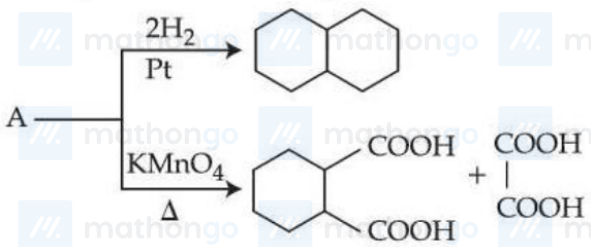
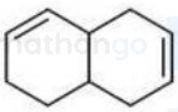
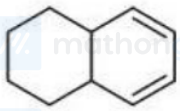
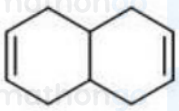
Q1. 21 January Shift 1

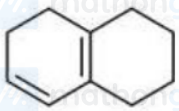


Identify A in the following reaction.

(1) 

(2) 

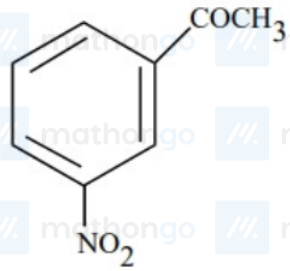
(3) 

(4) 

Q2. 22 January Shift 1

Given below are two statements:

Statement I: Benzene is nitrated to give nitrobenzene, which on further treatment with $CH_3COCl/AlCl_3$ will give



Statement II: $-NO_2$ group is a m-directing, and deactivating group.

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

(1) Statement I is incorrect but Statement II is correct

(2) Both Statement I and Statement II are incorrect

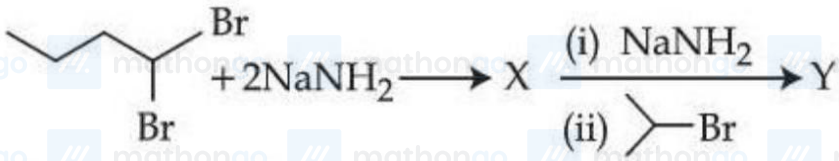
(3) Both Statement I and Statement II are correct

(4) Statement I is correct but Statement II is incorrect

Q3. 22 January Shift 1

The cycloalkene (X) on bromination consumes one mole of bromine per mole of (X) and gives the product (Y) in which C : Br ratio is 3:1. The percentage of bromine in the product (Y) is ____ \%. (Nearest integer) (Given : molar mass in $gmol^{-1}$ H : 1, C : 12, O : 16, Br : 80)

Q4. 22 January Shift 2

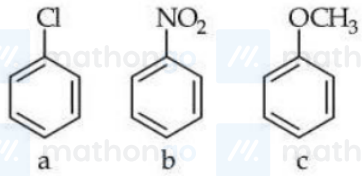


Consider the following reaction : The product Y formed is :

(1) 5-methylhex-2-yne (2) Isopropylbut-1-yne
(3) 2-methylhex-3-yne (4) 2-methylhex-2-yne

Q5. 23 January Shift 1

Consider the following compounds

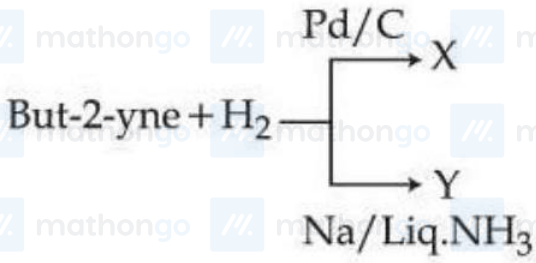


Arrange these compounds in the increasing order of reactivity with nitrating mixture.

(1) c < a < b (2) b < a < c (3) c < b < a (4) b < c < a

Q6. 23 January Shift 1

But-2-yne and hydrogen (one mole each) are separately treated with (i) Pd/C and (ii) Na/liq. NH_3 to give the products X and Y respectively.



Identify the incorrect statements.

A. X and Y are stereoisomers.

B. Dipole moment of X is zero.

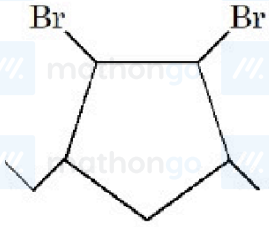
C. Boiling point of X is higher than Y.

D. X and Y react with $O_3/Zn + H_2O$ to give different products.

Choose the correct answer from the options given below :

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

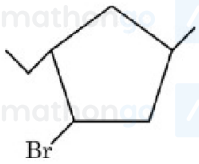
Q7. 23 January Shift 2

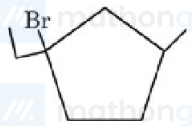


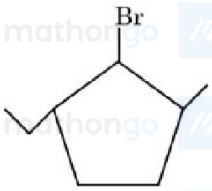
$\xrightarrow[\text{(ii) HBr}]{\text{(i) Zn, } \Delta}$ (P)

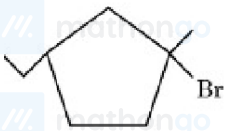
Major Product

Identify (P)

(1) 

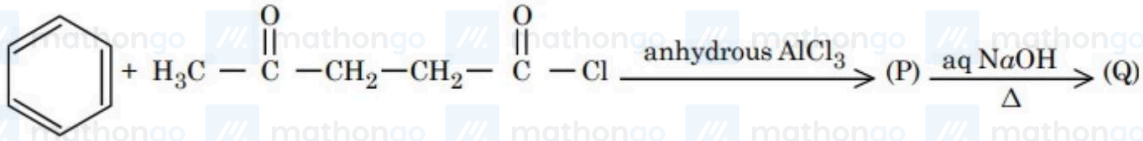
(2) 

(3) 

(4) 

Q8. 23 January Shift 2

Consider the following reaction of benzene.



In compound (Q), the percentage of oxygen is ____ %. (Nearest integer)

Q9. 28 January Shift 1

$Ph - CH = CH_2 \xrightarrow[HBr]{(PhCOO)_2}$ Product

Consider the above reaction

A. The reaction proceeds through a more stable radical intermediate.

B. The role of peroxide is to generate H° (Hydrogen radical).

C. During this reaction, benzene is formed as a byproduct.

D. 1-Bromo-2-phenylethane is formed as the minor product.

E. The same reaction in absence of peroxide proceeds via carbocation intermediate.

Identify the correct statements. Choose the correct answer from the options given below:

(1) C, D & E Only

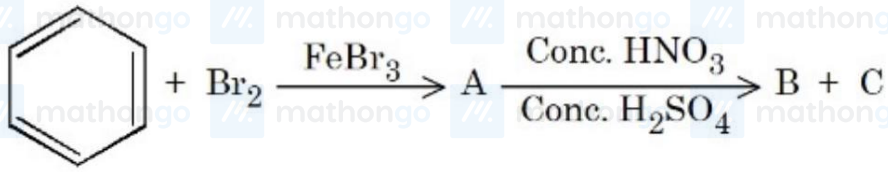
(2) A, B & D Only

(3) A, C & E Only

(4) A & E Only

Q10. 28 January Shift 1

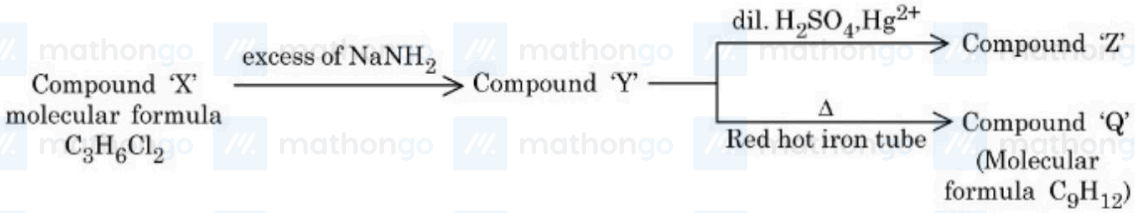
Method used for separation of mixture of products (B and C) obtained in the following reaction is



(1) steam distillation (2) simple distillation
(3) sublimation (4) fractional distillation

Q11. 28 January Shift 1

Given below are two statements for the following reaction sequence.



Statement I: Compound ' Z ' will give yellow precipitate with NaOI.

Statement II: Compound ' Q ' has two different types of ' H ' atoms (aromatic : aliphatic) in the ratio 1:3.

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

(1) Both Statement I and Statement II are false (2) Statement I is true but Statement II is false
(3) Both Statement I and Statement II are true (4) Statement I is false but Statement II is true

Q12. 28 January Shift 2

Identify the correct statements : The presence of $-NO_2$ group in benzene ring

A. activates the ring towards electrophilic substitutions.

B. deactivates the ring towards electrophilic substitutions.

C. activates the ring towards nucleophilic substitutions.

D. deactivates the ring towards nucleophilic substitutions.

Choose the correct answer from the options given below :

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

ANSWER KEYS

1. (2)	**2.** (1)	**3.** 66	**4.** (3)	**5.** (1)	**6.** (3)	**7.** (4)	**8.** 10
9. (3)	**10.** (4)	**11.** (3)	**12.** (2)				