## JEE MAIN ANSWER KEY & SOLUTIONS

**SUBJECT :- CHEMISTRY**
**CLASS :- 12th** **PAPER CODE :- CWT-7**
**CHAPTER :- ALKYL HALIDE**

### ANSWER KEY

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.** | (C) | **2.** | (C) | **3.** | (C) | **4.** | (D) | **5.** | (B) | **6.** | (A) | **7.** | (A) |
| **8.** | (A) | **9.** | (A) | **10.** | (B) | **11.** | (A) | **12.** | (B) | **13.** | (B) | **14.** | (A) |
| **15.** | (C) | **16.** | (C) | **17.** | (B) | **18.** | (A) | **19.** | (A) | **20.** | (C) | **21.** | 2 |
| **22.** | 4 | **23.** | 29 | **24.** | 10 | **25.** | 2 | **26.** | 5 | **27.** | 1 | **28.** | 3 |
| **29.** | 5 | **30.** | 7 | | | | | | | | | | |

### SOLUTIONS

**1.** (C)

**Sol.** $ROH + SOCl_2 \xrightarrow{Pyridine} R–Cl + SO_2 + HCl$

**2.** (C)

**Sol.** $ROH + SOCl_2 \rightarrow RCl + SO_2 + HCl$. It is evident that products other than RCl, are both gases ($SO_2$, HCl).

**3.** (C)

**Sol.** In Hunsdiecker reaction a silver salt of an acid reacts with bromine in the presence of $CCl_4$.

**4.** (D)

**Sol.** Since electrons are in resonance with ring.

**5.** (B)

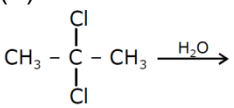
**Sol.** $CH_3-CH_2-Cl \xrightarrow[\Delta]{Alc.KOH} CH_2=CH_2$

Elimination reaction

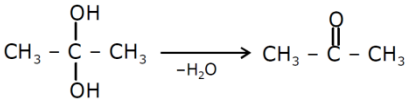
**6.** (A)

**Sol.** $CH_3–Br + AgCN \longrightarrow CH_3–N \cong C$ (A) $\xrightarrow{2H_3O^+} CH_3NH_2$ (B) + HCOOH

**7.** (A)

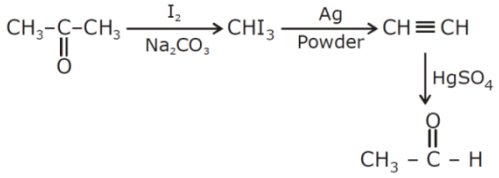


**Sol.**



**8.** (A)

**Sol.**



**9.** (A)

**Sol.** $:CCl_2$

**10.** (B)

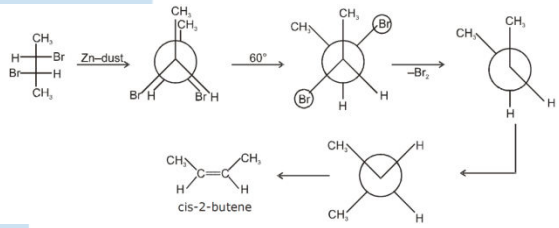
**Sol.** $Ph–NH_2 + CHCl3 \xrightarrow{3KOH} Ph-N\equiv C + \underset{+3KCl}{3H_2O}$

**11.** (A)

**Sol.** Due to - I effect, Cl atoms tend to attract the electro ns o f C– H bond towards themselves.

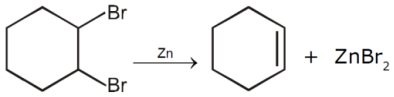
**12.** (B)

**Sol.**




**13.** (B)

**Sol.**



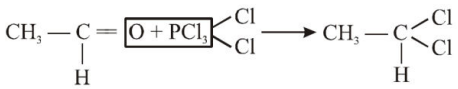
Both Br are eliminated from adjacent carbon that is called β elimination.

**14.** (A)

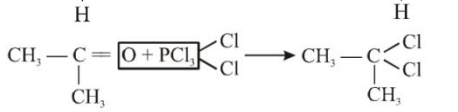
**Sol.** Leaving group are different in all substrate So. rate of $S_N2$ a leaving tendency of leaving group.

**15.** (C)

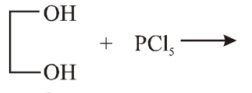
**Sol.** (A)



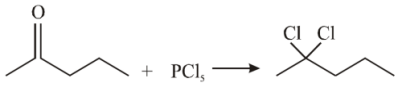
(B)



(C)

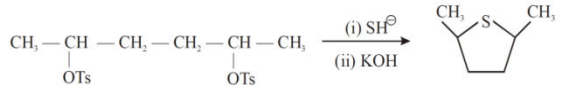


(D)

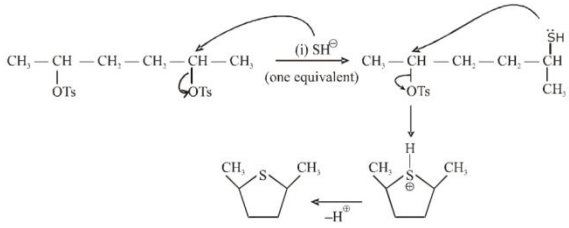


**16.** (C)

**Sol.**

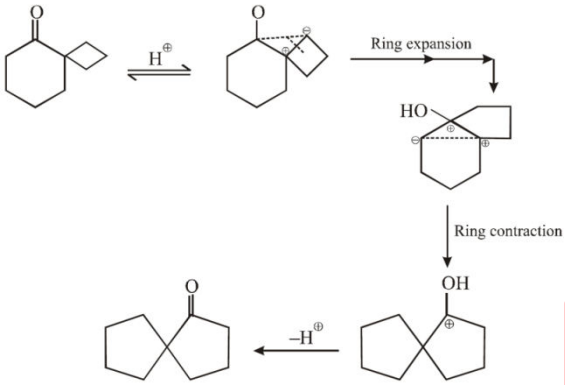


Mechanism



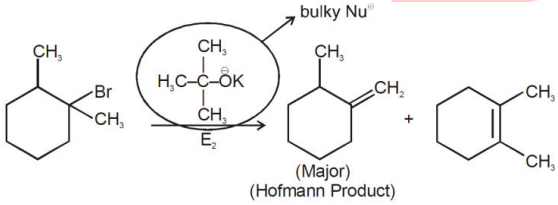
**17.** (B)

**Sol.**



**18.** (A)

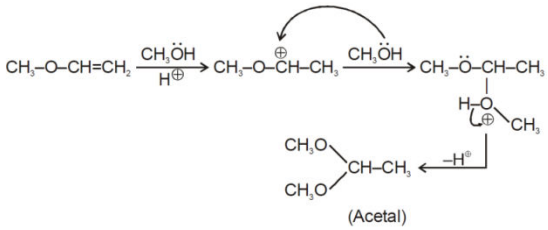
**Sol.**



in presence of highly branched base hoffmann eliminated product will formed.

**19.** (A)

**Sol.**



**20.** (C)

**Sol.** In $E_2$ elimination reaction.

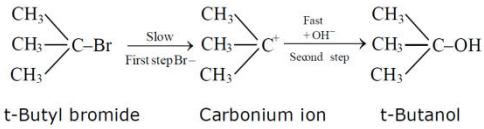
Rate of reaction $\propto$ (alkyl halide) (base)

Alkyl halide and base both have participate in slowest step so rate of reaction is depends on both the conc. of alkyl halide and base.

**21.** 2

**Sol.** The number of step involved in $S_N1$ and $S_N2$ mechanisms are given by the set 2, 1

The $S_N1$ reaction takes place in 2 steps as follows.



t-Butyl bromide Carbonium ion t-Butanol

The $S_N2$ reaction takes place in 1 step as follows -

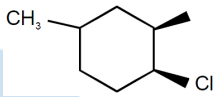
$$CH_3-Br \xrightarrow[\text{Slow}]{+OH^-} [HO---CH_3---Br]$$

Methyl bromide (one step transition state)

$$\xrightarrow[\text{Methanol}]{\text{Fast}} CH_3OH + Br^-$$

**22.** 4

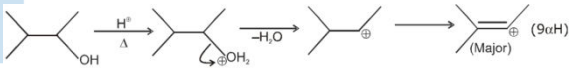
**Sol.**

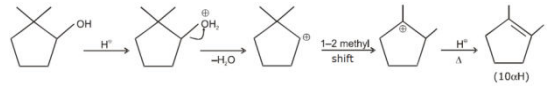


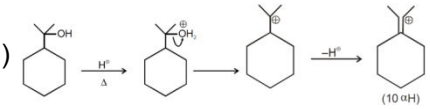
This compound gives four $S_N1$ product.

**23.** 29

**Sol.** Total number of $\alpha$ - hydrogen A + B + C = 29

(i) 

(ii) 

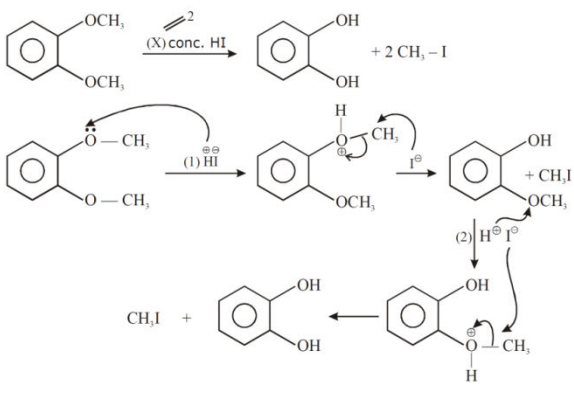
(iii) 

**24.** 10

**Sol.** DDT is a non biodegradable pollutant.

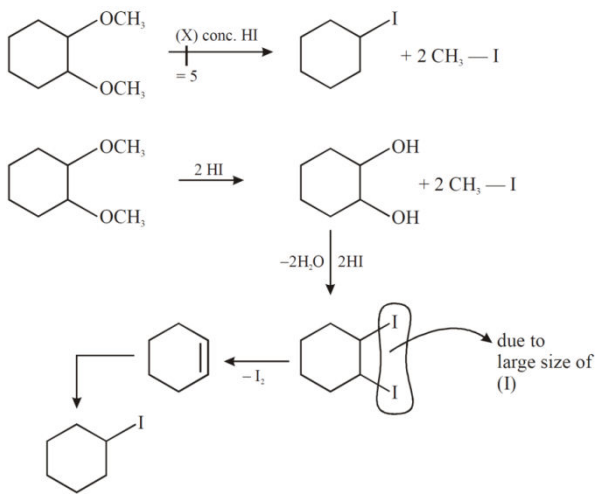
**25.** 2

**Sol.**



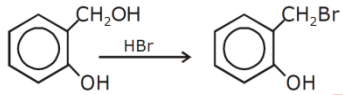
**26.** 5

**Sol.**




**27.** 1

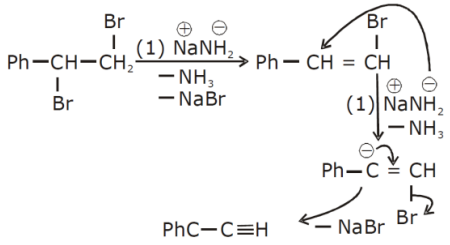
**Sol.**




Not break due to double bond character

**28.** 3

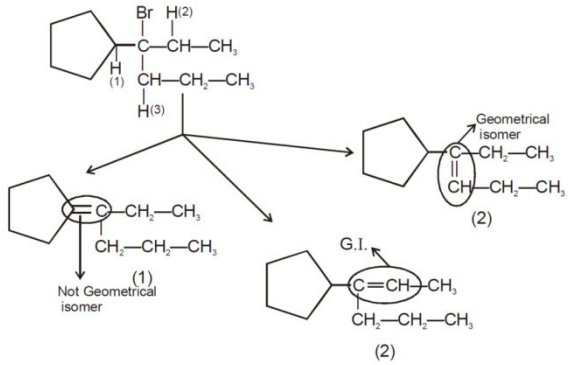
**Sol.**




No. of moles of $NaNH_2$ ($\pi$) = 2

**29.** 5

**Sol.**

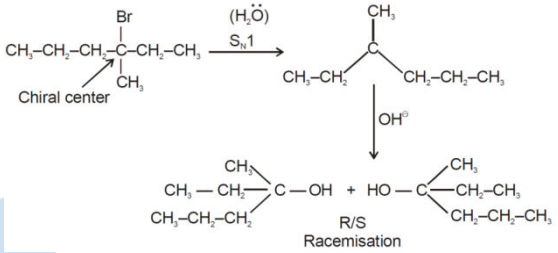



Total no. of product $\Rightarrow$ (1 + 2 + 2) $\Rightarrow$ 5

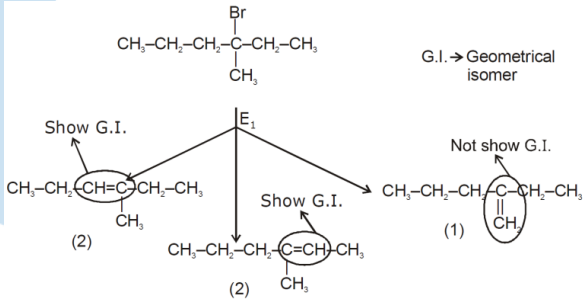
**30.** 7

**Sol.**

(1)




(2)




Total no. $S_N1 + E_1$ of products = 7.