

## Chemistry Section A

<b>Section Id :</b>	676033105
<b>Section Number :</b>	3
<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>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	676033105
<b>Question Shuffling Allowed :</b>	Yes

**Question Number : 31 Question Id : 6760331561 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. Frenkel defect	I. CsCl
B. Schottky defect	II. Pink LiCl
C. Impurity defect	III. ZnS
D. Metal excess defect	IV. Solid solution of CdCl <sub>2</sub> and AgCl

Choose the *correct* answer from the options given below :

Options :

6760334681. A-I, B-IV, C-II, D-III

6760334682. A-IV, B-II, C-III, D-I

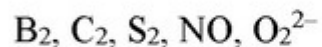
6760334683. A-III, B-I, C-IV, D-II

6760334684. A-II, B-III, C-I, D-IV

Question Number : 32 Question Id : 6760331562 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the following species



Which set represents all paramagnetic species?

Options :

6760334685. B<sub>2</sub>, C<sub>2</sub>, O<sub>2</sub><sup>2-</sup>

6760334686. C<sub>2</sub>, S<sub>2</sub>, O<sub>2</sub><sup>2-</sup>

6760334687. B<sub>2</sub>, S<sub>2</sub>, NO

6760334688. C<sub>2</sub>, S<sub>2</sub>, NO

**Question Number : 33 Question Id : 6760331563 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1**

For a gaseous reaction,  $A_{(g)} \rightarrow 2B_{(g)} + C_{(g)}$ , the rate of decomposition of  $A_{(g)}$  may be studied by measuring the pressure (P) in a system at constant volume (V) and temperature (T). If all the gaseous species follow ideal gas equation, then which of the relation is correct?

**Options :**

6760334689. Rate of reaction =  $2RT \frac{dP}{dT}$

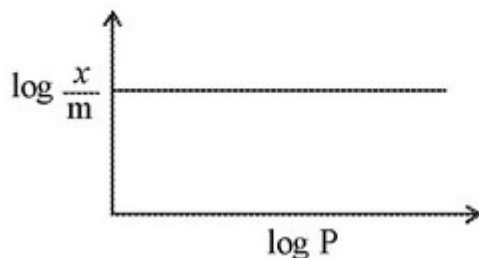
6760334690. Rate of reaction =  $RT \frac{dP}{dT}$

6760334691. Rate of reaction =  $\frac{1}{2RT} \frac{dP}{dT}$

6760334692. Rate of reaction =  $\frac{1}{RT} \frac{dP}{dT}$

**Question Number : 34 Question Id : 6760331564 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1**

Graph between  $\log \frac{x}{m}$ , ('x' is mass of gas adsorbed and 'm' is the mass of adsorbent) versus  $\log P$  (P-pressure of gas adsorbed) is a straight line (as depicted in the figure). It is applicable when



**Options :**

6760334693. Freundlich isotherm is not satisfied

6760334694. Freundlich isotherm is satisfied with  $\frac{1}{n} = 0$

6760334695. Freundlich isotherm is satisfied with  $\frac{1}{n} = \infty$

6760334696. Freundlich isotherm is satisfied with  $\frac{1}{n} = 1$ .

**Question Number : 35 Question Id : 6760331565 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

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

The correct order of first ionization enthalpy is :

**Options :**

6760334697.  $\text{Be} > \text{B} > \text{C} > \text{N} > \text{O}$

6760334698.  $\text{O} > \text{N} > \text{C} > \text{B} > \text{Be}$

6760334699.  $\text{N} > \text{O} > \text{C} > \text{Be} > \text{B}$

6760334700.  $N > O > C > B > Be$

**Question Number : 36 Question Id : 6760331566 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

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

The concentrated ores siderite and copper glance are converted to their oxides by

**Options :**

6760334701. calcination of both.

6760334702. roasting of both.

6760334703. calcination and roasting respectively.

6760334704. roasting and calcination respectively.

**Question Number : 37 Question Id : 6760331567 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

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

Naturally occurring hydrogen contains three isotopes, protium (H), deuterium (D) and tritium (T). What is correct order of heat of dissociation for  $H_2$ ,  $D_2$  and  $T_2$  ?

**Options :**

6760334705.  $H_2 > D_2 > T_2$

6760334706.  $T_2 > D_2 > H_2$

6760334707.  $H_2 = D_2 = T_2$

6760334708.  $D_2 > T_2 > H_2$

**Question Number : 38 Question Id : 6760331568 Question Type : MCQ Option Shuffling : Yes Is Question Mand:**

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

Choose the correct statement from the following :

**Options :**

6760334709. All group I compounds are diamagnetic.

6760334710. Pure  $\text{KO}_2$  is white and paramagnetic.

6760334711.  $\text{KO}_2$  is more stable than  $\text{LiO}_2$ .

6760334712. Among the alkali metal super oxides,  $\text{LiO}_2$  has the highest lattice energy.

**Question Number : 39 Question Id : 6760331569 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

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

Which among the following cannot be prepared from Diborane?

**Options :**

6760334713.  $\text{H}_3\text{BO}_3$

6760334714.  $\text{NaBH}_4$

6760334715.  $\text{Na}_2\text{B}_4\text{O}_7$

6760334716.  $\text{B}_2(\text{CH}_3)_6$

**Question Number : 40 Question Id : 6760331570 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. Gadolinium (At. No. 64)	I. $5f^7, 6d^1, 7s^2$
B. Holmium (At. No. 67)	II. $5f^4, 6d^1, 7s^2$
C. Neptunium (At. No. 93)	III. $4f^{11}, 6s^2$
D. Curium (At. No. 96)	IV. $4f^7, 5d^1, 6s^2$

Choose the correct answer from the options given below :

**Options :**

6760334717. A-I, B-II, C-III, D-IV

6760334718. A-IV, B-III, C-II, D-I

6760334719. A-III, B-IV, C-I, D-II

6760334720. A-II, B-I, C-IV, D-III

**Question Number : 41 Question Id : 6760331571 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

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

In stratosphere, chlorofluorocarbon compounds break down by UV radiations, releasing 'X' free radical, which further causes ozone layer depletion. Identify 'X'.

**Options :**

6760334721.  $O_2^{\bullet -}$

6760334722.  $\bullet Cl$

6760334723.  $ClO^{\bullet}$

6760334724. \*F

**Question Number : 42 Question Id : 6760331572 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1**

In Carius method of halogen estimation, the halogen containing compound is heated with

**Options :**

6760334725. sodium element followed by addition of water.

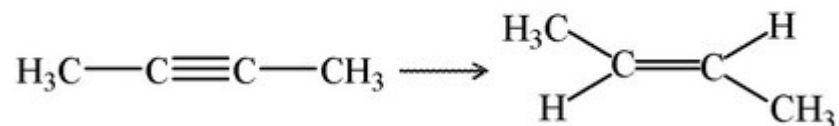
6760334726. fuming  $\text{HNO}_3$  in the presence of silver nitrate.

6760334727. barium chloride solution.

6760334728. ammonia and ammonium molybdate

**Question Number : 43 Question Id : 6760331573 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1**

Select the most suitable reagent for the following reduction reaction



**Options :**

6760334729.  $\text{H}_2$ , Pd/C, Quinoline

6760334730.  $\text{H}_2$ , Na/Liq.  $\text{NH}_3$

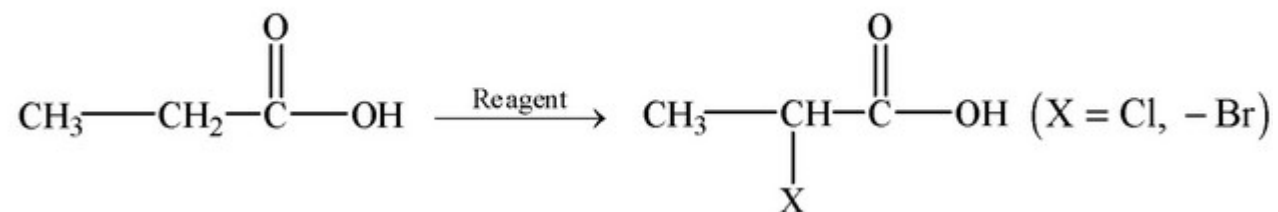
6760334731.  $\text{LiAlH}_4/\text{H}_3\text{O}^+$

6760334732. Pt/ $\text{H}_2$



Question Number : 44 Question Id : 6760331574 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No  
Correct Marks : 4 Wrong Marks : 1

Identify the reagent in the following reaction.



Options :

6760334733.  $\text{SOCl}_2$

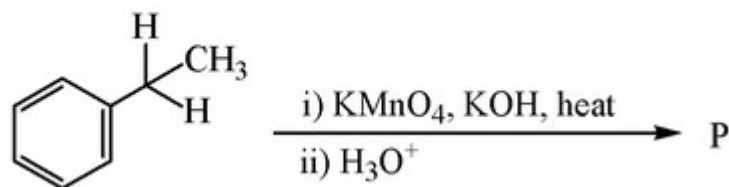
6760334734. NBS/hv or heat

6760334735.  $\text{X}_2/\text{Red Phosphorus, H}_2\text{O}$

6760334736. Halogen at high temperature (400-500°C)

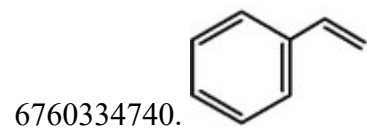
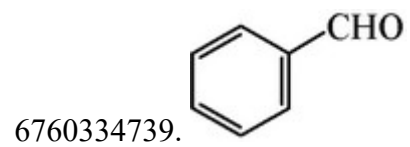
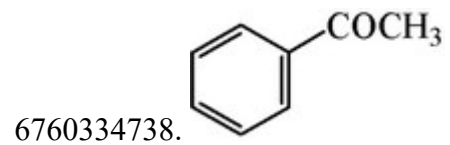
Question Number : 45 Question Id : 6760331575 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No  
Correct Marks : 4 Wrong Marks : 1

Identify P in the given chemical reaction



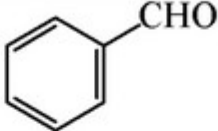
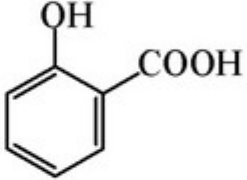
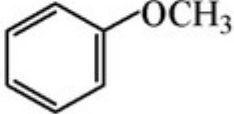
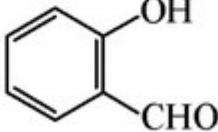
Options :

6760334737.



**Question Number : 46 Question Id : 6760331576 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. Kolbe's Reaction	I. 
B. Gatterman-Koch Reaction	II. 
C. Reimer-Tiemann Reaction	III. 
D. Williamson Synthesis	IV. 

Choose the correct answer from the options given below :

Options :

6760334741. A – IV, B – II, C – III, D – I

6760334742. A – IV, B – III, C – II, D – I

6760334743. A – II, B – I, C – IV, D – III

6760334744. A – III, B – I, C – IV, D – II

Question Number : 47 Question Id : 6760331577 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

**Statement I :** Benzenediazonium chloride is a colored crystalline solid.

**Statement II :** Benzenediazonium fluoroborate is water soluble and stable at room temperature.

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

**Options :**

6760334745. Both Statement I and Statement II are correct

6760334746. Both Statement I and Statement II are incorrect

6760334747. Statement I is correct but Statement II is incorrect

6760334748. Statement I is incorrect but Statement II is correct

**Question Number : 48 Question Id : 6760331578 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

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

Which one of the following compound gives Biuret Test?

**Options :**

6760334749. Aspartame

6760334750. Saccharin

6760334751. Sucralose

6760334752. Sucrose

**Question Number : 49 Question Id : 6760331579 Question Type : MCQ Option Shuffling : Yes Is Question Mand:**

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

Which C-atom in  $\alpha$ -D-glucopyranose is attached with two oxygens?

**Options :**

6760334753. C – 1

6760334754. C – 2

6760334755. C – 3 and C – 1

6760334756. C – 5

**Question Number : 50 Question Id : 6760331580 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**

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

Match List I with List II

List I (Metal salt)	List II (Colour to the flame)
A. $\text{Cu}^{2+}$	I. Brick Red
B. $\text{Sr}^{2+}$	II. Apple Green
C. $\text{Ba}^{2+}$	III. Green Flame with blue center
D. $\text{Ca}^{2+}$	IV. Crimson Red.

Choose the correct answer from the options given below :

**Options :**

6760334757. A – I, B – II, C – III, D – IV

6760334758. A – IV, B – III, C – II, D – I

6760334759. A – II, B – I, C – IV, D – III

6760334760. A – III, B – IV, C – II, D – I

## Chemistry Section B

Section Id :	676033106
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	676033106
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 6760331581 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A solution of  $\text{H}_2\text{SO}_4$  has 30%  $\text{H}_2\text{SO}_4$  by mass and a density of  $1.25 \text{ g mL}^{-1}$ .

The molarity of the solution is \_\_\_\_\_ M. (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 : 6760331582 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The wavelength of a tennis ball of mass 57 g travelling at  $80 \text{ km h}^{-1}$  is \_\_\_\_\_  
 $\times 10^{-34} \text{ m}$ . (Nearest integer)

[Use :  $h = 6.6 \times 10^{-34} \text{ J s}$ ]

**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 :** 6760331583 **Question Type :** SA

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

A lead bullet weighing 18 g and travelling with a velocity of  $500 \text{ m/s}^{-1}$  is embedded in a wooden block weighing 1 kg. If both the block and the bullet were initially at  $25^\circ\text{C}$ , the final temperature of the block containing the bullet is \_\_\_\_\_ $^\circ\text{C}$ .  
(Nearest integer)

[Assume no heat is lost to the surroundings, heat capacity of wood and lead are  $0.5 \text{ kcal kg}^{-1} \text{ K}^{-1}$ ,  $0.03 \text{ kcal kg}^{-1} \text{ K}^{-1}$  respectively.]

**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 :** 6760331584 **Question Type :** SA

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

One mole of glucose was added to 1.0L of water (density = 1 g mL<sup>-1</sup>). The elevation in boiling point is  $x K_b$ . The value of  $x$  is \_\_\_\_\_. (Nearest integer)

( $K_b$  is molal elevation constant for water.)

**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 :** 6760331585 **Question Type :** SA

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

If  $K_{SP}$  of  $\text{CaSO}_4$  is  $9.0 \times 10^{-6}$  at 298K, the molar solubility of  $\text{CaSO}_4$  in 0.2M  $\text{Ca}(\text{NO}_3)_2$  is \_\_\_\_\_  $\times 10^{-6}$ M. (Nearest integer)

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

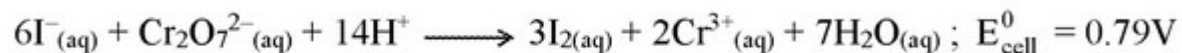
100

**Question Number :** 56 **Question Id :** 6760331586 **Question Type :** SA

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



For the reaction,



The standard reduction potential for  $\text{I}_{2(\text{aq})}$  is  $x \times 10^{-2}$  V. The value of  $x$  is \_\_\_\_\_.

(Nearest integer)

[Given : The standard reduction potential for  $(\text{Cr}_2\text{O}_7^{2-}_{(\text{aq})} \rightarrow 2\text{Cr}^{3+}$  is 1.33 V]

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

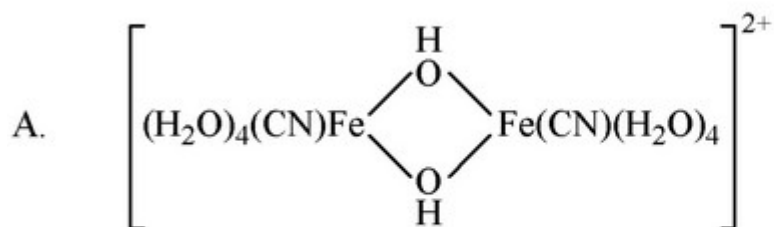
**Possible Answers :**

100

**Question Number :** 57 **Question Id :** 6760331587 **Question Type :** SA

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

Among the following species, the number of species with oxidation state of Fe in +3 is \_\_\_\_\_.



**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 : 6760331588 Question Type : SA**

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

Sum of unpaired electrons in  $[\text{NiCl}_4]^{2-}$  and  $[\text{Ni}(\text{CN})_4]^{2-}$  is \_\_\_\_\_.

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

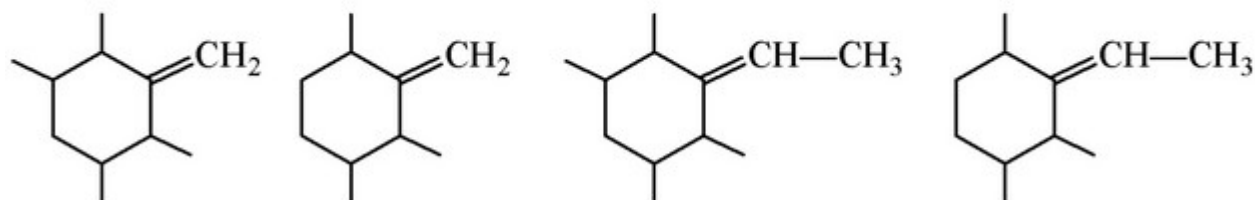
**Possible Answers :**

100

**Question Number : 59 Question Id : 6760331589 Question Type : SA**

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

From the following compounds, the total number of compound(s) which will show Geometrical isomerism is \_\_\_\_\_.



**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 : 6760331590 Question Type : SA**

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

Number of isomeric compounds with molecular formula  $C_4H_{11}N$  that will give carbylamine test is \_\_\_\_\_.

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

100