

## Topic :-ORGANIC CHEMISTRY - SOME BASIC PRINCIPLES AND TECHNIQUES

1 (c)

Kejldahl's method is used for the estimation of nitrogen. The organic compound is heated with conc.  $H_2SO_4$  in presence of  $K_2SO_4$  (used to elevate boiling point of  $H_2SO_4$ ) and  $CuSO_4$  (used as catalyst) to convert all the nitrogen into  $(NH_4)_2SO_4$ .

2 (c)

Acetone and methanol have nearly equal boiling point. thus, they are separated by fractional distillation

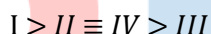
3 (b)

Follow IUPAC rules.

4 (c)

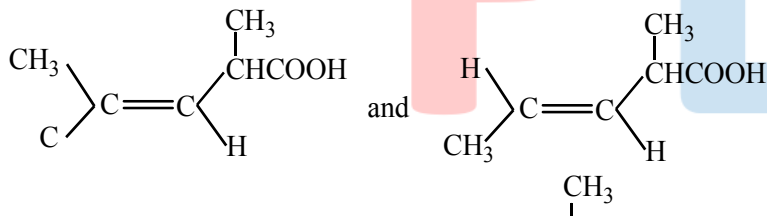
The oxygen atom in phenol has more dominating resonance effect than inductive effect. Increase in charge separation decreases the stability of a resonating structure

Stability of resonating structure in decreasing order will be



5 (c)

The acid exist in *cis* and *trans* forms :

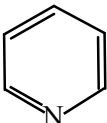


Also it has asymmetric carbon atom  $CH_3CH = HCOOH$ .

6 (a)

Follow the mechanism of esterification.

7 (b)

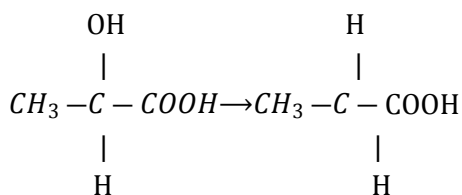
Pyridine  is a heterocyclic compound having six

membered ring formed with C and N-atoms.

8

**(a)**

When -OH group of lactic acid is replaced by H, then chiral carbon is lost.



lactic acid

∴ Its optical activity is lost.

10

**(a)**

2-butene exhibit rotamers. Rotamers are the isomers formed by restricted rotation.

11

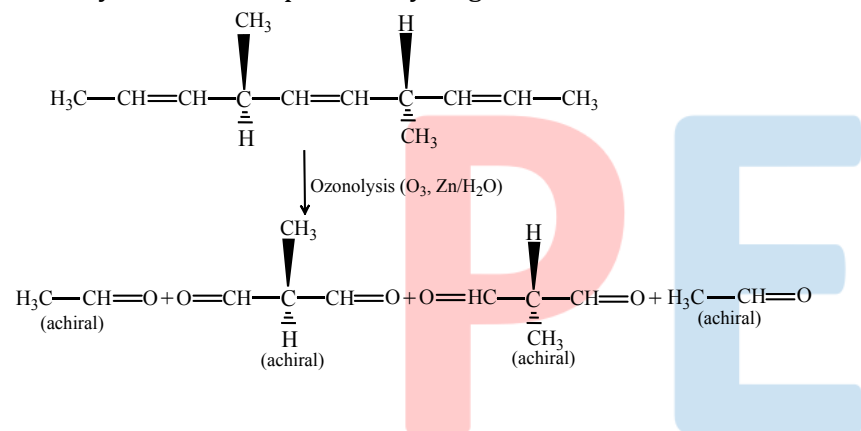
**(d)**

It contains lone pair electron on N atom.

12

**(a)**

Ozonolysis of the compound may be given as :



13

**(b)**

2-aminopentane and 3-aminopentane; Position is different.

15

**(c)**

$$\% \text{ of H} = \frac{2}{18} \times \frac{\text{weight of H}_2\text{O}}{\text{weight of organic compound}} \times 100$$

$$= \frac{2}{18} \times \frac{0.9}{0.5} \times 100 = 20\%$$

∴ The percentage of carbon = 100 - 20 = 80 %

16

**(b)**

*o* - and *p*-directing groups facilitate  $S_E$  reactions whereas *m*-directing groups deactivate benzene ring for  $S_E$  reactions.

17

**(a)**

(+) and (-) tartaric acid does not possess any element of symmetry.

18

**(b)**

A molecule having doubly bonded carbon atoms shows geometrical isomerism only if both the doubly bonded carbon have altogether different group, *i.e.*,  $\text{baC} \equiv \text{C}_{\text{ab}}$  or  $\text{abC} = \text{C}_{\text{ac}}$  or  $\text{dcC} = \text{C}_{\text{ab}}$ .

19 (c)

The chemical formula of thiourea is  $\text{NH}_2\text{CSNH}_2$  so here  $\text{Na}_2\text{S}$ ,  $\text{NaCN}$  and  $\text{NaCNS}$  will be formed but not  $\text{Na}_2\text{SO}_4$

20 (a)

A white precipitate with am.  $\text{AgNO}_3$  confirms the presence of terminal alkyne.

PE

**ANSWER-KEY**

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

PE