Date Planned : __ / __ / __	Daily Tutorial Sheet-8	Expected Duration : 45 Min
Actual Date of Attempt : __ / __ / __	JEE Advanced (Archive)	Exact Duration :_____

104. The correct statement about the synthesis of erythritol $(C(CH_2OH)_4)$ used in the preparation of PETN is : **(2016)**

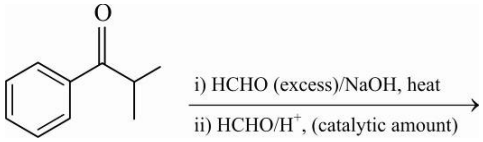
(A) The synthesis requires four aldol condensations between methanol and ethanol

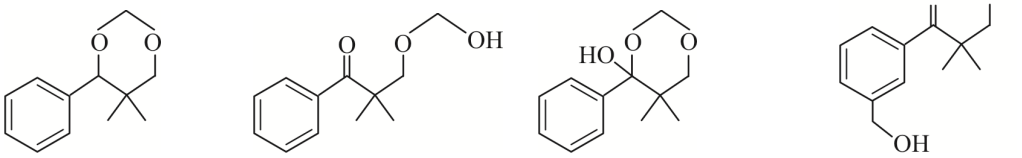
(B) The synthesis requires two aldol condensations and two Cannizzaro reactions

(C) The synthesis requires three aldol condensations and one Cannizzaro reaction

(D) Alpha hydrogens of ethanol and methanol are involved in this reaction

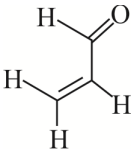
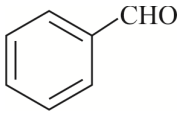
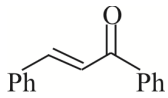
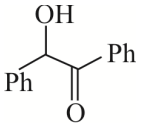
105. The major product of the following reaction sequence is : **(2016)**



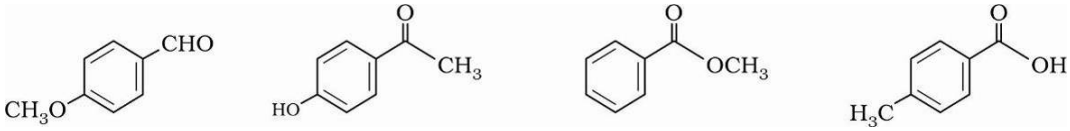


(A) **(B)** **(C)** **(D)**

***106.** Positive Tollen's test is observed for : **(2016)**

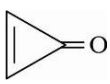
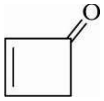
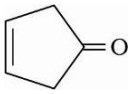
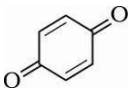
(A)  **(B)**  **(C)**  **(D)** 

107. A compound of molecular formula $C_8H_8O_2$ reacts with acetophenone to form a single cross-aldol product in the presence of base. The same compound on reaction with conc. NaOH forms benzyl alcohol as one of the products. The structure of the compound is : **(2017)**



(A) **(B)** **(C)** **(D)**

108. Which of the following compounds will show highest dipole moment ? **(2017)**

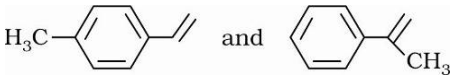
I.  **II.**  **III.**  **IV.** 

(A) I **(B)** II **(C)** III **(D)** IV

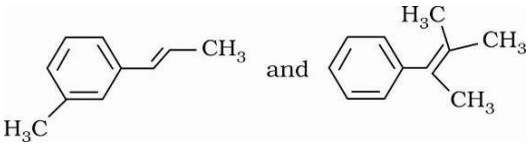
***109.** Compounds P and R upon ozonolysis produce Q and S, respectively. The molecular formula of Q and S is C_8H_8O. Q undergoes Cannizzaro reaction but not haloform reaction, whereas S undergoes haloform reaction but not Cannizzaro reaction. **(2017)**

I. $P \xrightarrow[2.\ Zn/H_2O]{1.\ O_3/CH_2Cl_2} \underset{(C_8H_8O)}{Q}$ **II.** $R \xrightarrow[2.\ Zn/H_2O]{1.\ O_3/CH_2Cl_2} \underset{(C_8H_8O)}{S}$

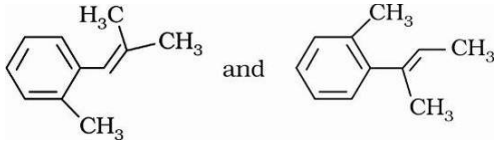
The option(s) with suitable combination of P and R, respectively, is(are) :



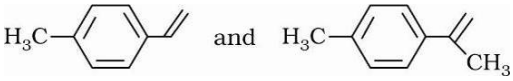
(A)



(B)



(C)



(D)

Matrix Matching Type

Answer Q.110-112 by appropriately matching the information given in the three columns of the following table.

Column 1, 2 and 3 contain starting materials, reaction condition, and type of reactions, respectively.

Column 1		Column 2		Column 3	
(I)	Toluene	**(i)**	$NaOH / Br_2$	**(P)**	Condensation
(II)	Acetophenone	**(ii)**	Br_2 / hν	**(Q)**	Carboxylation
(III)	Benzaldehyde	**(iii)**	$(CH_3CO)_2O / CH_3COOK$	**(R)**	Substitution
(IV)	Phenol	**(iv)**	$NaOH / CO_2$	**(S)**	Haloform

110. The only CORRECT combination in which the reaction proceeds through radical mechanism is : **(2017)**

(A) (IV) (i) (Q) **(B)** (I) (ii) (R) **(C)** (III) (ii) (P) **(D)** (II) (iii) (R)

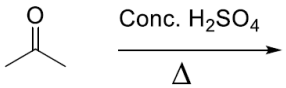
111. The only CORRECT combination that gives two different carboxylic acids is : **(2017)**

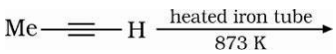
(A) (III) (iii) (P) **(B)** (IV) (iii) (Q) **(C)** (II) (iv) (R) **(D)** (I) (i) (S)

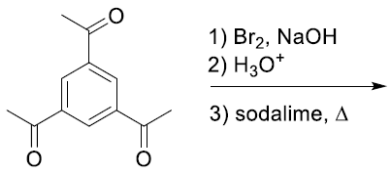
112. For the synthesis of benzoic acid, the only CORRECT combination is : **(2017)**

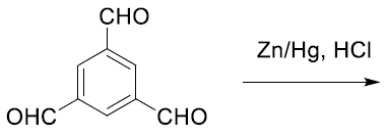
(A) (IV) (ii) (P) **(B)** (II) (i) (S) **(C)** (III) (iv) (R) **(D)** (I) (iv) (Q)

***113.** The reaction(s) leading to the formation of 1, 3, 5-trimethylbenzene is(are) : **(2018)**

(A) 

(B) 

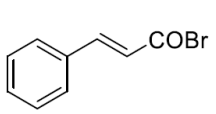
(C) 

(D) 

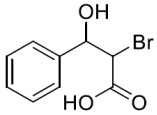
PARAGRAPH FOR QUESTIONS 114 - 115

Treatment of benzene with CO/HCl in the presence of anhydrous $AlCl_3$ / CuCl followed by reaction with Ac_2O / NaOAc gives compound X as the major product. Compound X upon reaction with Br_2 / Na_2CO_3, followed by heating 473 K with moist KOH furnishes Y as the major product. Reaction of X with H_2 / Pd-C, followed by H_3PO_4 treatment produce Z as the major product. **(2018)**

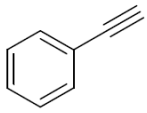
114. The compound Y is :

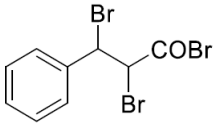


(A)



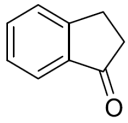
(B)


(C)

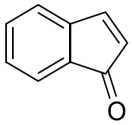


(D)

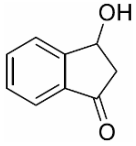
115. The compound Z is : **(2018)**



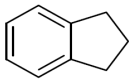
(A)



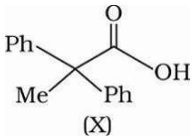
(B)



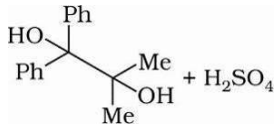
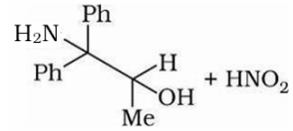
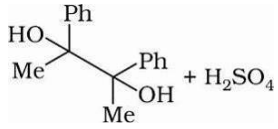
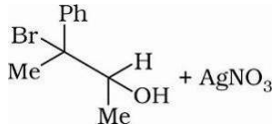
(C)


(D)

116. This desired product X can be prepared by reacting the major product of the reactions in List-I with one or more appropriate reagents in List-II. (Given, order of migratory aptitude : *aryl* > *alkyl* > *hydrogen*) **(2018)**



(X)

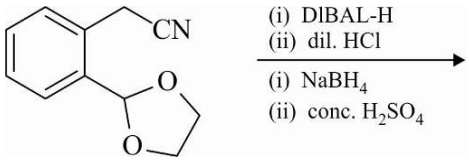
List-I		List-II	
(P)		**1.**	I_2, NaOH
(Q)		**2.**	$[Ag(NH_3)_2]OH$
(R)		**3.**	Fehling solution
(S)		**4.**	HCHO, NaOH
		5.	NaOBr

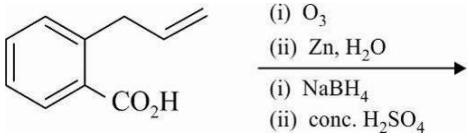
The correct option is :

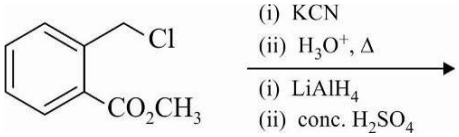
	P	Q	R	S		P	Q	R	S
(A)	1	2, 3	1	2, 4	**(B)**	1	3, 4	4, 5	3
(C)	1, 5	3, 4	5	2, 4	**(D)**	1, 5	2, 3	1, 5	2, 3

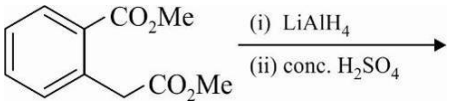
117. List-I includes starting materials and reagents of selected chemical reactions. List-II gives structures of compounds that may be formed as intermediate products and/or final products from the reactions of List-I. **(2019)**

List-I

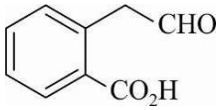
(I) 

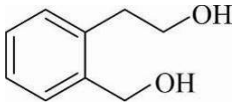
(II) 

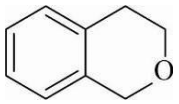
(III) 

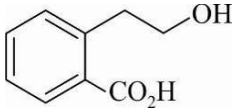
(IV) 

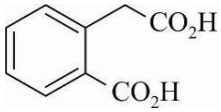
List-II

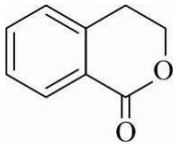
(P) 

(Q) 

(R) 

(S) 

(T) 

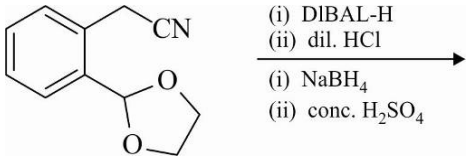
(U) 

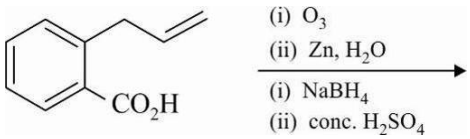
Which of the following options has the correct combination considering List-I and List-II?

(A) (II), (P), (S), (T) **(B)** (I), (S), (Q), (R) **(C)** (I), (Q), (T), (U) **(D)** (II), (P), (S), (U)

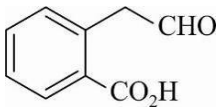
118. List-I includes starting materials and reagents of selected chemical reactions. List-II gives structures of compounds that may be formed as intermediate products and/or final products from the reactions of List-I. **(2019)**

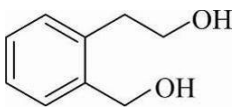
List-I

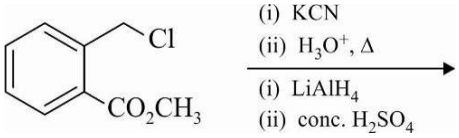
(I) 

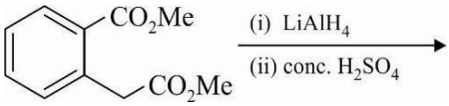
(II) 

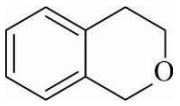
List-II

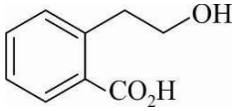
(P) 

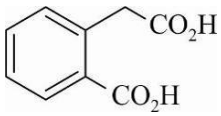
(Q) 

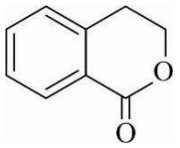
(III) 

(IV) 

(R) 

(S) 

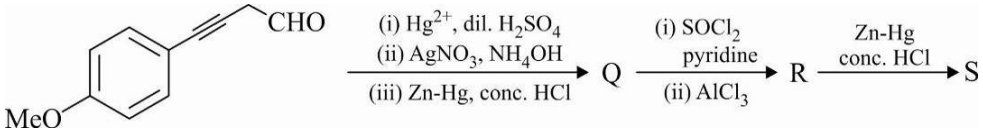
(T) 

(U) 

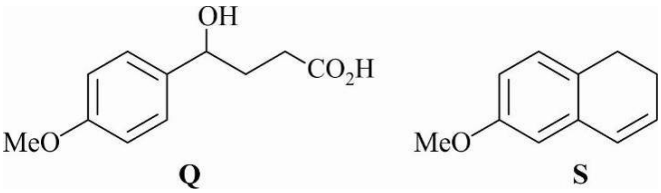
Which of the following options has the correct combination considering List-I and List-II?

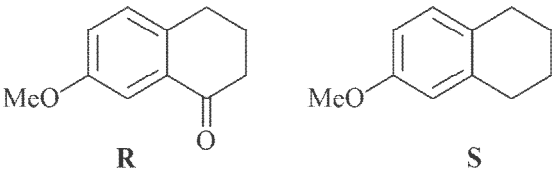
(A) (IV), (Q), (U) **(B)** (III), (T), (U) **(C)** (IV), (Q), (R) **(D)** (III), (S), (R)

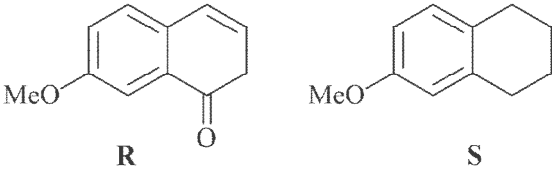
119. Choose the correct option(s) for the following reaction sequence **(2019)**

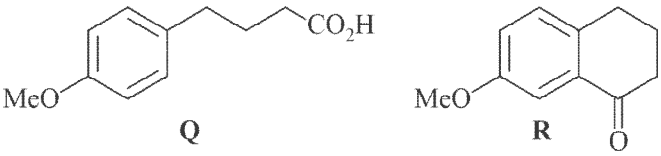


Consider Q, R and S as major products

(A) 

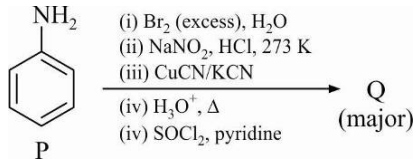
(B) 

(C) 

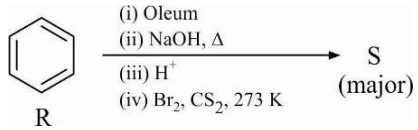
(D) 

120. Schemes 1 and 2 describe the conversion of P to Q and R to S, respectively. Scheme 3 describes the synthesis of T from Q and S. The total number of Br atoms in a molecule of T is _____ **(2019)**

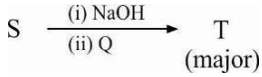
Scheme 1 :



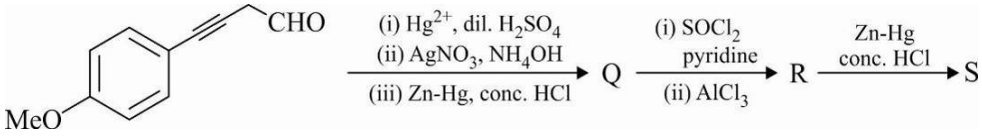
Scheme 2 :



Scheme 3 :

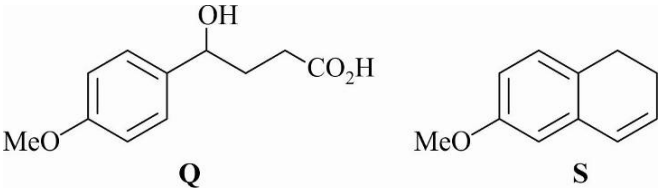


121. Choose the correct option(s) for the following reaction sequence **(2019)**

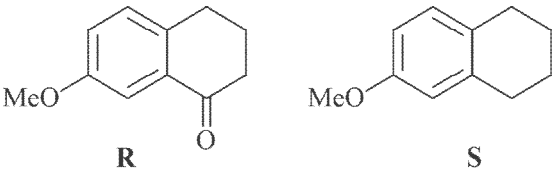


Consider Q, R and S as major products

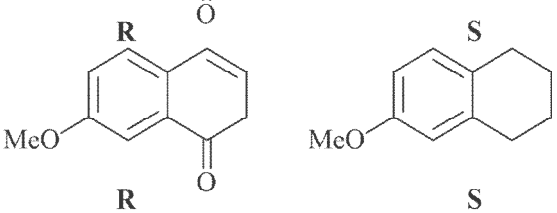
(A)



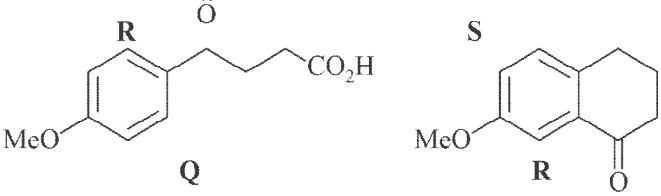
(B)



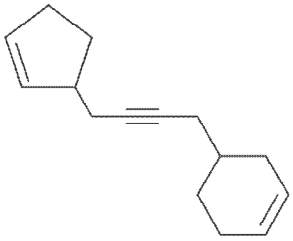
(C)



(D)



122. Total number of hydroxyl groups present in a molecule of the major product P is _____ **(2019)**



$\xrightarrow[\text{(ii) dil. } KMnO_4 \text{ (excess), 273 K}]{\text{(i) } H_2,\ Pd\text{-}BaSO_4,\ \text{quinoline}}$