

<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	20
<b>Number of Questions to be attempted :</b>	20
<b>Section Marks :</b>	80
<b>Mark As Answered Required? :</b>	Yes
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	864351375
<b>Question Shuffling Allowed :</b>	Yes

**Question Number : 31 Question Id : 8643515611 Question Type : MCQ Option Shuffling : Yes Is**

**Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

A hard substance melts at high temperature and is an insulator in both solid and in molten state. This solid is most likely to be a/an :

**Options :**

86435116831. Ionic solid

86435116832. Covalent solid

86435116833. Metallic solid

86435116834. Molecular solid

**Question Number : 32 Question Id : 8643515612 Question Type : MCQ Option Shuffling : Yes Is**

**Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements :

**Statement I :** Bohr's theory accounts for the stability and line spectrum of  $\text{Li}^+$  ion.

**Statement II :** Bohr's theory was unable to explain the splitting of spectral lines in the presence of a magnetic field.

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

**Options :**

86435116835. Both statement I and statement II are true.

86435116836. Both statement I and statement II are false.

86435116837. Statement I is true but statement II is false.

86435116838. Statement I is false but statement II is true.

**Question Number : 33 Question Id : 8643515613 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The charges on the colloidal CdS sol and  $\text{TiO}_2$  sol are, respectively :

**Options :**

86435116839. positive and positive

86435116840. negative and positive

86435116841. positive and negative

86435116842. negative and negative

**Question Number : 34 Question Id : 8643515614 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The first ionization energy of magnesium is smaller as compared to that of elements X and Y, but higher than that of Z. The elements X, Y and Z, respectively, are :

**Options :**

86435116843. argon, chlorine and sodium

86435116844. chlorine, lithium and sodium

86435116845. argon, lithium and sodium

86435116846. neon, sodium and chlorine

**Question Number : 35 Question Id : 8643515615 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Match List - I with List - II :

List - I	List - II
(a) Mercury	(i) Vapour phase refining
(b) Copper	(ii) Distillation Refining
(c) Silicon	(iii) Electrolytic Refining
(d) Nickel	(iv) Zone Refining

Choose the most appropriate answer from the option given below :

**Options :**

86435116847. (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

86435116848. (a)-(i), (b)-(iv), (c)-(ii), (d)-(iii)

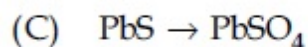
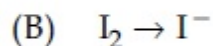
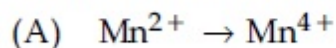
86435116849. (a)-(ii), (b)-(iii), (c)-(i), (d)-(iv)

86435116850. (a)-(ii), (b)-(iv), (c)-(iii), (d)-(i)

**Question Number : 36 Question Id : 8643515616 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

In basic medium,  $\text{H}_2\text{O}_2$  exhibits which of the following reactions ?



Choose the most appropriate answer from the options given below :

**Options :**

86435116851. (A) only

86435116852. (B) only

86435116853. (A), (B) only

86435116854. (A), (C) only

**Question Number : 37 Question Id : 8643515617 Question Type : MCQ Option Shuffling : No Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Match List - I with List - II :

List - I	List - II
(a) Be	(i) treatment of cancer
(b) Mg	(ii) extraction of metals
(c) Ca	(iii) incendiary bombs and signals
(d) Ra	(iv) windows of X-ray tubes
	(v) bearings for motor engines.

Choose the most appropriate answer from the option given below :

**Options :**

86435116855. (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

86435116856. (a)-(iii), (b)-(iv), (c)-(ii), (d)-(v)

86435116857. (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)

86435116858. (a)-(iii), (b)-(iv), (c)-(v), (d)-(ii)

**Question Number : 38 Question Id : 8643515618 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The oxidation states of nitrogen in NO, NO<sub>2</sub>, N<sub>2</sub>O and NO<sub>3</sub><sup>-</sup> are in the order of :

**Options :**

86435116859. NO > NO<sub>2</sub> > N<sub>2</sub>O > NO<sub>3</sub><sup>-</sup>

86435116860. N<sub>2</sub>O > NO<sub>2</sub> > NO > NO<sub>3</sub><sup>-</sup>

86435116861. NO<sub>2</sub> > NO<sub>3</sub><sup>-</sup> > NO > N<sub>2</sub>O

86435116862. NO<sub>3</sub><sup>-</sup> > NO<sub>2</sub> > NO > N<sub>2</sub>O

**Question Number : 39 Question Id : 8643515619 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The oxide that shows magnetic property is :

**Options :**

86435116863.  $\text{SiO}_2$

86435116864.  $\text{Mn}_3\text{O}_4$

86435116865.  $\text{MgO}$

86435116866.  $\text{Na}_2\text{O}$

**Question Number : 40 Question Id : 8643515620 Question Type : MCQ Option Shuffling : Yes Is**

**Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The secondary valency and the number of hydrogen bonded water molecule(s) in  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ , respectively, are :

**Options :**

86435116867. 4 and 1

86435116868. 6 and 4

86435116869. 5 and 1

86435116870. 6 and 5

**Question Number : 41 Question Id : 8643515621 Question Type : MCQ Option Shuffling : Yes Is**

**Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements :

**Statement I :** Non-biodegradable wastes are generated by the thermal power plants.

**Statement II :** Bio-degradable detergents leads to eutrophication.

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

**Options :**

86435116871. Both statement I and statement II are true.

86435116872. Both statement I and statement II are false.

86435116873. Statement I is true but statement II is false.

86435116874. Statement I is false but statement II is true.

**Question Number : 42 Question Id : 8643515622 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements :

**Statement I :**  $C_2H_5OH$  and  $AgCN$  both can generate nucleophile.

**Statement II :**  $KCN$  and  $AgCN$  both will generate nitrile nucleophile with all reaction conditions.

Choose the most appropriate option :

**Options :**

86435116875. Both statement I and statement II are true.

86435116876. Both statement I and statement II are false.

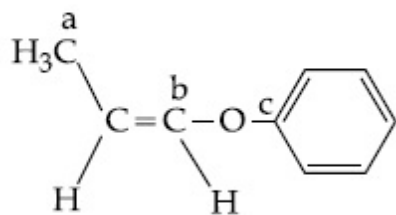
86435116877. Statement I is true but statement II is false.

86435116878. Statement I is false but statement II is true.

**Question Number : 43 Question Id : 8643515623 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

In the following molecule,



Hybridisation of Carbon a, b and c respectively are :

**Options :**

86435116879.  $sp^3, sp^2, sp^2$

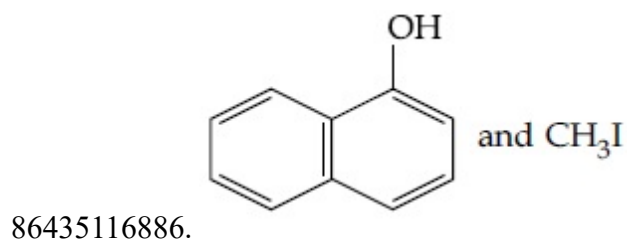
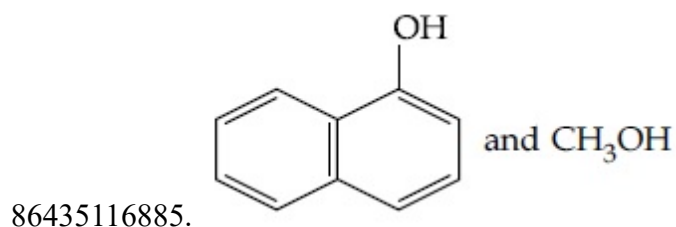
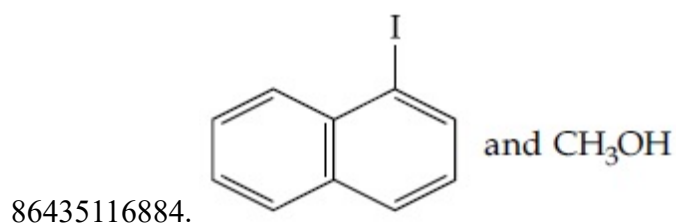
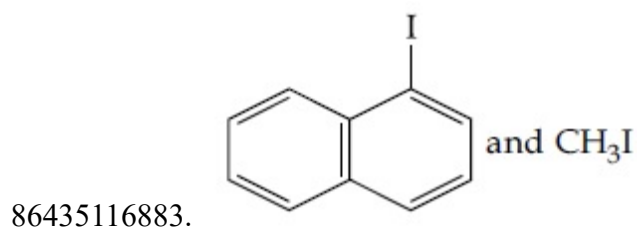
86435116880.  $sp^3, sp^2, sp$ 86435116881.  $sp^3, sp, sp$ 86435116882.  $sp^3, sp, sp^2$ 

Question Number : 44 Question Id : 8643515624 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Main Products formed during a reaction of 1-methoxy naphthalene with hydroiodic acid are :

Options :



Question Number : 45 Question Id : 8643515625 Question Type : MCQ Option Sh Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In the reaction of hypobromite with amide, the carbonyl carbon is lost as :

Options :

86435116887. CO

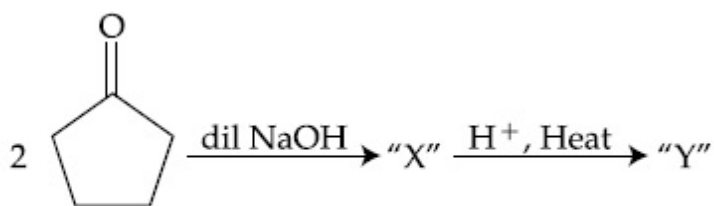
86435116888. CO<sub>2</sub>

86435116889. CO<sub>3</sub><sup>2-</sup>

86435116890. HCO<sub>3</sub><sup>-</sup>

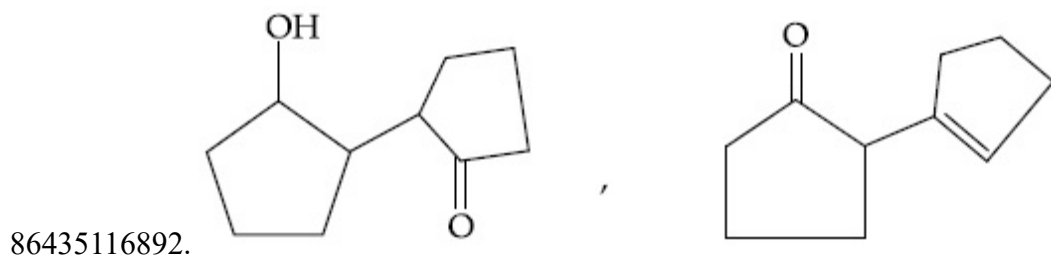
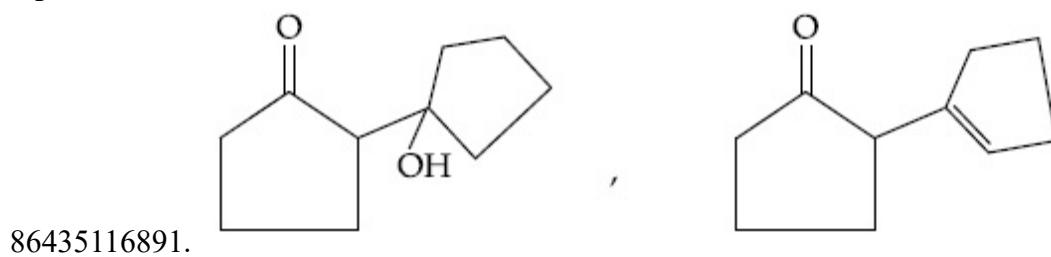
Question Number : 46 Question Id : 8643515626 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

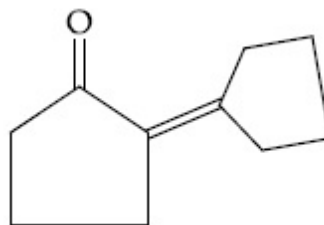
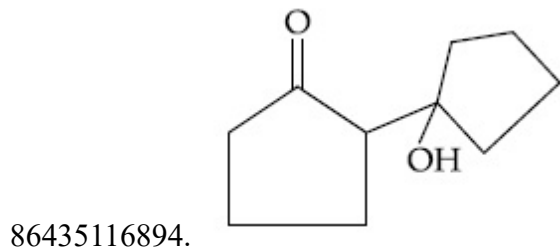
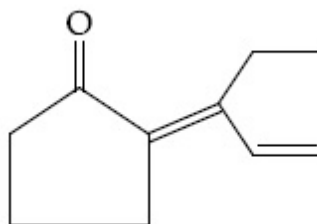
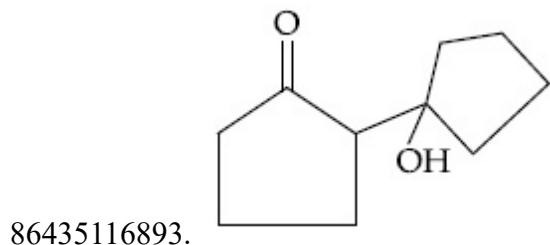


Consider the above reaction, the product 'X' and 'Y' respectively are :

Options :





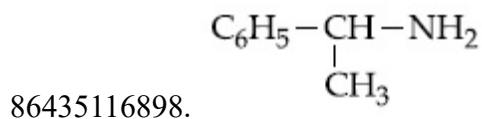
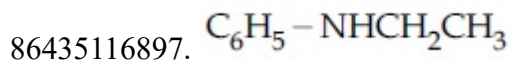
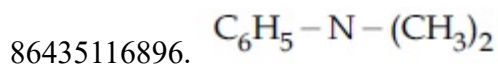
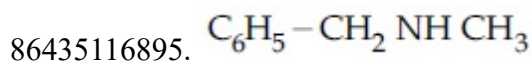


**Question Number : 47 Question Id : 8643515627 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

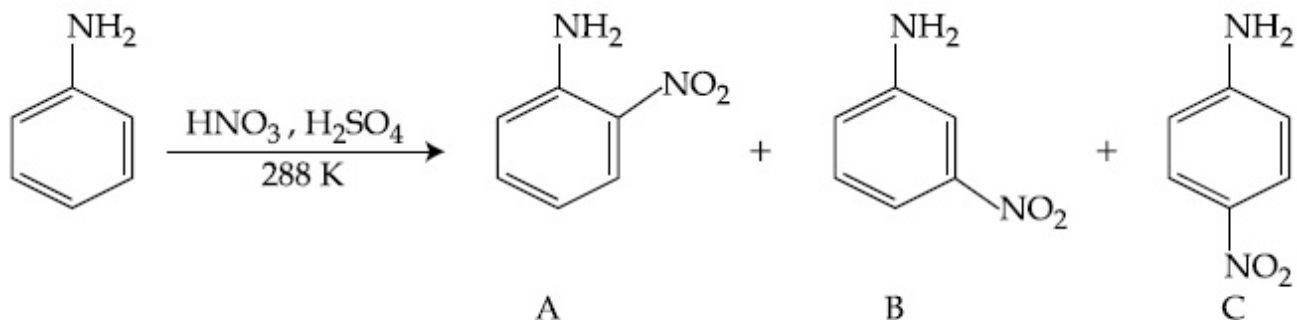
An organic compound "A" on treatment with benzene sulphonyl chloride gives compound B. B is soluble in dil. NaOH solution. Compound A is :

**Options :**



**Question Number : 48 Question Id : 8643515628 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**



Consider the given reaction, percentage yield of :

**Options :**

86435116899. A > C > B

86435116900. C > A > B

86435116901. B > C > A

86435116902. C > B > A

**Question Number : 49 Question Id : 8643515629 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

**Match List - I with List - II :**

List - I (Class of Chemicals)	List - II (Example)
(a) Antifertility drug	(i) Meprobamate
(b) Antibiotic	(ii) Alitame
(c) Tranquilizer	(iii) Norethindrone
(d) Artificial Sweetener	(iv) Salvarsan

Choose the most appropriate match :

**Options :**

86435116903. (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

86435116904. (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

86435116905. (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)

86435116906. (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)

**Question Number : 50 Question Id : 8643515630 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Deficiency of vitamin K causes :

**Options :**

86435116907. Increase in blood clotting time

86435116908. Decrease in blood clotting time

86435116909. Cheilosis

86435116910. Increase in fragility of RBC's

## Chemistry Section B

<b>Section Id :</b>	864351376
<b>Section Number :</b>	4
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	10
<b>Number of Questions to be attempted :</b>	5
<b>Section Marks :</b>	20
<b>Mark As Answered Required? :</b>	Yes
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	864351376
<b>Question Shuffling Allowed :</b>	Yes

**Question Number : 51 Question Id : 8643515631 Question Type : SA**

**Correct Marks : 4 Wrong Marks : 0**

10.0 mL of  $\text{Na}_2\text{CO}_3$  solution is titrated against 0.2 M HCl solution. The following titre values were obtained in 5 readings :

4.8 mL, 4.9 mL, 5.0 mL, 5.0 mL and 5.0 mL.

Based on these readings, and convention of titrimetric estimation the concentration of  $\text{Na}_2\text{CO}_3$  solution is \_\_\_\_\_ mM.

(Round off to the Nearest Integer).

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

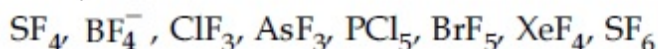
**Possible Answers :**

100

**Question Number : 52 Question Id : 8643515632 Question Type : SA**

**Correct Marks : 4 Wrong Marks : 0**

The number of species below that have two lone pairs of electrons in their central atom is \_\_\_\_\_. (Round off to the Nearest Integer).



**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

100

**Question Number : 53 Question Id : 8643515633 Question Type : SA**

**Correct Marks : 4 Wrong Marks : 0**

The gas phase reaction



at 400 K has  $\Delta G^\circ = +25.2 \text{ kJ mol}^{-1}$ .

The equilibrium constant  $K_C$  for this reaction is \_\_\_\_\_  $\times 10^{-2}$ . (Round off to the Nearest Integer).

[Use :  $R = 8.3 \text{ J mol}^{-1} \text{ K}^{-1}$ ,  $\ln 10 = 2.3$

$\log_{10} 2 = 0.30$ ,  $1 \text{ atm} = 1 \text{ bar}$ ]

[antilog  $(-0.3) = 0.501$ ]

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

100

**Question Number : 54 Question Id : 8643515634 Question Type : SA**

**Correct Marks : 4 Wrong Marks : 0**

A solute A dimerizes in water. The boiling point of a 2 molal solution of A is  $100.52^{\circ}\text{C}$ . The percentage association of A is \_\_\_\_\_. (Round off to the Nearest Integer).

[Use :  $K_b$  for water =  $0.52 \text{ K kg mol}^{-1}$

Boiling point of water =  $100^{\circ}\text{C}$ ]

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

100

**Question Number : 55 Question Id : 8643515635 Question Type : SA**

**Correct Marks : 4 Wrong Marks : 0**

The solubility of  $\text{CdSO}_4$  in water is  $8.0 \times 10^{-4} \text{ mol L}^{-1}$ . Its solubility in  $0.01 \text{ M H}_2\text{SO}_4$  solution is \_\_\_\_\_  $\times 10^{-6} \text{ mol L}^{-1}$ . (Round off to the Nearest Integer).

(Assume that solubility is much less than  $0.01 \text{ M}$ )

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

100

**Question Number : 56 Question Id : 8643515636 Question Type : SA**

**Correct Marks : 4 Wrong Marks : 0**

The molar conductivities at infinite dilution of barium chloride, sulphuric acid and hydrochloric acid are 280, 860 and  $426 \text{ S cm}^2 \text{ mol}^{-1}$  respectively. The molar conductivity at infinite dilution of barium sulphate is \_\_\_\_\_  $\text{S cm}^2 \text{ mol}^{-1}$ . (Round off to the Nearest Integer).

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

100

**Question Number : 57 Question Id : 8643515637 Question Type : SA**

**Correct Marks : 4 Wrong Marks : 0**

A reaction has a half life of 1 min. The time required for 99.9% completion of the reaction is \_\_\_\_\_ min. (Round off to the Nearest Integer).

[Use :  $\ln 2 = 0.69$ ;  $\ln 10 = 2.3$ ]

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

100

**Question Number : 58 Question Id : 8643515638 Question Type : SA**

**Correct Marks : 4 Wrong Marks : 0**

A xenon compound 'A' upon partial hydrolysis gives  $\text{XeO}_2\text{F}_2$ . The number of lone pair of electrons present in compound A is \_\_\_\_\_. (Round off to the Nearest Integer)

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

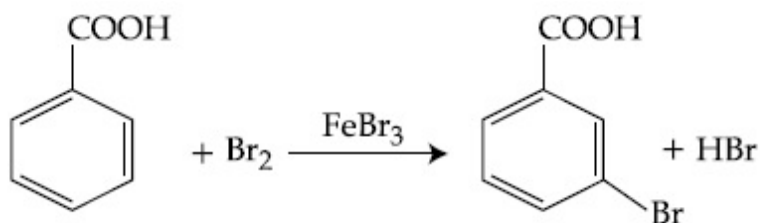
**Text Areas : PlainText**

**Possible Answers :**

100

**Question Number : 59 Question Id : 8643515639 Question Type : SA**

**Correct Marks : 4 Wrong Marks : 0**



Consider the above reaction where 6.1 g of Benzoic acid is used to get 7.8 g of m-bromo benzoic acid. The percentage yield of the product is \_\_\_\_\_.

(Round off to the Nearest Integer).

[Given : Atomic masses : C : 12.0 u, H : 1.0 u, O : 16.0 u, Br : 80.0 u]

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

100

**Question Number : 60 Question Id : 8643515640 Question Type : SA**

**Correct Marks : 4 Wrong Marks : 0**

In Tollen's test for aldehyde, the overall number of electron(s) transferred to the Tollen's reagent formula  $[\text{Ag}(\text{NH}_3)_2]^+$  per aldehyde group to form silver mirror is \_\_\_\_\_.  
(Round off to the Nearest Integer).

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

100