DPP
DAILY PRACTICE PROBLEMS

CLASS : XIIth
DATE :

SOLUTION

SUBJECT : CHEMISTRY
DPP NO. : 7

Topic :-HYDROCARBONS

1 **(a)**

Lindlar's catalyst is Pd — $CaCO_3$deactivated by lead acetate. Cram *et. al* gave a better catalyst for this purpose as Pd — $BaSO_4$ poisoned by quinolene. This too is sometimes referred as Lindlar's catalyst.

2 **(b)**

Remember this value.

3 **(a)**

The aldehydes formed are oxidized by H_2O_2formed during hydrolysis.

5 **(c)**

The acidic nature is $H_2O > C_2H_2 > NH_3$; thus, conjugate base order will be $OH^- > C_2H^- > NH_2^-$.

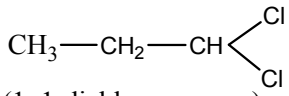
8 **(d)**

'X' is a three carbon compound with two halogen atom, so its molecular formula is $C_3H_6Cl_2$. Only terminal alkynes give red ppt. with ammoniacal Cu_2Cl_2, so the hydrocarbon produced by the reaction of 'X' with alc. KOH, must be a terminal alkyne (*i.e.*, $CH_3C \equiv CH$).

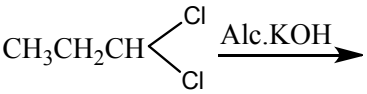
$$C_3H_6Cl_2 \xrightarrow{\text{Alc.KOH}} CH_3C \equiv CH \xrightarrow{\text{Amm.}Cu_2Cl_2} CH_3C \equiv CCu\downarrow$$

red ppt.

Compound (X) gives an aldehyde when reacts with aqueous KOH. This suggests that both the halogens are present on same terminal carbon atom. Thus, the formula of compound (X) is



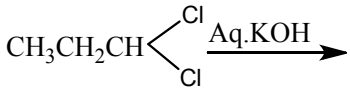
(1, 1-dichloropropane) and the reactions are as follows



$'X'$

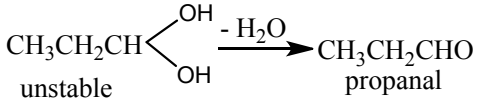
$$CH_3C \equiv CH \xrightarrow[Cu_2Cl_2]{\text{Ammoniacal}} CH_3C \equiv CCu\downarrow$$

red ppt.



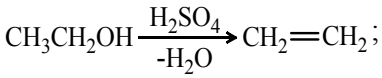
(*X*)

1, 1-dichloropropane



unstable propanal

9 **(a)**



Removal of H_2O is called dehydration.

10 **(d)**

Both vegetable and animal matter are origin of petroleum.

11 **(d)**

All are used in drying alkanes.

12 **(b)**

The stability order is:

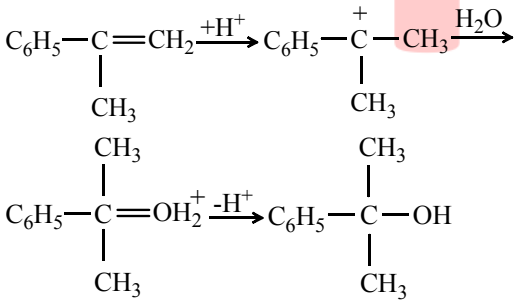
Staggered>skew>eclipsed

13 **(d)**

Cyclic hydrocarbon, with carbon-carbon bond length between1.34Å and 1.54Å, is benzene in which due to resonance, C — C, bond length is 1.39Å (*ie*.,between 1.34Å — 1.54Å). Benzene is a hexagonal molecule with bond-angle equal to120°.

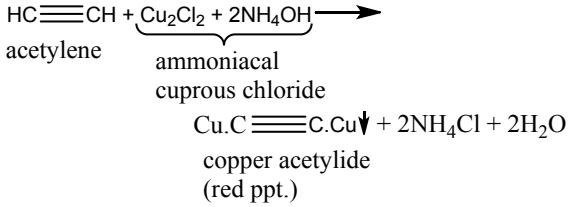
14 **(c)**

The reaction proceeds via carbocation mechanism.



15 **(c)**

Copper and silver alkylides are obtained by passing to alkynes in the ammoniacal solution of cuprous chloride and silver nitrate respectively. These reactions are used for detecting the presence of acetylenic hydrogen atom.



acetylene ammoniacal cuprous chloride

copper acetylide (red ppt.)

So, alkanes and alkenes remain unaffected.

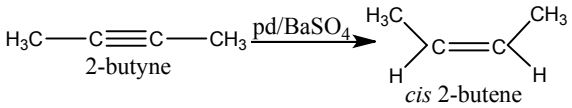
16 **(b)**

Benzene reacts with chlorine in presence of sunlight to give gammexane or benzene hexa chloride.

$$C_6H_6 + 3Cl_2 \xrightarrow{\text{Sunlight}} C_6H_6Cl_6$$

17 **(a)**

Hydrogenation in presence of Pd and $BaSO_4$ as *syn* addition and with Na and liquid NH_3 at 200 K is anti addition (*trans* compounds are formed.)



18 **(c)**

In benzene all the six carbon atoms are sp^2 hybridised. Out of these three sp^2 hybrid orbitals of each C-atom, two orbitals overlap with sp^2 hybrid orbitals of adjacent C-atoms to form six C — C single bonds. The remaining sp^2 orbital of each C-atom overlaps with *s*-orbitals of each H-atom to form six C — H single sigma bonds. Each C-atom is now left with one unhybridised *p*-orbital perpendicular to the plane of the ring.

20 **(b)**

Benzophenone (diphenyl ketone) can be prepared by the Friedel-Crafts' condensation between benzoyl chloride and benzene

$$C_6H_6 + C_6H_5COCl \xrightarrow{AlCl_3} C_6H_5COC_6H_5 + HCl(80\%)$$

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