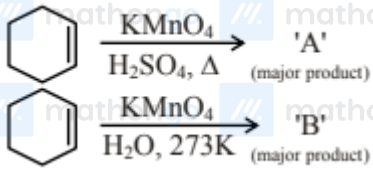
Q1 (20 July 2021 Shift 1)



For above chemical reactions, identify the correct statement from the following:

(1) Both compound 'A' and compound 'B' are dicarboxylic acids

(2) Both compound 'A' and compound 'B' are diols

(3) Compound 'A' is diol and compound 'B' is dicarboxylic acid

(4) Compound 'A' is dicarboxylic acid and compound 'B' is diol

Q2 (20 July 2021 Shift 2)

Benzene on nitration gives nitrobenzene in presence of HNO_3 and H_2SO_4 mixture, where :

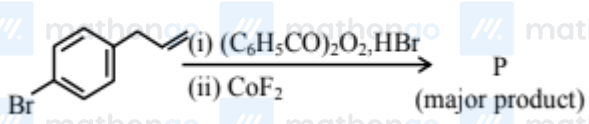
(1) both H_2SO_4 and HNO_3 act as a bases

(2) HNO_3 acts as an acid and H_2SO_4 acts as a base

(3) both H_2SO_4 and HNO_3 act as an acids

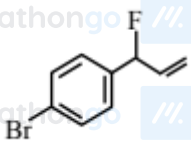
(4) HNO_3 acts as a base and H_2SO_4 acts as an acid

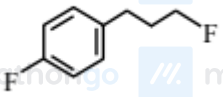
Q3 (20 July 2021 Shift 2)

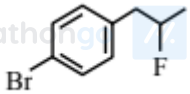


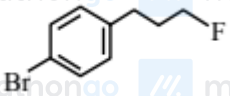
Major product P of above reaction, is :

(1)

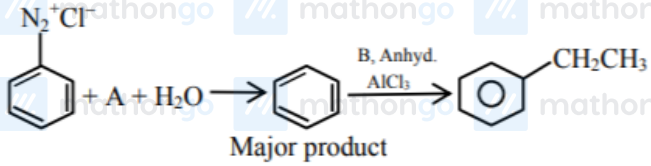


(2) 

(3) 

(4) 

Q4 (22 July 2021 Shift 1)



In the chemical reactions given above A and B respectively are:

(1) H_3PO_2 and CH_3CH_2Cl

(2) CH_3CH_2OH and H_3PO_2

(3) H_3PO_2 and CH_3CH_2OH

(4) CH_3CH_2Cl and H_3PO_2

Q5 (25 July 2021 Shift 1)

An organic compound ' $A'C_4H_8$ on treatment with $KMnO_4/H^+$ yields compound ' $B'C_3H_6O$.

Compound 'A' also yields compound 'B' an ozonolysis. Compound'A' is :

(1) 2-Methylpropene

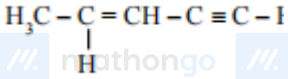
(2) 1-Methylcyclopropane

(3) But-2-ene

(4) Cyclobutane

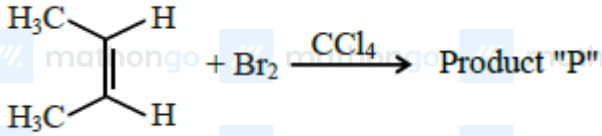
Q6 (25 July 2021 Shift 1)

The number of sigma bonds in



is

Q7 (25 July 2021 Shift 2)



Consider the above chemical reaction. The total

number of stereoisomers possible for Product ' P′ is _____

Q8 (27 July 2021 Shift 1)

Presence of which reagent will affect the reversibility of the following reaction, and change it to a irreversible reaction :

$$CH_4 + I_2 \underset{\text{Reversible}}{\overset{hv}{\rightleftharpoons}} CH_3 - I + HI$$

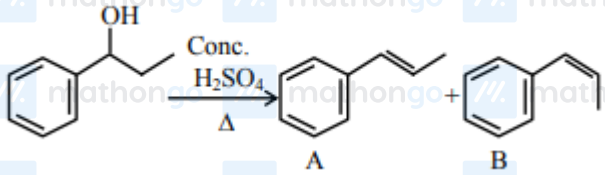
(1) HOCl

(2) dilute HNO_2

(3) Liquid NH_3

(4) Concentrated HIO_3

Q9 (27 July 2021 Shift 2)



consider the above reaction, and choose the correct statement:

(1) The reaction is not possible in acidic medium

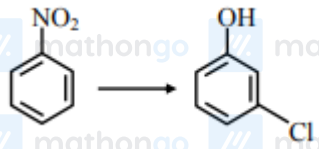
(2) Both compounds **A** and **B** are formed equally

(3) Compound A will be the major product

(4) Compound B will be the major product

Q10 (27 July 2021 Shift 2)

The correct sequence of correct reagents for the following transformation is :-



(1) (i) Fe, HCl (ii) Cl_2, HCl, (iii) $NaNO_2$, HCl, $0^\circ C$ (iv) H_2O/H^+

(2) (i) Fe, HCl (ii) $NaNO_2$, HCl, $0^\circ C$ (iii) H_2O/H^+ (iv) Cl_2, $FeCl_3$

(3) (i) Cl_2, $FeCl_3$ (ii) Fe, HCl (iii) $NaNO_2$, HCl, $0^\circ C$ (iv) H_2O/H^+

(4) (i) Cl_2, $FeCl_3$ (ii) $NaNO_2$, HCl, $0^\circ C$ (iii) Fe, HCl (iv) H_2O/H^+

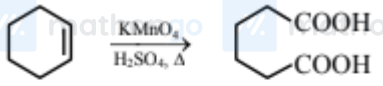
Answer Key

Q1 (4) **Q2** (4) **Q3** (4) **Q4** (1)

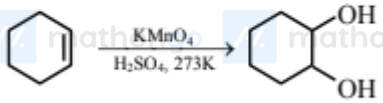
Q5 (1) **Q6** (10) **Q7** (2) **Q8** (4)

Q9 (3) **Q10** (3)

Q1



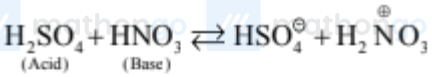
dicarboxylic acid
(A)

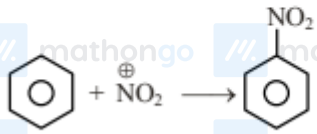


Diol
(B)

Q2

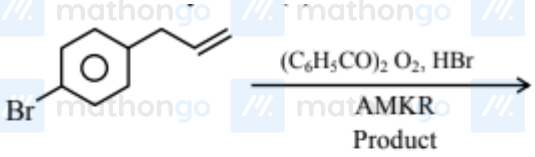
Reagent for nitration of Benzene

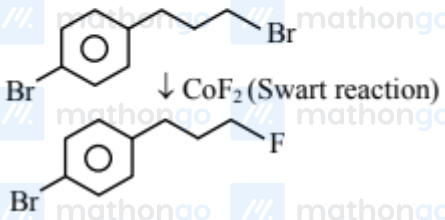




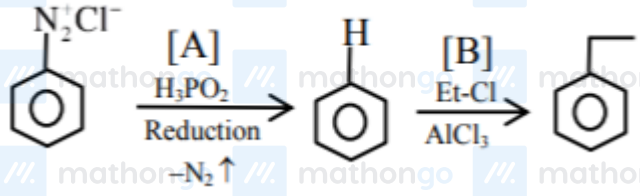
Nitrobenzene

Q3

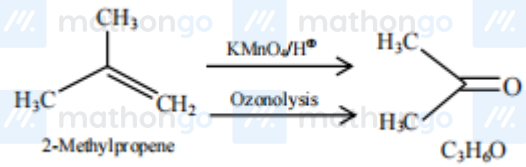




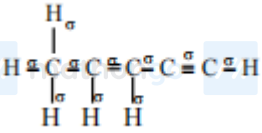
Q4



Q5

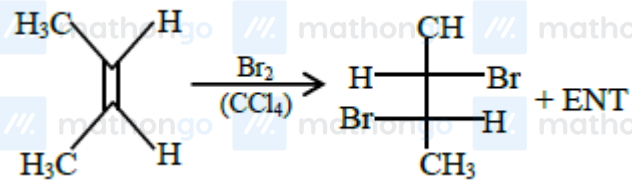


Q6



numbers of σ bonds $= 10$

Q7



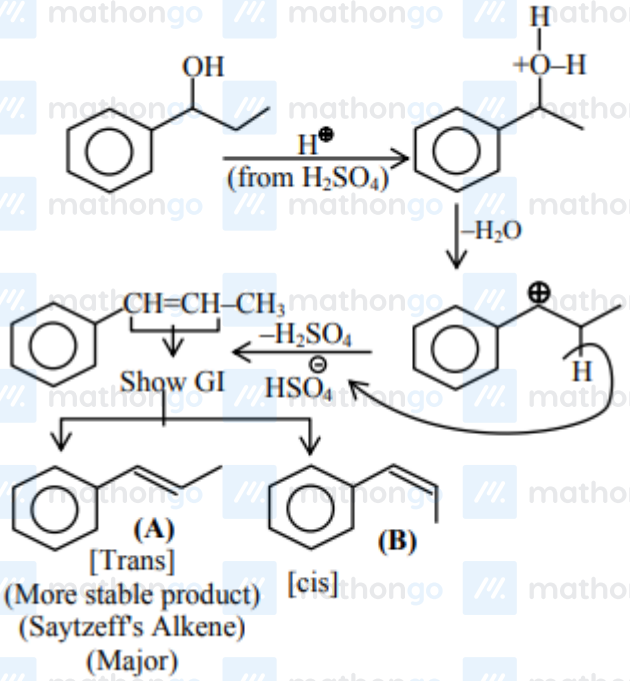
The total number of products possible $= 2$

Q8

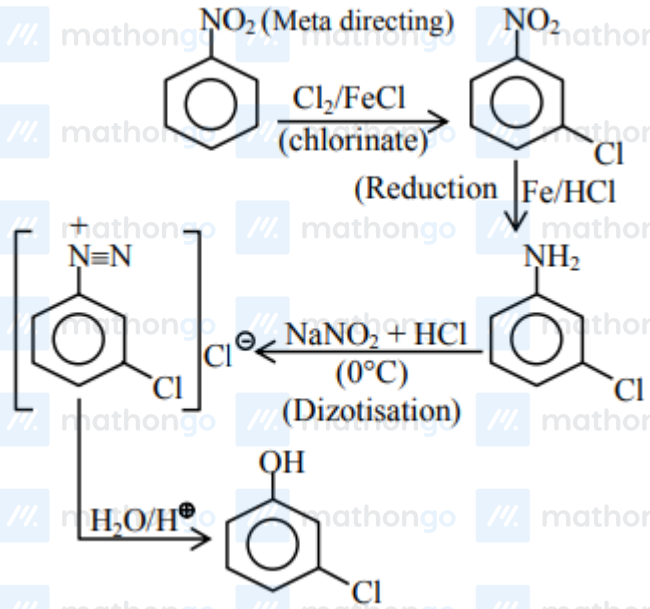
lodination of alkane is reversible reaction.

It can be irreversible in the presence of strong oxidising agent like conc. HNO_3 or conc. HIO_3

Q9


OH
H
+O–H
H⊕
(from H2SO4)
–H2O
CH=CH–CH3
–H2SO4
Show GI
HSO4⊖
H
(A)
[Trans]
(More stable product)
(Saytzeff's Alkene)
(Major)
(B)
[cis]

Q10


NO2 (Meta directing)
NO2
Cl2/FeCl
(chlorinate)
Cl
(Reduction
Fe/HCl
NH2
N≡N
Cl⊖
Cl
NaNO2 + HCl
(0°C)
(Dizotisation)
Cl
OH
H2O/H⊕
Cl