-CH_2-Cl$ is used during reaction then major product will be 

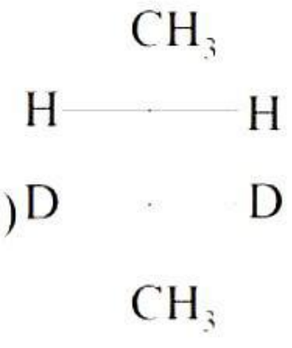
(D) Na metal acts as oxidising agent during reaction.

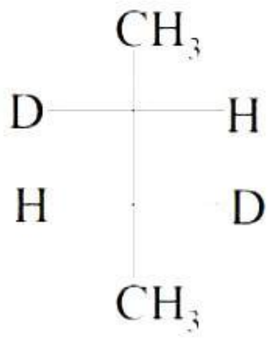
Q.10  $\xrightarrow{Na\ /\ Dry\ ether}$ Product(s)

Which product should not form during reaction.

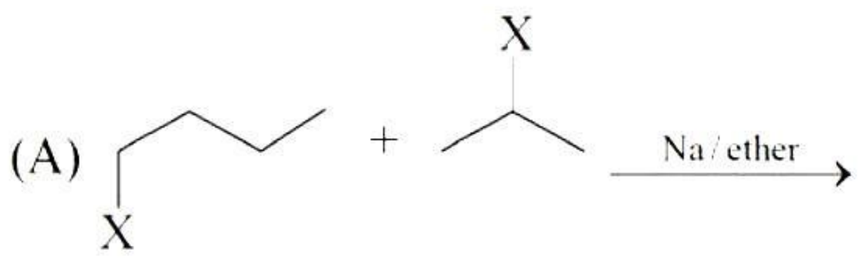
(A) 

(B) 

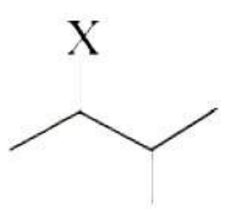
(C) 

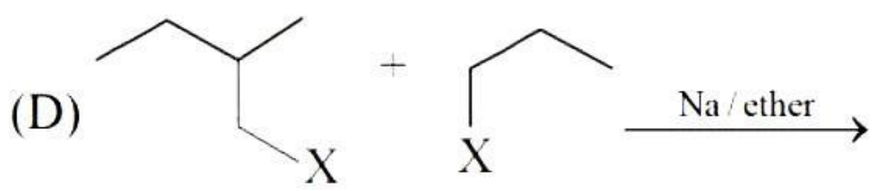
(D) 

Q.11 3-Methylhexane can be prepared by

(A)  Na / ether

(B)  Na / ether

(C) $H_3C - CH_2 - X$ +  Na / ether

(D)  Na / ether

More than one may be correct

Q.12 $CD_3 - \underset{\displaystyle Cl}{\underset{|}{CH}} - CH_3 \xrightarrow{\text{alc.KOH}}$

True about above reaction is/are:

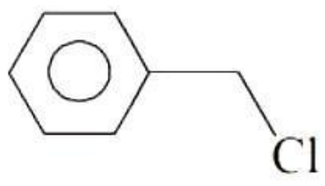
(A) It is E^2 elimination

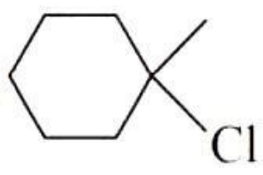
(B) Saytzeff's alkene is major product in above reaction

(C) CD_3–CH=CH_2 is major product

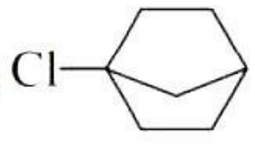
(D) It is anti elimination

Q.13 Which of the following can give ppt. of AgCl with both aq. $AgNO_3$ & alc. $AgNO_3$.

(A) 

(B) 

(C) $(Me_3C)_3C$–Cl

(D) 

Q.14 Methane will be produced in which of the following reaction:

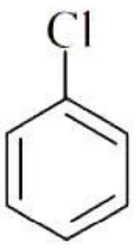
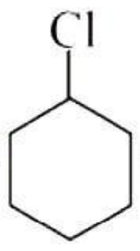
(A) $Be_2C \xrightarrow{H_2O}$

(B) $CH_3OH \xrightarrow{LAH}$

(C) CH_3–Cl $\xrightarrow[EtOH]{Na}$

(D) $Al_4C_3 \xrightarrow{H_2O}$

Q.15 Which of the statement is correct ?

(A)  is more reactive than  towards S_N1 mechanism due to aromaticity.

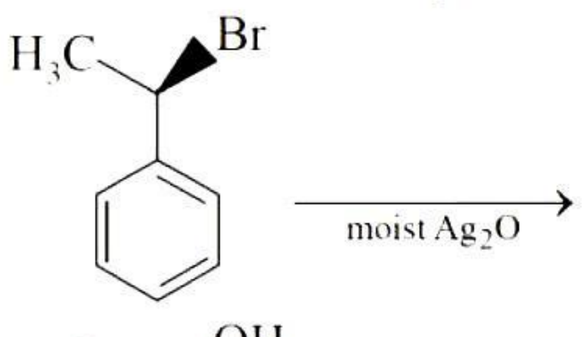
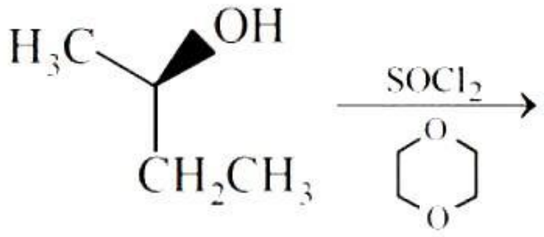
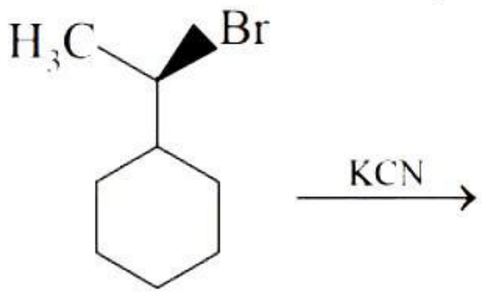
(B) Inversion of configuration take place during S_N2 mechansim at α-chiral carbon.

(C) Formation of R–Cl from R–OH by reaction with $SOCl_2$ is best method because byproducts are gases.

(D) CH_4 can be prepared by decarboxylation of carboxylic acid.

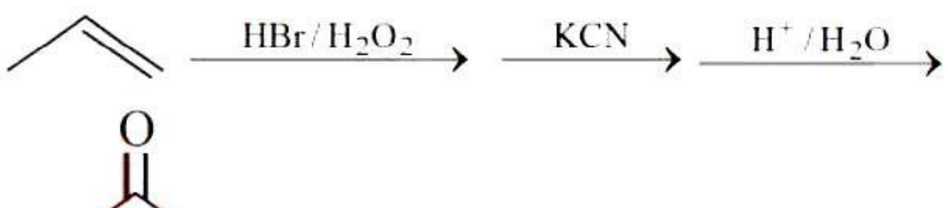
Match the column

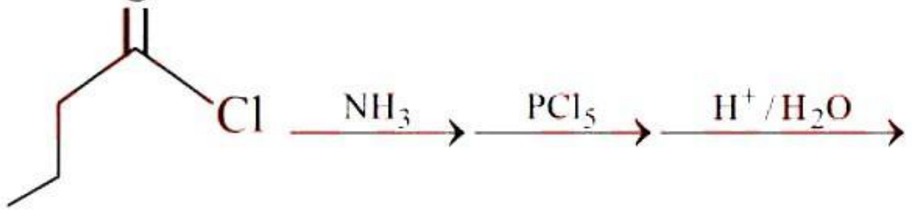
Q.16

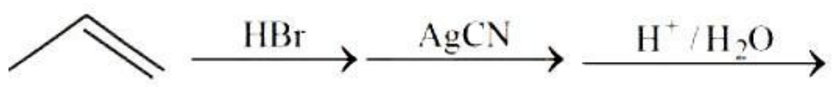
	Column I *(Reaction)*		**Column II** *(Mechanism of reaction for major product)*	
(A)			(P)	S_N1
(B)		moist Ag_2O	(Q)	S_N2
(C)		$SOCl_2$,	(R)	S_Ni
(D)		KCN	(S)	S_NAE
			(T)	S_NEA

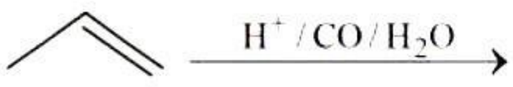
Subjective

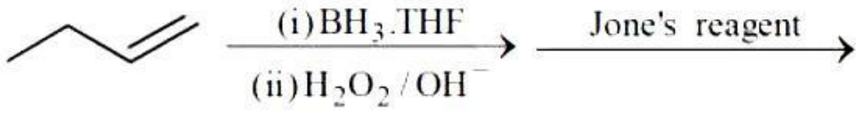
Q.17 Consider following reactions:

(a) 

(b) 

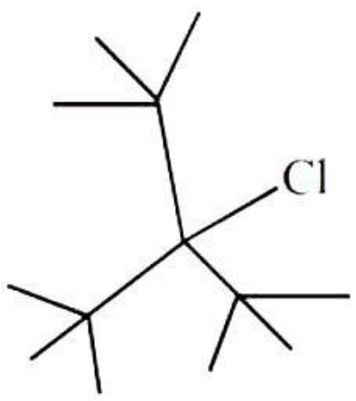
(c) 

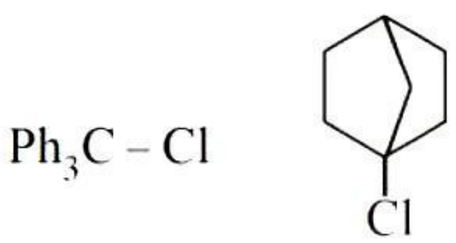
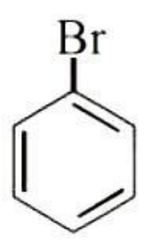
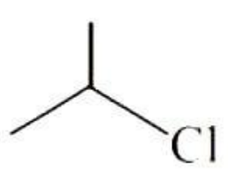
(d) 

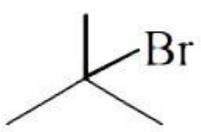
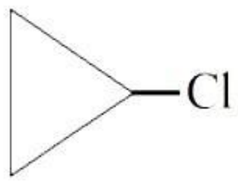
(e) 

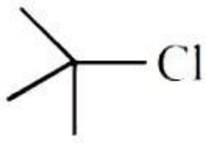
Number of reactions which can produce Butyric acid as major product is / are_____.

Q.18 Consider following compounds.



Number of compounds in above compound which are more reactive than  for S_N1 reaction is / are _____.

ANSWER KEY

Q.1	D	Q.2	D	Q.3	C	Q.4	C	Q.5	B
Q.6	C	Q.7	C	Q.8	B	Q.9	D	Q.10	C
Q.11	B	Q.12	ACD	Q.13	ABC	Q.14	ACD	Q.15	BCD
Q.16	[(A) S, (B) P, (C) R ,(D) Q]			Q.17	[3]	Q.18	[4]		

WORK SHEET - 06

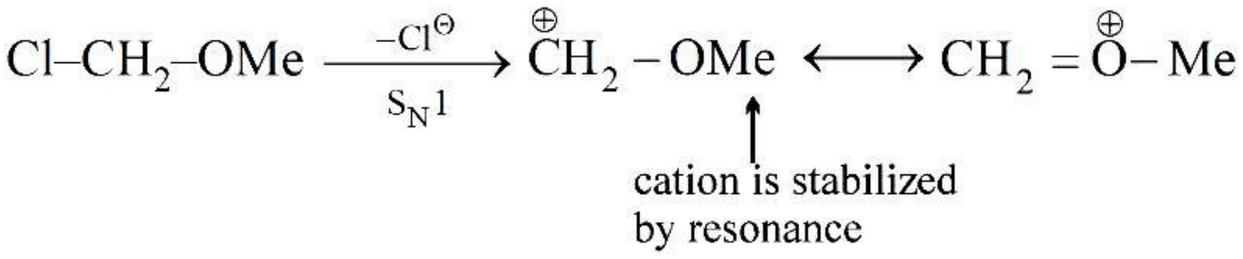
HINTS & SOLUTION

Q.1 (D)

Q.2 (D)

As for its preparation we have to take $CH_3–CH=CH–X + CH_2=CH–ONa$ or $CH_3–CH=CH–ONa + CH_2=CH–X$. But in either case ether will not be prepared as in both cases there are vinylic halides.

Q.3 (C)

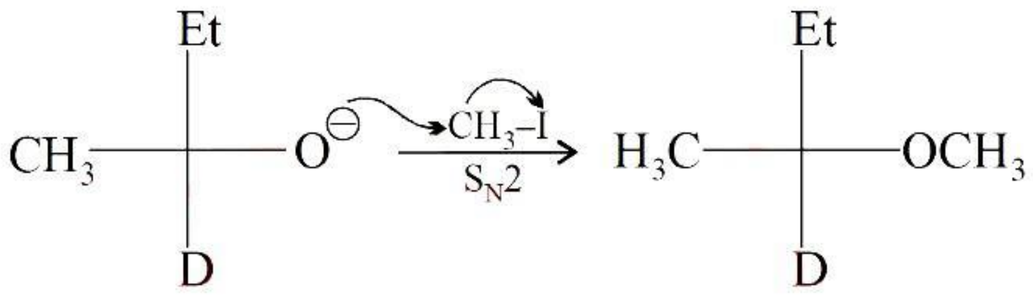


Q.4 (C)

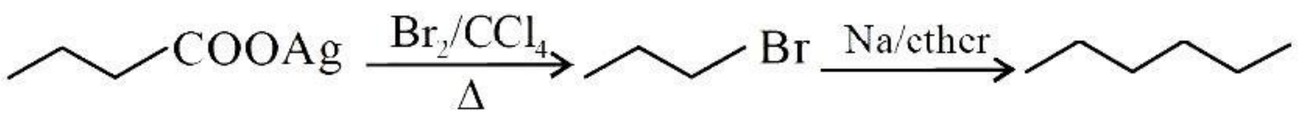
$SOCl_2 \rightarrow$ Retention of configuration $\rightarrow S_Ni$ mechanism

$PCl_3 \rightarrow$ Inversion $\rightarrow S_N2$ mechanism

Q.5 (B)

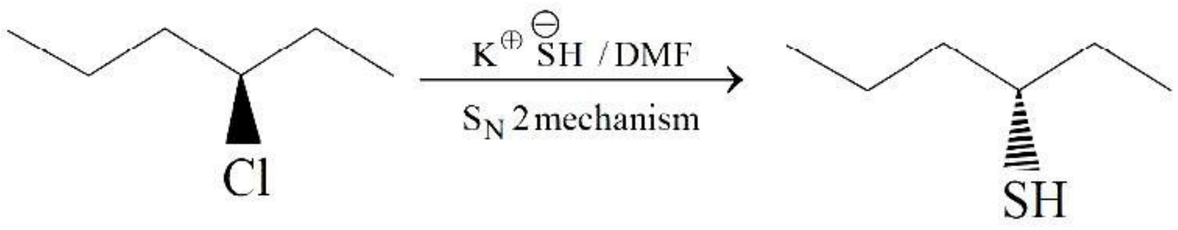


Q.6 (C)

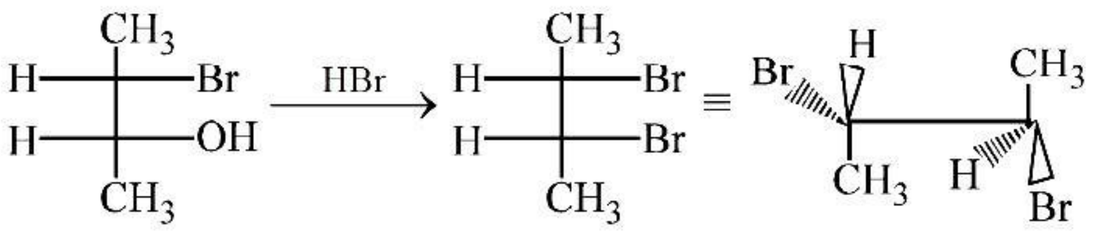


Hunsdiecker reaction

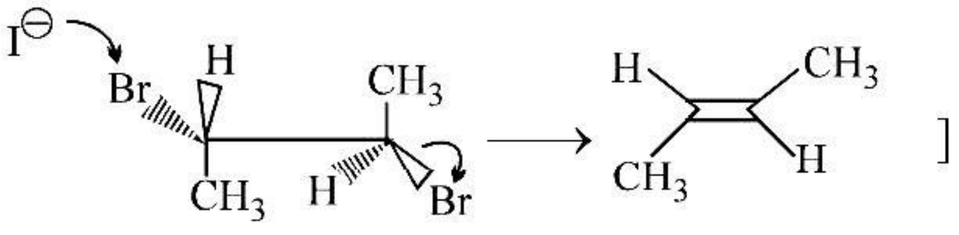
Q.7 (C



Q.8 (B)



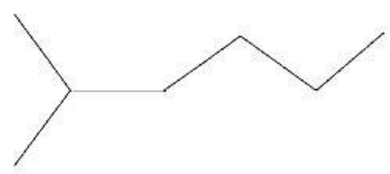
(NGP + S_N2 retention of configuration)



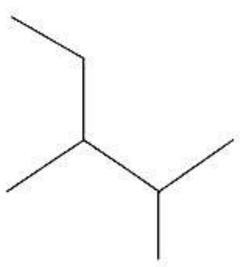
Q.9 (D)

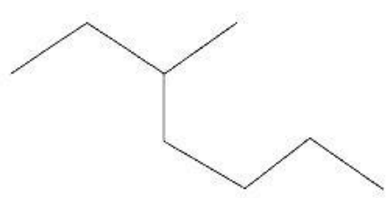
Q.10 (C)

Q.11 (B)

(A) 

(B) 

(C) 

(D) 

Q.12 (A) (C) (D)

B.E. C–D > C–H

H effect H > D

Stability $CD_3–CH=CH_2 < CH_3–CH=CD_2$

Q.13 (A) (B) (C)

A,B,C all capable of giving S_N1

Q.14 (A) (C) (D)

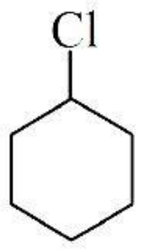
(A), (C), (D)

$Be_2C + 4H_2O \rightarrow CH_4 + 2Be(OH)_2$

$CH_3–Cl \xrightarrow[EtOH]{Na} CH_4$

$Al_4C_3 + 12\ H_2O \rightarrow 3CH_4 + 4Al(OH)_3$

Q.15 (B) (C) (D)

(A)  → Partial double bond character.

(B) in SN_2 inversion takes place

(C) $R–OH + SOCl_2 \rightarrow RCl + SO_2(\uparrow) + H(\uparrow)$ because by product are in gaseous state so reaction goes in foward direction.

(D) $Me–COOH \xrightarrow[\Delta]{NaOH+CaO} Me–H + CO_2(\uparrow)$

Q.16 (A) S, (B) P, (C) R ,(D) Q

Q.17 3

Q.18 4