DPP

DAILY PRACTICE PROBLEMS

CLASS : XIIth
DATE :

SOLUTION

SUBJECT : CHEMISTRY
DPP NO. :7

Topic :-HALOALKANES AND HALOARENES

1 **(a)**

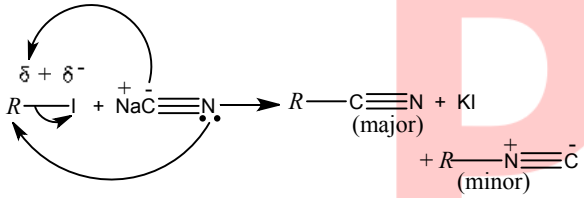
$CH_3COCH_3 + PCl_5 \longrightarrow CH_3CCl_2CH_3 + POCl_3$

2 **(a)**

Grignard reagent is $RMgX$.

3 **(c)**

CN^- (cyanide) is an ambidenate ligand, *i. e.* , it can donate electrons to the alkyl iodide either by using carbon or by using nitrogen.



In principle, the reaction can occur either through carbon or nitrogen. But in practice, the reaction mainly occurs through carbon as carbon behave like a strong nucleophile.

4 **(a)**

The iodoform test is given by compounds which have

$CH_3-\overset{\overset{O}{\|}}{C}-$ or $CH_3-\overset{\overset{OH}{|}}{CH}-$ group.

In this given compounds only CH_3CH_2OH gives positive iodoform test as it has

$CH-CH-$ group.
|
OH

5 **(d)**

KBr and conc. H_2SO_4 gives HBr , which reacts with C_2H_5OH to give C_2H_5Br.

7 **(b)**

$CCl_3COCH_3 + Ca(OH)_2 \longrightarrow CHCl_3 + (CH_3COO)_2Ca$

8 **(d)**

$C_2H_5Cl \xrightarrow{\text{Dehydrohalogenation}} C_2H_4$

(24+5+35.5) (24+4)

64.5 g of C_2H_5Cl forms=28 gC_2H_4

$\therefore$ 32.25 g of C_2H_5Cl will form $= \frac{28}{64.5} \times 32.25$

$= 14$ g C_2H_5

yield of alkene $= 50\%$ of 14 g

$= \frac{50}{100} \times 14 = 7$g

9 **(d)**

p- dichlorobenzene molecule has symmetrical structure. It can fit well in its crystal lattice. The intermolecular forces of attraction are strong. Hence, it possesses highest melting point.

11 **(a)**

The compound containing

$CH_3 - \overset{\overset{O}{\|}}{C} -$ and $- \overset{\overset{OH}{|}}{CH} - CH_3$

groups on heating with sodium hypoiodite (NaOI) or I_2 with aq. NaOH or aq. Na_2CO_3 gives yellow ppt. of iodoform and the reaction is known as iodoform.

$$H_3C - \overset{\overset{OH}{|}}{CH_2 - CH} - CH_3 + OI^- \longrightarrow$$

$$CH_3 - CH_2 - \overset{\overset{O}{\|}}{C} - CH_3 + I^- + H_2O$$

$$CH_3 - CH_2 - \overset{\overset{O}{\|}}{C} - CH_3 + OI^- \longrightarrow$$

$$CH_3 - CH_2 - \overset{\overset{O}{\|}}{C} - CI_3 + \overline{O}H$$

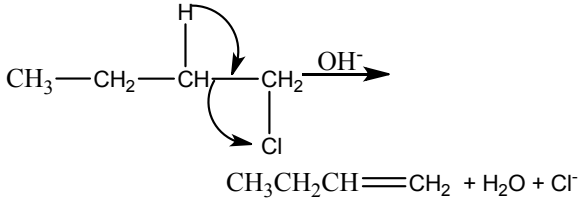
$$CH_3CH_2 - \overset{\overset{O}{\|}}{C} - CI_3 + HONa$$

$$CH_3 - CH_2 - \overset{\overset{O}{\|}}{C} - ONa + CHI_3$$

iodoform

12 **(a)**

Alkyl halides in presence of strong alcoholic alkali give elimination reaction.



$CH_3CH_2CH{=}CH_2 + H_2O + Cl^-$

14 **(b)**

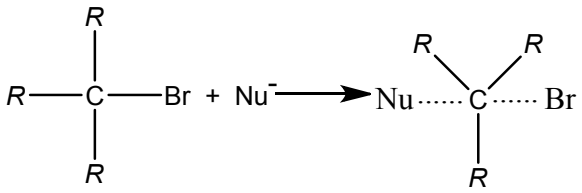
$$\underset{\text{Mol.wt.74}}{(CH_3)_3COH} \xrightarrow{H_2SO_4} \underset{\text{Mol.wt.56}}{(CH_3)_2C=CH_2}$$

$\because$ % yield $= 65$

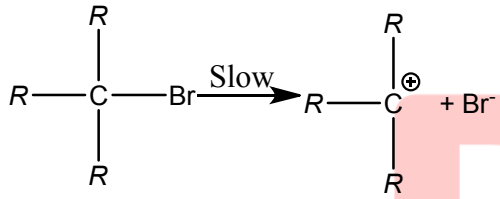
$\therefore$ Real yield $= \frac{56}{74} \times 37 \times \frac{65}{100} = 18.2$ g

15 **(a)**

In S_N2 reaction, nucleophile and alkyl halide react in one step.



Thus, tertiary carbon is under steric hindrance thus reaction does not take place until (C-Br) bond breaks



Which is the $S_N1$reaction.

16 **(b)**

$$CH_3CH_2CH_2Br \xrightarrow[\text{Dehydrobromination}]{\text{NaOH(alc.)}} CH_3CH{=}CH_2$$
$$\text{(-HBr)}$$

$$CH_3CH{=}CH_2 \xrightarrow[20^oC]{\text{HBr/acetic acid}} CH_3CHBr\cdot CH_3$$

Acc. To Markownikoff's rule.

$NaOH(aq.)$ will lead to the formation of $CH_3CH_2CH_2OH$;in

(d) $CH_3CHBrCH_2Br$ will be formed.

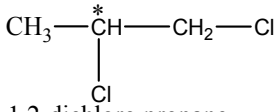
17 **(c)**

There are four isomers obtained.

$CH_3 - CH_2 - CH_3 + Cl_2 \longrightarrow$

$CH_3 - CH_2 - CHCl_2 + 2HCl$

(1,1,dichloro propane)



1,2-dichloro propane

(optical active)

d-and *l*-form

$CH_2 - CH_2 - CH_2$

| |

Cl Cl

1,3-dichloro propane

18 **(d)**

Two optical and two geometrical.

19 **(c)**

Industrial preparation of $CHCl_3$ is carried out by the action of bleaching powder over acetone.

20 **(a)**

$$RX + AgCN \rightarrow \underset{\text{alkyl isocyanide}}{RNC} + AgX$$

When alkyl halide reacts with silver cyanide, isocyanides are obtained. It is due to nucleophilic substitution in presence of Ag^+.

is least due to steric hinderance.

ANSWER-KEY										
Q.	1	2	3	4	5	6	7	8	9	10
A.	A	A	C	A	D	A	B	D	D	D
Q.	11	12	13	14	15	16	17	18	19	20
A.	A	A	B	B	A	B	C	D	C	A