Q1. 22 January Shift 1

Given below are two statements:

Statement I: Phenol on treatment with $CHCl_3$ /aq. KOH under refluxing condition, followed by acidification produces *p*-hydroxy benzaldehyde as the major product and *o*-hydroxy benzaldehyde as the minor product.

Statement II: The mixture of *p*-hydroxybenzaldehyde and *o* hydroxybenzaldehyde can be easily separated through steam distillation.

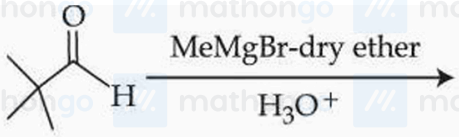
In the light of the above statements, choose the correct answer from the options given below

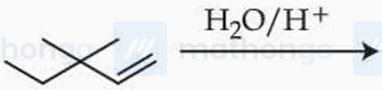
(1) Statement I is true but Statement II is false (2) Statement I is false but Statement II is true

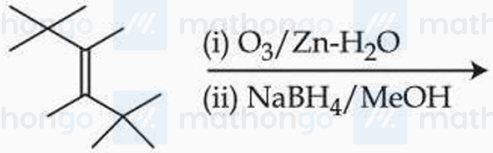
(3) Both Statement I and Statement II are true (4) Both Statement I and Statement II are false

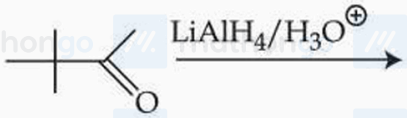
Q2. 22 January Shift 2

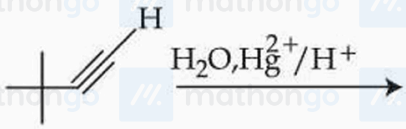
3, 3-Dimethyl-2-butanol cannot be prepared by :

A. 

B. 

C. 

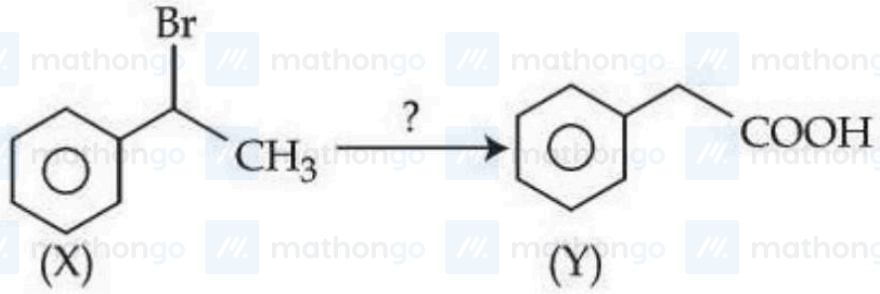
D. 

E. 

Choose the correct answer from the options given below :

(1) B and C Only (2) B and E Only (3) B Only (4) B, C and E Only

Q3. 23 January Shift 1



The correct sequence of reagents for the above conversion of X to Y is :

(1) (i) NaOH(aq); (ii) Jones reagent; (iii) H_3O^+

(2) (i) B_2H_6/H_2O_2; (ii) NaOEt; (iii) Jones reagent

(3) (i) Jones reagent; (ii) NaOEt; (iii) HotKMnO$_4$/KOH

(4) (i) NaOEt; (ii) B_2H_6/H_2O_2; (iii) Jones reagent

Q4. 23 January Shift 1

Match List - I with List - II.

List - I Functional group (detection)	List - II Change observed during detection
A. Unsaturation (Baeyer's test)	I. Red colour appears
B. Alcoholic group (Ceric ammonium nitrate test)	II. Silver mirror appears
C. Aldehyde group (Tollen's reagent)	III. Violet colour appears
D. Phenolic group ($FeCl_3$ test)	IV. Discharge of pink colour

Choose the correct answer from the options given below :

(1) A-III, B-IV, C-II, D-I

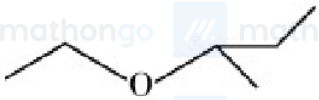
(2) A-IV, B-I, C-II, D-III

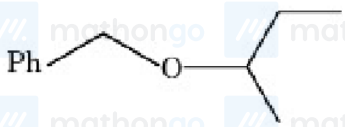
(3) A-IV, B-III, C-II, D-I

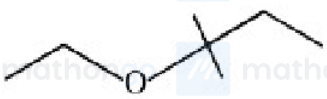
(4) A-III, B-IV, C-I, D-II

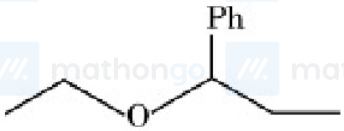
Q5. 23 January Shift 2

A mixed ether (P), when heated with excess of hot concentrated hydrogen iodide produces two different alkyl iodides which when treated with aq. NaOH give compounds (Q) and (R). Both (Q) and (R) give yellow precipitate with NaOI. Identify the mixed ether (P) :

(1) 

(2) 

(3) 

(4) 

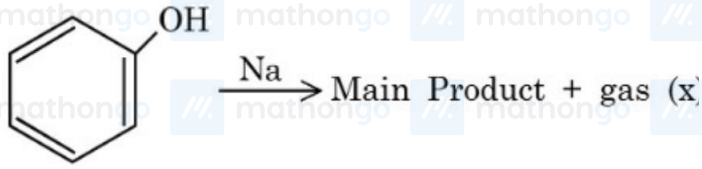
Q6. 24 January Shift 1

A hydroxy compound (X) with molar mass 122 g mol^{-1} is acetylated with acetic anhydride, using a large excess of the reagent ensuring complete acetylation of all hydroxyl groups. The product obtained has a molar mass of 290 g mol^{-1}. The number of hydroxyl groups present in compound (X) is:

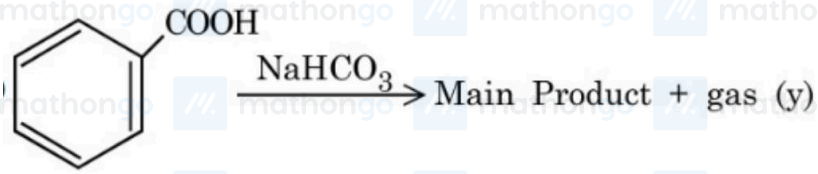
(1) 5 (2) 2 (3) 4 (4) 3

Q7. 24 January Shift 1

Consider the following two reactions A and B.



(A)



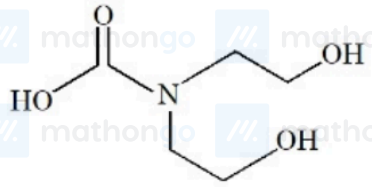
(B)

Numerical value of [molar mass of x+ molar mass of y] is ____.

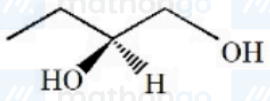
(1) 160 (2) 4 (3) 88 (4) 46

Q8. 24 January Shift 2

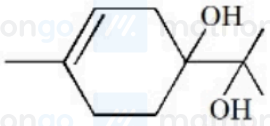
From the following, how many compounds contain at least one secondary alcohol?



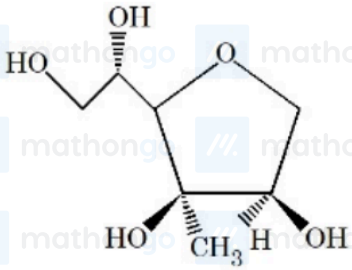
(I)



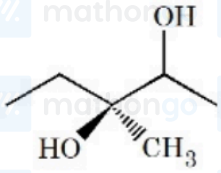
(II)



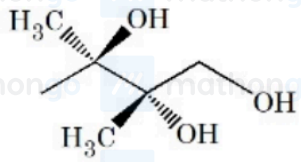
(III)



(IV)



(V)



(VI)

Choose the correct answer from the options given below:

(1) Three (2) Five (3) Four (4) Two

Q9. 24 January Shift 2

The unsaturated ether on acidic hydrolysis produces carbonyl compounds as shown below:-

$$CH_3 - CH = CH - O - CH = CH_2 \xrightarrow{\downarrow H_3O^{(+)}} CH_3 - CH_2 - CH = O \text{ and } O = CH - CH_3$$

Based on this, predict the solution/reagent that will help to distinguish " P " and " Q " obtained in the following reaction:-

$$CH_3 - CH = CH - O - \underset{\displaystyle CH_3}{\overset{|}{C}} = CH_2 \xrightarrow[\Delta]{H_3O^{(+)}} P + Q$$

(1) Fehling solution (2) Lucas reagent (3) 2, 4 - DNP reagent (4) Saturated $NaHSO_3$ solution

Q10. 28 January Shift 1

Consider the following reaction sequence

$$\text{Compound (x)} \atop \text{[76.6\% C, 6.38\% H, vapour density 47]} \xrightarrow[\text{(ii) } H_3O^+]{\text{(i) } CO_2,\ NaOH,\ 120°C,\ \text{high pressure}} \text{Compound (y)} \atop \text{(Major Product)}$$

Compound (y) develops characteristic colour with neutral $FeCl_3$ solution. Identify the INCORRECT statement from the following for the above sequence.

(1) Compound y will dissolve in $NaHCO_3$ and evolve a gas.

(2) Both compounds x and y will dissolve in NaOH.

(3) Both compounds x and y will burn with sooty flame.

(4) Compound x is more acidic than compound y.

Q11. 28 January Shift 2

The reactions which produce alcohol as the product are:

A. $CH_4 + O_2 \xrightarrow[\Delta]{Mo_2O_3}$

B. $2CH_3CH_3 + 3O_2 \xrightarrow[\Delta]{(CH_3COO)_2Mn}$

C. $(CH_3)_3CH \xrightarrow{KMnO_4}$

D. $2CH_4 + O_2 \xrightarrow{Cu/523\ K/100\ atm.}$

E. $CH_3 - CH = CH - CH_3 \xrightarrow{KMnO_4/H^+}$

Choose the correct answer from the options given below :

(1) A, C and E Only (2) A and D Only (3) C and D Only (4) B, D and E Only

ANSWER KEYS

1. (2)	**2.** (2)	**3.** (4)	**4.** (1)	**5.** (1)	**6.** (3)	**7.** (4)	**8.** (1)
9. (1)	**10.** (4)	**11.** (3)					