

Question Number : 31 Question Id : 8643512281 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The **INCORRECT** statement regarding the structure of C_{60} is :

Options :

8643516841. It contains 12 six-membered rings and 24 five-membered rings.
8643516842. The six-membered rings are fused to both six and five-membered rings.
8643516843. The five-membered rings are fused only to six-membered rings.
8643516844. Each carbon atom forms three sigma bonds.

Question Number : 32 Question Id : 8643512282 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The **INCORRECT** statements below regarding colloidal solutions is :

Options :

8643516845. A colloidal solution shows colligative properties.
8643516846. A colloidal solution shows Brownian motion of colloidal particles.
8643516847. The flocculating power of Al^{3+} is more than that of Na^+ .
8643516848. An ordinary filter paper can stop the flow of colloidal particles.

Question Number : 33 Question Id : 8643512283 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The characteristics of elements X, Y and Z with atomic numbers, respectively 22, 52 and 82 are :

Options :

8643516849. X, Y and Z are metals.
8643516850. X and Z are non-metals and Y is a metalloid.
8643516851. X is a metalloid, Y is a non-metal and Z is a metal.
8643516852. X and Y are metalloids and Z is a metal.

Question Number : 34 Question Id : 8643512284 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following reduction reaction **CANNOT** be carried out with coke ?

Options :

8643516853. $\text{Fe}_2\text{O}_3 \rightarrow \text{Fe}$
8643516854. $\text{ZnO} \rightarrow \text{Zn}$
8643516855. $\text{Cu}_2\text{O} \rightarrow \text{Cu}$
8643516856. $\text{Al}_2\text{O}_3 \rightarrow \text{Al}$

Question Number : 35 Question Id : 8643512285 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The correct statements about H_2O_2 are :

- (A) used in the treatment of effluents.
- (B) used as both oxidising and reducing agents.
- (C) the two hydroxyl groups lie in the same plane.
- (D) miscible with water.

Choose the correct answer from the options given below :

Options :

8643516857. (A), (B) and (D) only

8643516858. (B), (C) and (D) only

8643516859. (A), (C) and (D) only

8643516860. (A), (B), (C) and (D)

Question Number : 36 Question Id : 8643512286 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Identify the elements X and Y using the ionisation energy values given below :

	Ionization energy (kJ/mol)	
	1 st	2 nd
X	495	4563
Y	731	1450

Options :

8643516861. X = Na ; Y = Mg

8643516862. X = Mg ; Y = Na

8643516863. X = F ; Y = Mg

8643516864. X = Mg ; Y = F

Question Number : 37 Question Id : 8643512287 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The exact volumes of 1 M NaOH solution required to neutralise 50 mL of 1 M H_3PO_3 solution and 100 mL of 2 M H_3PO_2 solution, respectively, are :

Options :

8643516865. 50 mL and 50 mL

8643516866. 100 mL and 50 mL

8643516867. 100 mL and 200 mL

8643516868. 100 mL and 100 mL

Question Number : 38 Question Id : 8643512288 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Arrange the following metal complex/compounds in the increasing order of spin only magnetic moment. Presume all the three, high spin system.

(Atomic numbers Ce = 58, Gd = 64 and Eu = 63.)

(a) $(\text{NH}_4)_2[\text{Ce}(\text{NO}_3)_6]$ (b) $\text{Gd}(\text{NO}_3)_3$ and (c) $\text{Eu}(\text{NO}_3)_3$

Answer is :

Options :

8643516869. (a) < (b) < (c)

8643516870. (a) < (c) < (b)

8643516871. (b) < (a) < (c)

8643516872. (c) < (a) < (b)

Question Number : 39 Question Id : 8643512289 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Fex_2 and Fey_3 are known when x and y are :

Options :

8643516873. $x = \text{F, Cl, Br, I}$ and $y = \text{F, Cl, Br, I}$

8643516874. $x = \text{F, Cl, Br, I}$ and $y = \text{F, Cl, Br}$

8643516875. $x = \text{F, Cl, Br}$ and $y = \text{F, Cl, Br, I}$

8643516876. $x = \text{Cl, Br, I}$ and $y = \text{F, Cl, Br, I}$

Question Number : 40 Question Id : 8643512290 Question Type : MCQ Option

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The green house gas/ es is (are) :

- (A) Carbon dioxide
- (B) Oxygen
- (C) Water vapour
- (D) Methane

Choose the most appropriate answer from the options given below :

Options :

8643516877. (A) only

8643516878. (A) and (C) only

8643516879. (A), (C) and (D) only

8643516880. (A) and (B) only

Question Number : 41 Question Id : 8643512291 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
Test/Reagents/Observation(s)	Species detected
(a) Lassaigne's Test	(i) Carbon
(b) Cu(II) oxide	(ii) Sulphur
(c) Silver nitrate	(iii) N, S, P, and halogen
(d) The sodium fusion extract gives black precipitate with acetic acid and lead acetate	(iv) Halogen Specifically

The correct match is :

Options :

8643516881. (a)-(i), (b)-(ii), (c)-(iv), (d)-(iii)

8643516882. (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)

8643516883. (a)-(iii), (b)-(i), (c)-(ii), (d)-(iv)

8643516884. (a)-(i), (b)-(iv), (c)-(iii), (d)-(ii)

Question Number : 42 Question Id : 8643512292 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Statement I : Sodium hydride can be used as an oxidising agent.

Statement II : The lone pair of electrons on nitrogen in pyridine makes it basic.

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

Options :

8643516885. Both statement I and statement II are true

8643516886. Both statement I and statement II are false

8643516887. Statement I is true but statement II is false

8643516888. Statement I is false but statement II is true

Question Number : 43 Question Id : 8643512293 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

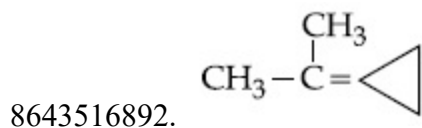
An unsaturated hydrocarbon X on ozonolysis gives A. Compound A when warmed with ammonical silver nitrate forms a bright silver mirror along the sides of the test tube. The unsaturated hydrocarbon X is :

Options :

8643516889. $\text{CH}_3 - \text{C} \equiv \text{C} - \text{CH}_3$

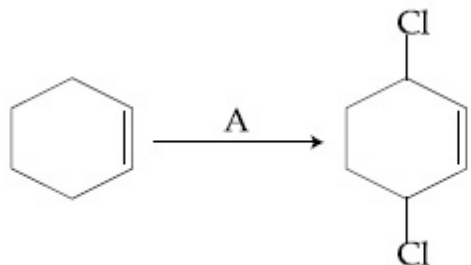
8643516890. $\begin{array}{c} \text{CH}_3 - \text{C} = \text{C} - \text{CH}_3 \\ | \quad | \\ \text{CH}_3 \quad \text{CH}_3 \end{array}$

8643516891. $\text{HC} \equiv \text{C} - \text{CH}_2 - \text{CH}_3$



Question Number : 44 Question Id : 8643512294 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



Identify the reagent(s) 'A' and condition(s) for the reaction

Options :

8643516893. A = Cl_2 ; dark, Anhydrous AlCl_3

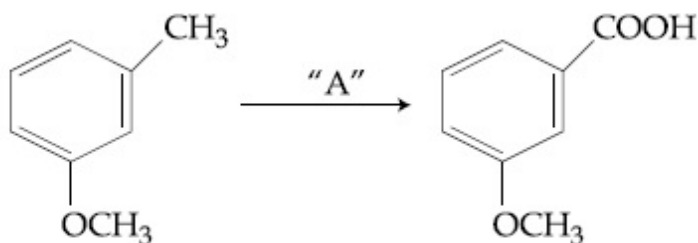
8643516894. A = HCl , ZnCl_2

8643516895. A = Cl_2 ; UV light

8643516896. A = HCl ; Anhydrous AlCl_3

Question Number : 45 Question Id : 8643512295 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



In the above reaction, the reagent "A" is :

Options :

8643516897. LiAlH_4

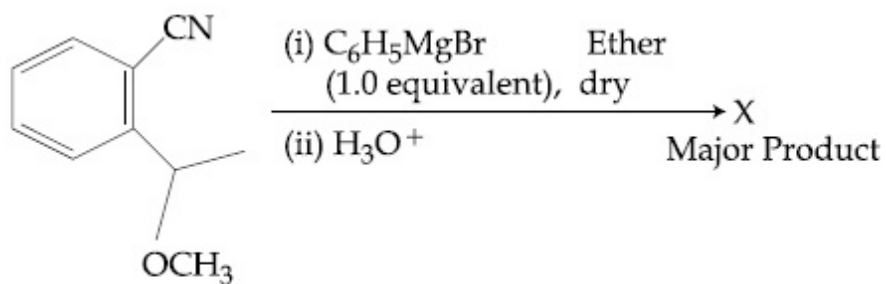
8643516898. Alkaline KMnO_4 , H^+

8643516899. HCl , $\text{Zn} - \text{Hg}$

8643516900. NaBH_4 , H_3O^+

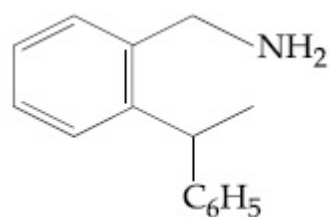
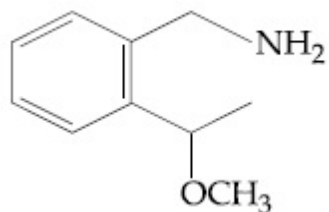
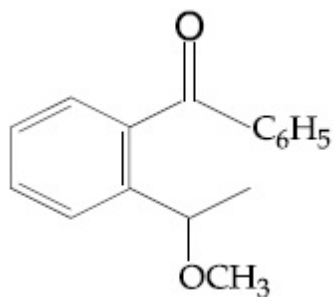
Question Number : 46 Question Id : 8643512296 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

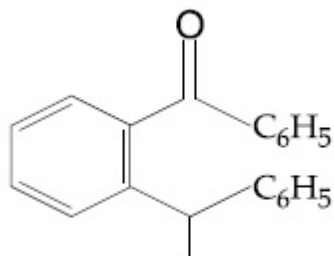
Correct Marks : 4 Wrong Marks : 1



The structure of X is :

Options :





8643516904.

Question Number : 47 Question Id : 8643512297 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following is least basic ?

Options :

8643516905. $(\text{CH}_3\text{CO})_2\ddot{\text{N}}\text{H}$

8643516906. $(\text{C}_2\text{H}_5)_2\ddot{\text{N}}\text{H}$

8643516907. $(\text{CH}_3\text{CO})\ddot{\text{N}}\text{HC}_2\text{H}_5$

8643516908. $(\text{C}_2\text{H}_5)_3\ddot{\text{N}}$

Question Number : 48 Question Id : 8643512298 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Ammonolysis of Alkyl halides followed by the treatment with NaOH solution can be used to prepare primary, secondary and tertiary amines. The purpose of NaOH in the reaction is :

Options :

8643516909. to remove basic impurities

8643516910. to activate NH_3 used in the reaction

8643516911. to increase the reactivity of alkyl halide

8643516912. to remove acidic impurities

Question Number : 49 Question Id : 8643512299 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following polymer is used in the manufacture of wood laminates ?

Options :

8643516913. Melamine formaldehyde resin

8643516914. Urea formaldehyde resin

8643516915. *cis*-poly isoprene

8643516916. Phenol and formaldehyde resin

Question Number : 50 Question Id : 8643512300 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The secondary structure of protein is stabilised by :

Options :

8643516917. van der Waals forces

8643516918. Peptide bond

8643516919. Hydrogen bonding

8643516920. glycosidic bond

Chemistry Section B

Section Id :	864351154
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Mark As Answered Required? :	Yes
Sub-Section Number :	1

Sub-Section Id : 864351154
Question Shuffling Allowed : Yes

Question Number : 51 Question Id : 8643512301 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

When 35 mL of 0.15 M lead nitrate solution is mixed with 20 mL of 0.12 M chromic sulphate solution, _____ $\times 10^{-5}$ moles of lead sulphate precipitate out. (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 : 8643512302 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Ga (atomic mass 70 u) crystallizes in a hexagonal close packed structure. The total number of voids in 0.581 g of Ga is _____ $\times 10^{21}$. (Round off to the Nearest Integer).
[Given : $N_A = 6.023 \times 10^{23}$]

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 : 8643512303 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The number of orbitals with $n = 5$, $m_l = +2$ 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 : 54 Question Id : 8643512304 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

At 25°C, 50 g of iron reacts with HCl to form FeCl₂. The evolved hydrogen gas expands against a constant pressure of 1 bar. The work done by the gas during this expansion is _____ J.

(Round off to the Nearest Integer).

[Given : R = 8.314 J mol⁻¹ K⁻¹. Assume, hydrogen is an ideal gas]

[Atomic mass of Fe is 55.85 u]

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 : 8643512305 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

At 363 K, the vapour pressure of A is 21 kPa and that of B is 18 kPa. One mole of A and 2 moles of B are mixed. Assuming that this solution is ideal, the vapour pressure of the mixture is _____ kPa. (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 : 56 Question Id : 8643512306 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Sulphurous acid (H₂SO₃) has $K_{a1} = 1.7 \times 10^{-2}$ and $K_{a2} = 6.4 \times 10^{-8}$. The pH of 0.588 M H₂SO₃ 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 : 57 Question Id : 8643512307 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A 5.0 mol dm^{-3} aqueous solution of KCl has a conductance of 0.55 mS when measured in a cell of cell constant 1.3 cm^{-1} . The molar conductivity of this solution is _____ $\text{mSm}^2 \text{ mol}^{-1}$. (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 : 58 Question Id : 8643512308 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A and B decompose via first order kinetics with half-lives 54.0 min and 18.0 min respectively. Starting from an equimolar non reactive mixture of A and B, the time taken for the concentration of A to become 16 times that of B is _____ min. (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 : 8643512309 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$ absorbs light of wavelength 498 nm during a $d-d$ transition. The octahedral splitting energy for the above complex is _____ $\times 10^{-19} \text{ J}$. (Round off to the Nearest Integer). $h = 6.626 \times 10^{-34} \text{ Js}$; $c = 3 \times 10^8 \text{ ms}^{-1}$

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 : 8643512310 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

In Duma's method of estimation of nitrogen, 0.1840 g of an organic compound gave 30 mL of nitrogen collected at 287 K and 758 mm of Hg pressure. The percentage composition of nitrogen in the compound is _____. (Round off to the Nearest Integer).

[Given : Aqueous tension at 287 K = 14 mm of Hg]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100