CHEMISTRY

PHASE TEST – IV
PAPER – 1

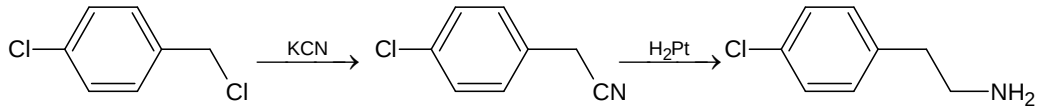
ANSWERS, HINTS & SOLUTIONS

Q. No.	Answers	Q. No.	Answers
1.	A, B, C, D	1.	A $\rightarrow$ p, r, s, t; B $\rightarrow$ q; C $\rightarrow$p, q; D $\rightarrow$ q
2.	A,C	2.	A $\rightarrow$ r, s; B $\rightarrow$ p, q; C $\rightarrow$ p, r; D $\rightarrow$ r, s.
3.	C, D	1.	3
4.	A, D	2.	4
5.	A, B, C	3.	4
6.	A, B, D	4.	8
7.	A, B	5.	3
8.	A, B, C	6.	9
9.	A, B	7.	6
10.	A, B, D	8.	4

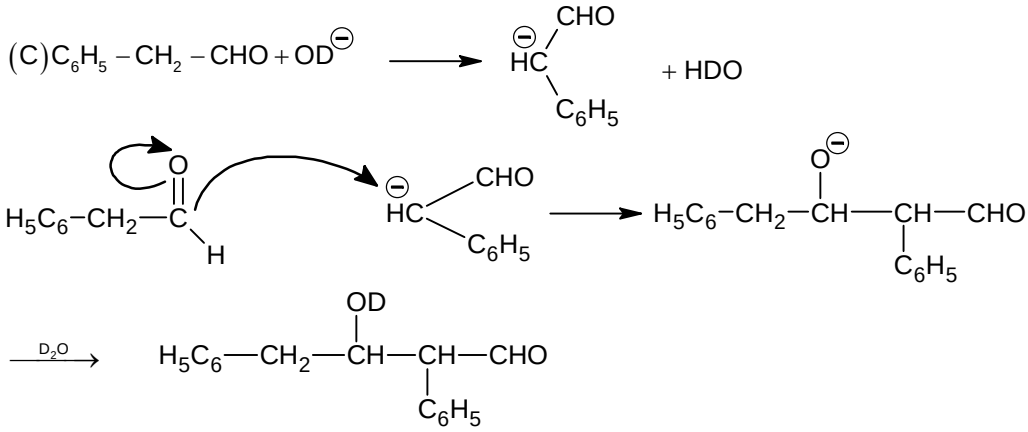
ANSWER, HINT AND SOLUTION

SECTION – A

2.



3. A, B do not undergo aldol condensation, due to absence of α – hydrogen.
C, D can undergo aldol condensation as below:



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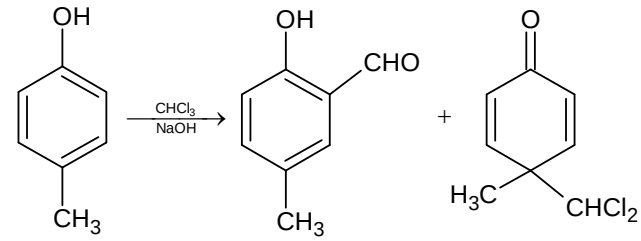
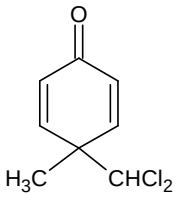


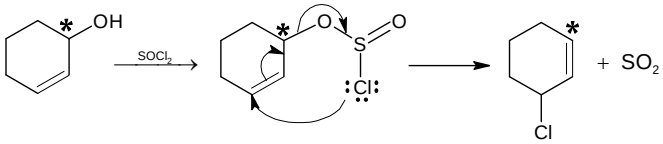


is not hydrolysed due to insolubility in basic aqueous medium and crowding around chlorine atoms.

5. $CH_3–CH_2–NO_2 \xrightarrow{H_2 / Ni} CH_3CH_2NH_2$ (K)
$CH_3–CH_2–O–NO \xrightarrow{H_2 / Ni} CH_3CH_2OH$ (L) + NH_3 (M)

6. Only (C) justifies the formations of above compounds on reductive ozonolysis.

7.



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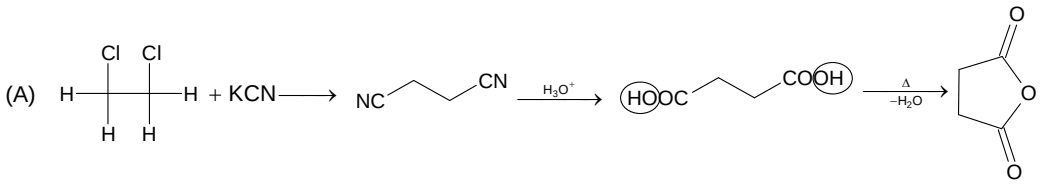
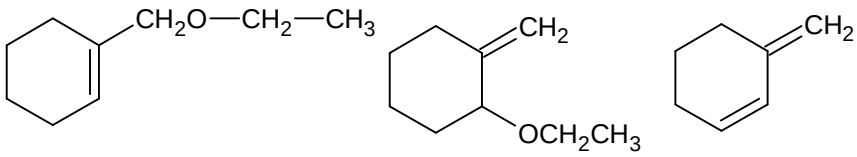


(B) $H_3C-CHCl_2 \xrightarrow{KCN} H_3C-CH(CN)_2 \xrightarrow{H_3O^+} H_3C-CH(COOH)_2 \xrightarrow[\text{decarboxylation}]{\Delta} CH_3CH_2COOH$

10. Only the anhydrides with at least 2 α H on the same side can show Perkin's reaction $\Rightarrow$ (A) and (B) will show this but not (C). Reformatsky's reaction followed by heating and hydrolysis will create α, β unsaturated carboxylic acid.

SECTION-C (Integer value correct Type)

1.



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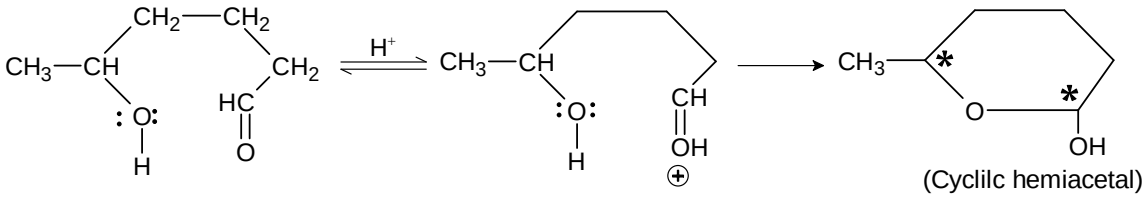
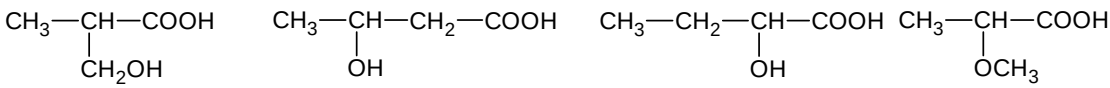


(Two chiral carbons hence four stereoisomers)

3.



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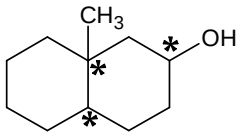
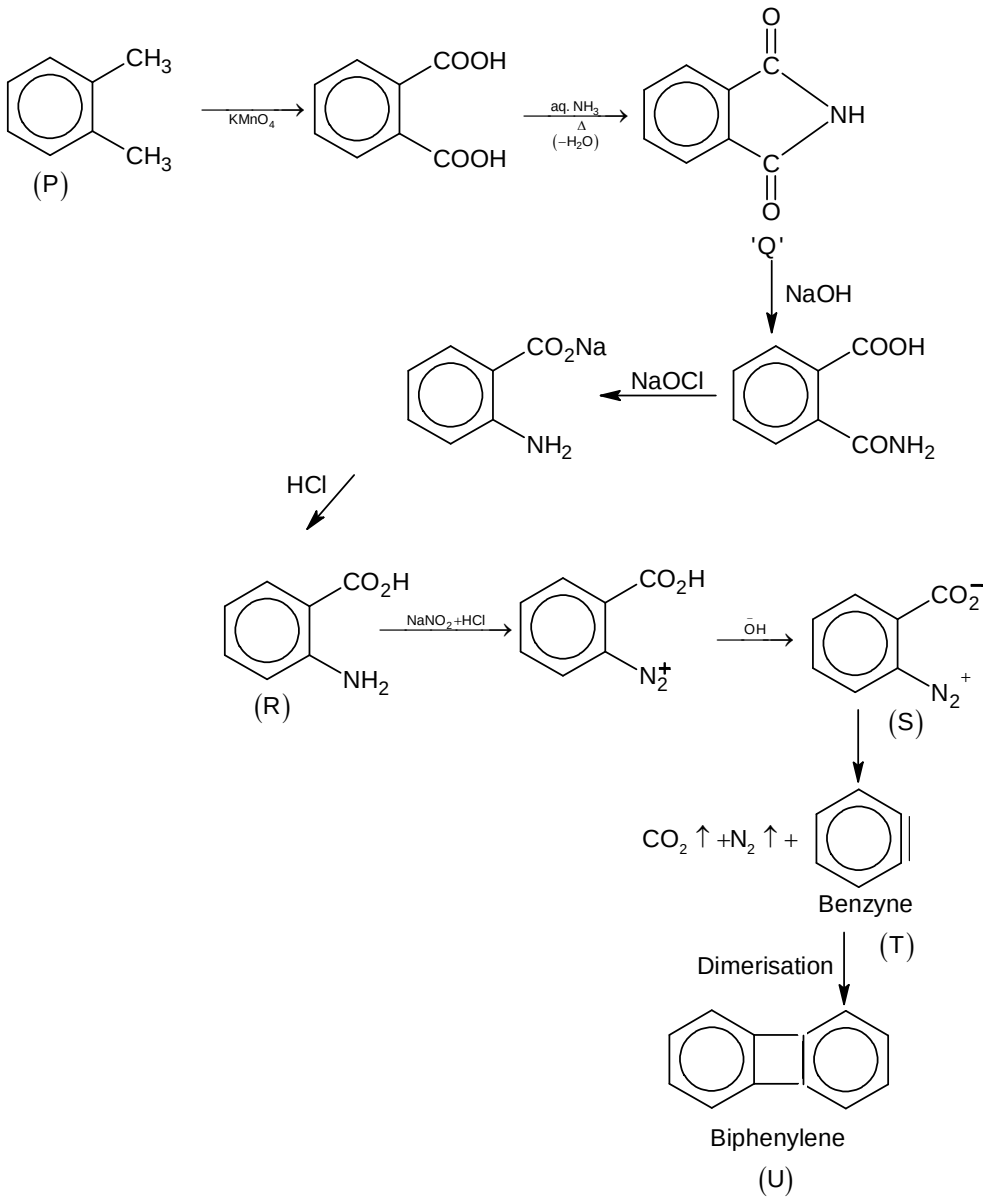


5. We know that one mol of PCl_5 reacts with one mol of —OH group.

Mole of Alcohol = 0.1, mol of $PCl_5 = \dfrac{62.5}{208.5} = 0.3$

Hence number of OH group = $\dfrac{\text{mol of } PCl_5}{\text{mol of Alcohol}} = \dfrac{0.3}{0.1} = 3$

6.



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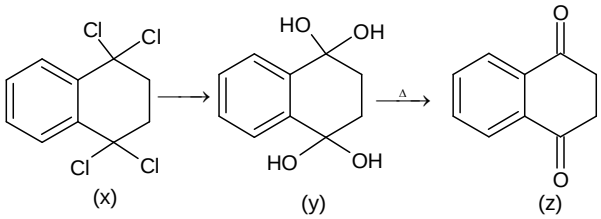

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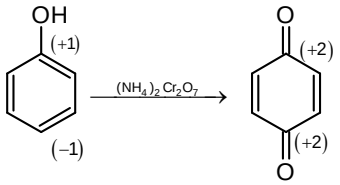

So, the total number of electrons exchanged by phenol is 4