Question ID:101731
Topic Name: Chemistry-Section A
Question:

Production of iron in blast furnace follows the following equation

$$Fe_3O_4(s) + 4CO(g) \rightarrow 3Fe(l) + 4CO_2(g)$$
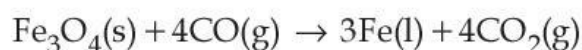
when 4.640 kg of Fe_3O_4 and 2.520 kg of CO are allowed to react then the amount of iron (in g) produced is :

[Given :   Molar Atomic mass $(g\ mol^{-1})$: $Fe = 56$

Molar Atomic mass $(g\ mol^{-1})$: $O = 16$

Molar Atomic mass $(g\ mol^{-1})$: $C = 12$]

A   1400

B   2200

C   3360

D   4200

Answer Given By Candidate:**C**

Question ID:101732
Topic Name: Chemistry-Section A
Question:

Which of the following statements are **correct** ?

(A)   The electronic configuration of Cr is [Ar] $3d^5\ 4s^1$.

(B)   The magnetic quantum number may have a negative value.

(C)   In the ground state of an atom, the orbitals are filled in order of their increasing energies.

(D)   The total number of nodes are given by $n - 2$.

Choose the **most appropriate** answer from the options given below :

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

B   (A) and (B) only

C   (A) and (C) only

D   (A), (B) and (C) only

Answer Given By Candidate:**B**

Question ID:101733
Topic Name: Chemistry-Section A

Arrange the following in the decreasing order of their covalent character :

(A)   LiCl

(B)   NaCl

(C)   KCl

(D)   CsCl

Question: Choose the **most appropriate** answer from the options given below :

A   (A) > (C) > (B) > (D)

B   (B) > (A) > (C) > (D)

C   (A) > (B) > (C) > (D)

D   (A) > (B) > (D) > (C)

Answer Given By Candidate:**C**

Question ID:101734
Topic Name: Chemistry-Section A

Question: The solubility of AgCl will be maximum in which of the following ?

A   0.01 M KCl

B   0.01 M HCl

C   0.01 M $AgNO_3$

D   Deionised water

Answer Given By Candidate:**D**

Question ID:101735
Topic Name: Chemistry-Section A

Question: Which of the following is a **correct** statement ?

A   Brownian motion destabilises sols.

B   Any amount of dispersed phase can be added to emulsion without destabilising it.

C   Mixing two oppositely charged sols in equal amount neutralises charges and stabilises colloids.

D   Presence of equal and similar charges on colloidal particles provides stability to the colloidal solution.

Answer Given By Candidate:**C**

Question ID:101736
Topic Name: Chemistry-Section A

Question: The electronic configuration of Pt (atomic number 78) is :

A   [Xe] $4f^{14}$ $5d^9$ $6s^1$

B $[Kr]\ 4f^{14}\ 5d^{10}$

C $[Xe]\ 4f^{14}\ 5d^{10}$

D $[Xe]\ 4f^{14}\ 5d^8\ 6s^2$

Answer Given By Candidate:**C**

Question ID:101737
Topic Name: Chemistry-Section A
Question:

In isolation of which one of the following metals from their ores, the use of cyanide salt is not commonly involved ?

A Zinc

B Gold

C Silver

D Copper

Answer Given By Candidate:**A**

Question ID:101738
Topic Name: Chemistry-Section A
Question:

Which one of the following reactions indicates the reducing ability of hydrogen peroxide in basic medium ?

A $HOCl + H_2O_2 \rightarrow H_3O^+ + Cl^- + O_2$

B $PbS + 4H_2O_2 \rightarrow PbSO_4 + 4H_2O$

C $2MnO_4^- + 3H_2O_2 \rightarrow 2MnO_2 + 3O_2 + 2H_2O + 2OH^-$

D $Mn^{2+} + H_2O_2 \rightarrow Mn^{4+} + 2OH^-$

Answer Given By Candidate:**C**

Question ID:101739
Topic Name: Chemistry-Section A

Match **List - I** with **List - II**.

List - I	List - II
(Metal)	(Emitted light wavelength (nm))
(A) Li	(I) 670.8
(B) Na	(II) 589.2
(C) Rb	(III) 780.0
(D) Cs	(IV) 455.5

Question: Choose the **most appropriate** answer from the options given below :

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

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

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

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

Answer Given By Candidate:**A**

Question ID:101740
Topic Name: Chemistry-Section A

Match **List - I** with **List - II**.

	List - I (Metal)		List - II (Application)
(A)	Cs	(I)	High temperature thermometer
(B)	Ga	(II)	Water repellent sprays
(C)	B	(III)	Photoelectric cells
(D)	Si	(IV)	Bullet proof vest

Question: Choose the **most appropriate** answer from the options given below :

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

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

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

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

Answer Given By Candidate:**A**

Question ID:101741
Topic Name: Chemistry-Section A
Question:

The oxoacid of phosphorus that is easily obtained from a reaction of alkali and white phosphorus and has two P–H bonds, is :

A Phosphonic acid

B Phosphinic acid

C Pyrophosphorus acid

D Hypophosphoric acid

Answer Given By Candidate:**D**

Question ID:101742
Topic Name: Chemistry-Section A
Question: The acid that is believed to be mainly responsible for the damage of Taj Mahal is

A sulfuric acid.

B hydrofluoric acid.

C phosphoric acid.

D hydrochloric acid.

Answer Given By Candidate:**A**

Question ID:101743
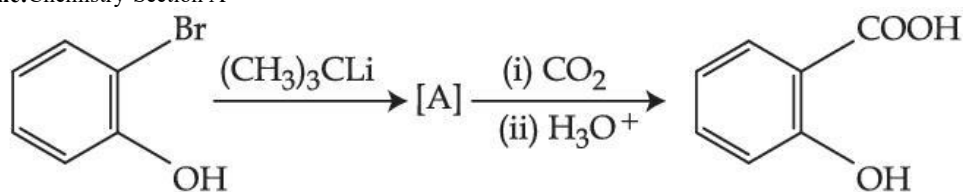**Topic Name:**Chemistry-Section A
Question:

Two isomers 'A' and 'B' with molecular formula C_4H_8 give different products on oxidation with $KMnO_4$ in acidic medium. Isomer 'A' on reaction with $KMnO_4/H^+$ results in effervescence of a gas and gives ketone. The compound 'A' is

A But-1-ene.

B cis-But-2-ene.

C trans-But-2-ene.

D 2-methyl propene.

Answer Given By Candidate:**D**

Question ID:101744
Topic Name: Chemistry-Section A

Question: In the given conversion the compound A is :

A

B

C

D

Question ID:101745
Topic Name: Chemistry-Section A
Question:

Given below are two statements :

Statement I : The esterification of carboxylic acid with an alcohol is a nucleophilic acyl substitution.

**Statement II :** Electron withdrawing groups in the carboxylic acid will increase the rate of esterification reaction.

Choose the **most appropriate** option :

A Both **Statement I** and **Statement II** are correct.

B Both **Statement I** and **Statement II** are incorrect.

C **Statement I** is correct but **Statement II** is incorrect.

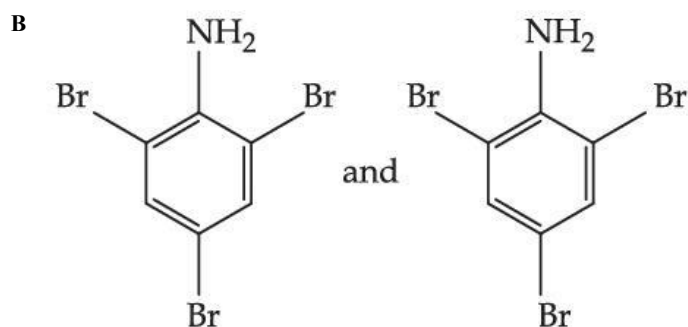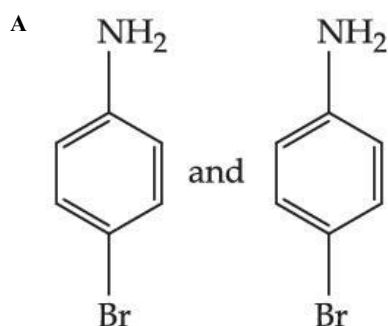D **Statement I** is incorrect but **Statement II** is correct.

Question ID:101746
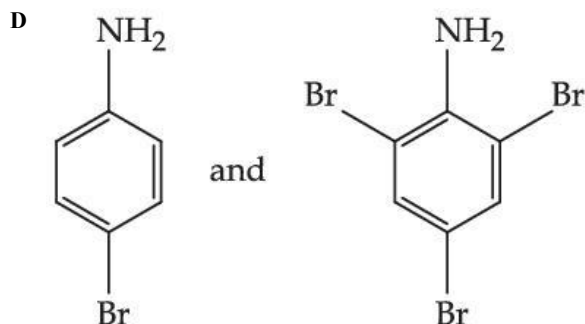**Topic Name:**Chemistry-Section A
Question:
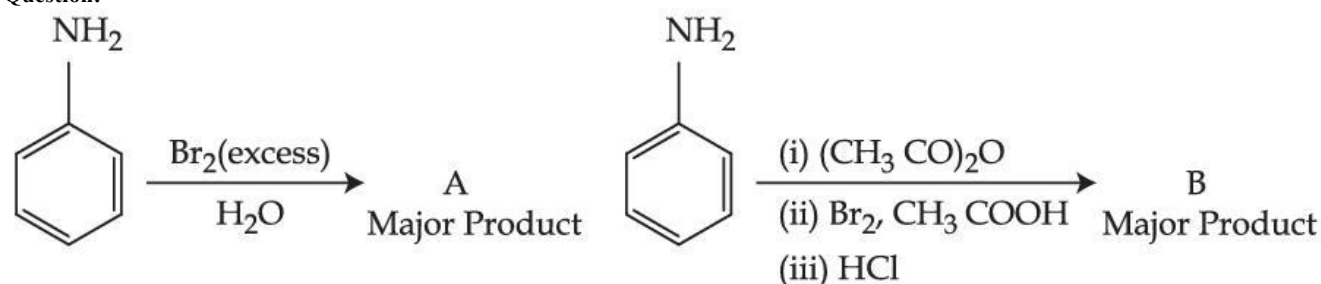
Consider the above reactions, the product A and product B respectively are

A

B

C

D

Answer Given By Candidate:**C**

Question ID:101747
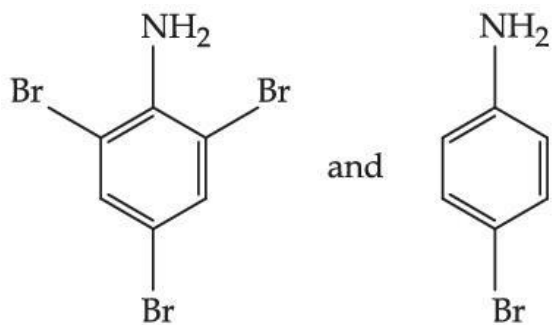**Topic Name:**Chemistry-Section A
Question:

The polymer, which can be stretched and retains its original status on releasing the force is

A Bakelite.

B Nylon 6,6.

C Buna-N.

D Terylene.

Answer Given By Candidate:**Not Attempted**

Question ID:101748
Topic Name: Chemistry-Section A

Question: Sugar moiety in DNA and RNA molecules respectively are

A β-D-2-deoxyribose, β-D-deoxyribose.

B β-D-2-deoxyribose, β-D-ribose

C β-D-ribose, β-D-2-deoxyribose.

D β-D-deoxyribose, β-D-2-deoxyribose.

Answer Given By Candidate:**B**

Question ID:101749
Topic Name: Chemistry-Section A

Question: Which of the following compound **does not** contain sulfur atom ?

A Cimetidine

B Ranitidine

C

Histamine

D Saccharin

Answer Given By Candidate:**Not Attempted**

Question ID:101750
Topic Name: Chemistry-Section A
Question:

Given below are two statements.

Statement I :   Phenols are weakly acidic.

Statement II :   Therefore they are freely soluble in NaOH solution and are weaker acids than alcohols and water.

Choose the **most appropriate** option :

A Both **Statement I** and **Statement II** are correct.

B Both **Statement I** and **Statement II** are incorrect.

C **Statement I** is correct but **Statement II** is incorrect.

D **Statement I** is incorrect but **Statement II** is correct.

Answer Given By Candidate:**B**

Question ID:101751
Topic Name: Chemistry-Section B
Question:

Geraniol, a volatile organic compound, is a component of rose oil. The density of the vapour is 0.46 gL^{-1} at 257°C and 100 mm Hg. The molar mass of geraniol is _____ $g\ mol^{-1}$. (Nearest Integer)

[Given : $R = 0.082$ L atm $K^{-1}\ mol^{-1}$]

Answer Given By Candidate:**160**

Question ID:101752
Topic Name: Chemistry-Section B
Question:

17.0 g of NH_3 completely vapourises at -33.42°C and 1 bar pressure and the enthalpy change in the process is 23.4 kJ mol^{-1}. The enthalpy change for the vapourisation of 85 g of NH_3 under the same conditions is _____ kJ.

Answer Given By Candidate:**117**

Question ID:101753
Topic Name: Chemistry-Section B
Question:

1.2 mL of acetic acid is dissolved in water to make 2.0 L of solution. The depression in freezing point observed for this strength of acid is 0.0198°C. The percentage of dissociation of the acid is _____. (Nearest integer)

[Given :   Density of acetic acid is 1.02 g mL^{-1}

Molar mass of acetic acid is 60 g mol^{-1}

$K_f(H_2O) = 1.85$ K kg mol^{-1}]

Answer Given By Candidate:**Not Attempted**

Question ID:101754
Topic Name: Chemistry-Section B
Question:

A dilute solution of sulphuric acid is electrolysed using a current of 0.10 A for 2 hours to produce hydrogen and oxygen gas. The total volume of gases produced at STP is _____ cm^3. (Nearest integer)

[Given : Faraday constant $F = 96500$ C mol^{-1} at STP, molar volume of an ideal gas is 22.7 L mol^{-1}]

Answer Given By Candidate:**Not Attempted**

Question ID:101755
Topic Name: Chemistry-Section B
Question:

The activation energy of one of the reactions in a biochemical process is 532611 J mol^{-1}. When the temperature falls from 310 K to 300 K, the change in rate constant observed is $k_{300} = x \times 10^{-3} k_{310}$. The value of x is _____.
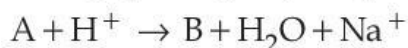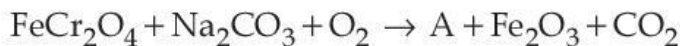
[Given : $\ln 10 = 2.3$

$R = 8.3$ J K^{-1} mol^{-1}]

Answer Given By Candidate:**Not Attempted**

Question ID:101756
Topic Name: Chemistry-Section B
Question:

The number of terminal oxygen atoms present in the product B obtained from the following reaction is _____.

$FeCr_2O_4 + Na_2CO_3 + O_2 \rightarrow A + Fe_2O_3 + CO_2$

$A + H^+ \rightarrow B + H_2O + Na^+$

Answer Given By Candidate:**Not Attempted**

Question ID:101757
Topic Name: Chemistry-Section B
Question:

An acidified manganate solution undergoes disproportionation reaction. The spin-only magnetic moment value of the product having manganese in higher oxidation state is _____ B.M. (Nearest integer)

Answer Given By Candidate:**0**

Question ID:101758
Topic Name: Chemistry-Section B
Question:

Kjeldahl's method was used for the estimation of nitrogen in an organic compound. The ammonia evolved from 0.55 g of the compound neutralised 12.5 mL of 1 M H_2SO_4 solution.

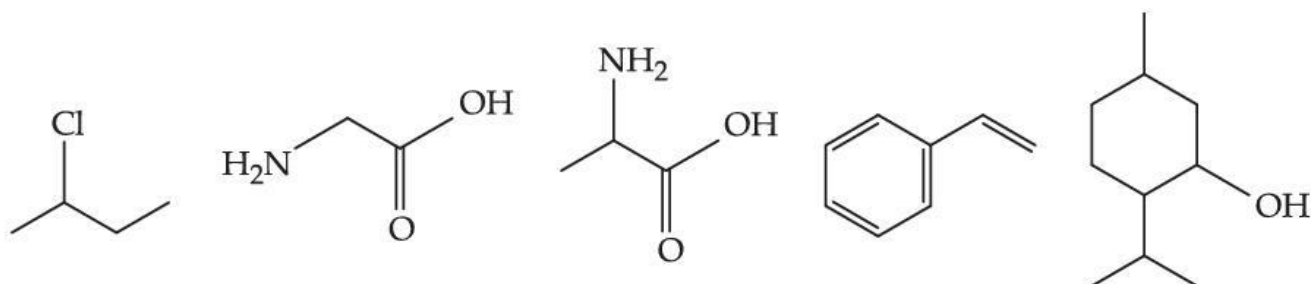The percentage of nitrogen in the compound is _____. (Nearest integer)

Answer Given By Candidate:**Not Attempted**

Question ID:101759

Topic Name: Chemistry-Section B
Question:

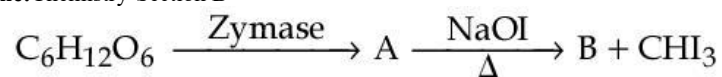Observe structures of the following compounds

The total number of structures/compounds which possess asymmetric carbon atoms is

_____.

Answer Given By Candidate:**3**

Question ID:101760
Topic Name: Chemistry-Section B

$$C_6H_{12}O_6 \xrightarrow{\text{Zymase}} A \xrightarrow[\Delta]{\text{NaOI}} B + CHI_3$$

Question: The number of carbon atoms present in the product B is _____.

Answer Given By Candidate:**Not Attempted**