Section : **Chemistry Section A**

Q.31

"A" obtained by Ostwald's method involving air oxidation of NH_3, upon further air oxidation produces "B". "B" on hydration forms an oxoacid of Nitrogen along with evolution of "A". The oxoacid also produces "A" and gives positive brown ring test.

Identify A and B, respectively.

Options

1. NO_2, N_2O_5
2. NO, NO_2
3. NO_2, N_2O_4
4. N_2O_3, NO_2

Question Type : **MCQ**
Question ID : **3666942045**
Option 1 ID : **3666946324**
Option 2 ID : **3666946325**
Option 3 ID : **3666946326**
Option 4 ID : **3666946323**
Status : **Answered**
Chosen Option : **1**

Q.32

The reaction representing the Mond process for metal refining is _____.

Options

1. $2K[Au(CN)_2] + Zn \xrightarrow{\Delta} K_2[Zn(CN)_4] + 2Au$
2. $ZnO + C \xrightarrow{\Delta} Zn + CO$
3. $Zr + 2I_2 \xrightarrow{\Delta} ZrI_4$
4. $Ni + 4CO \xrightarrow{\Delta} Ni(CO)_4$

Question Type : **MCQ**
Question ID : **3666942041**
Option 1 ID : **3666946309**
Option 2 ID : **3666946307**
Option 3 ID : **3666946310**
Option 4 ID : **3666946308**
Status : **Not Answered**
Chosen Option : **--**

Q.33 During the borax bead test with $CuSO_4$, a blue green colour of the bead was observed in oxidising flame due to the formation of

Options

1. CuO
2. Cu
3. $Cu(BO_2)_2$
4. Cu_3B_2

Question Type : **MCQ**
Question ID : **3666942053**
Option 1 ID : **3666946358**
Option 2 ID : **3666946355**
Option 3 ID : **3666946356**
Option 4 ID : **3666946357**
Status : **Answered**
Chosen Option : **1**

Q.34 Compound that will give positive Lassaigne's test for both nitrogen and halogen is:

Options

1. NH_4Cl
2. $NH_2OH.HCl$
3. $CH_3NH_2.HCl$
4. $N_2H_4.HCl$

Question Type : **MCQ**
Question ID : **3666942056**
Option 1 ID : **3666946368**
Option 2 ID : **3666946370**
Option 3 ID : **3666946369**
Option 4 ID : **3666946367**
Status : **Not Answered**
Chosen Option : **--**

Q.35 Correct statement about smog is:

Options

1. Classical smog also has high concentration of oxidizing agents
2. Photochemical smog has high concentration of oxidizing agents
3. Both NO_2 and SO_2 are present in classical smog
4. NO_2 is present in classical smog

Question Type : **MCQ**
Question ID : **3666942047**
Option 1 ID : **3666946334**
Option 2 ID : **3666946333**
Option 3 ID : **3666946332**
Option 4 ID : **3666946331**
Status : **Answered**
Chosen Option : **3**

Q.36

The correct order of hydration enthalpies is

(A) K^+

(B) Rb^+

(C) Mg^{2+}

(D) Cs^+

(E) Ca^{2+}

Choose the correct answer from the options given below:

Options

1. E > C > A > B > D
2. C > E > A > D > B
3. C > A > E > B > D
4. C > E > A > B > D

Question Type : **MCQ**
Question ID : **3666942043**
Option 1 ID : **3666946316**
Option 2 ID : **3666946318**
Option 3 ID : **3666946315**
Option 4 ID : **3666946317**
Status : **Answered**
Chosen Option : **2**

Q.37

The standard electrode potential (M^{3+}/M^{2+}) for V, Cr, Mn & Co are –0.26 V, –0.41 V, +1.57 V and +1.97 V, respectively. The metal ions which can liberate H_2 from a dilute acid are

Options

1. V^{2+} and Cr^{2+}
2. Cr^{2+} and Co^{2+}
3. V^{2+} and Mn^{2+}
4. Mn^{2+} and Co^{2+}

Question Type : **MCQ**
Question ID : **3666942046**
Option 1 ID : **3666946327**
Option 2 ID : **3666946329**
Option 3 ID : **3666946328**
Option 4 ID : **3666946330**
Status : **Answered**
Chosen Option : **1**

Q.38

Number of cyclic tripeptides formed with 2 amino acids A and B is:

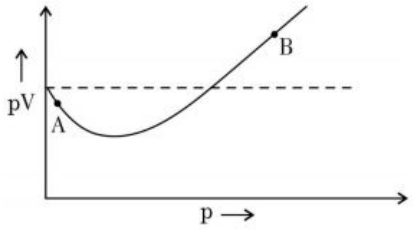
Options

1. 2
2. 4
3. 5
4. 3

Question Type : **MCQ**
Question ID : **3666942055**
Option 1 ID : **3666946366**
Option 2 ID : **3666946365**
Option 3 ID : **3666946363**
Option 4 ID : **3666946364**
Status : **Answered**
Chosen Option : **1**

Q.39

For 1 mol of gas, the plot of pV vs. p is shown below. p is the pressure and V is the volume of the gas



What is the value of compressibility factor at point A?

Options

1. $1-\frac{b}{V}$
2. $1+\frac{b}{V}$
3. $1-\frac{a}{RTV}$
4. $1+\frac{a}{RTV}$

Question Type : **MCQ**
Question ID : **3666942037**
Option 1 ID : **3666946294**
Option 2 ID : **3666946293**
Option 3 ID : **3666946292**
Option 4 ID : **3666946291**
Status : **Not Answered**
Chosen Option : **--**

Q.40

Match List I with List II.

List I	List II
Antimicrobials	Names
(A) Narrow Spectrum Antibiotic	(I) Furacin
(B) Antiseptic	(II) Sulphur dioxide
(C) Disinfectants	(III) Penicillin G
(D) Broad spectrum antibiotic	(IV) Chloramphenicol

Choose the correct answer from the options given below:

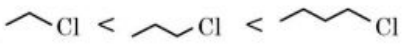
Options

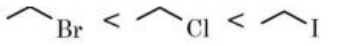
1. (A) – III, (B) – I, (C) – IV, (D) – II
2. (A) – III, (B) – I, (C) – II, (D) – IV
3. (A) – I, (B) – II, (C) – IV, (D) – III
4. (A) – II, (B) – I, (C) – IV, (D) – III

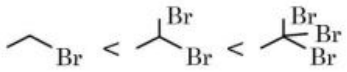
Question Type : **MCQ**
Question ID : **3666942054**
Option 1 ID : **3666946361**
Option 2 ID : **3666946362**
Option 3 ID : **3666946360**
Option 4 ID : **3666946359**
Status : **Answered**
Chosen Option : **2**

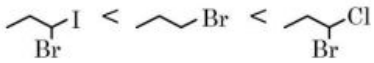
Q.41

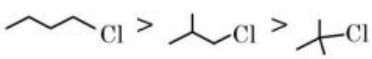
Identify the correct order for the given property for following compounds.

(A) Boiling Point: 

(B) Density: 

(C) Boiling Point: 

(D) Density: 

(E) Boiling Point: 

Choose the correct answer from the option given below:

Options

1. (A), (B) and (E) only
2. (A), (C) and (D) only
3. (B), (C) and (D) only
4. (A), (C) and (E) only

Question Type : **MCQ**
Question ID : **3666942049**
Option 1 ID : **3666946339**
Option 2 ID : **3666946341**
Option 3 ID : **3666946340**
Option 4 ID : **3666946342**
Status : **Answered**
Chosen Option : **1**

Q.42 Chiral complex from the following is:

Here en = ethylene diamine

Options

1. cis – $[PtCl_2 (NH_3)_2]$
2. trans – $[Co(NH_3)_4 Cl_2]^+$
3. cis – $[PtCl_2 (en)_2]^{2+}$
4. trans – $[PtCl_2(en)_2]^{2+}$

Question Type : **MCQ**
Question ID : **3666942048**
Option 1 ID : **3666946335**
Option 2 ID : **3666946337**
Option 3 ID : **3666946336**
Option 4 ID : **3666946338**
Status : **Not Answered**
Chosen Option : **--**

Q.43 Which of the following salt solutions would coagulate the colloid solution formed when $FeCl_3$ is added to NaOH solution, at the fastest rate?

Options

1. 10 mL of 0.1 mol dm^{-3} Na_2SO_4
2. 10 mL of 0.15 mol dm^{-3} $CaCl_2$
3. 10 mL of 0.1 mol dm^{-3} $Ca_3(PO_4)_2$
4. 10 mL of 0.2 mol dm^{-3} $AlCl_3$

Question Type : **MCQ**
Question ID : **3666942039**
Option 1 ID : **3666946299**
Option 2 ID : **3666946301**
Option 3 ID : **3666946300**
Option 4 ID : **3666946302**
Status : **Not Answered**
Chosen Option : **--**

Q.44 The bond dissociation energy is highest for

Options

1. Br_2
2. F_2
3. I_2
4. Cl_2

Question Type : **MCQ**
Question ID : **3666942040**
Option 1 ID : **3666946305**
Option 2 ID : **3666946303**
Option 3 ID : **3666946306**
Option 4 ID : **3666946304**
Status : **Answered**
Chosen Option : **3**

Q.45 The shortest wavelength of hydrogen atom in Lyman series is λ. The longest wavelength in Balmer series of He^+ is

Options

1. $\frac{5}{9\lambda}$
2. $\frac{36\lambda}{5}$
3. $\frac{9\lambda}{5}$
4. $\frac{5\lambda}{9}$

Question Type : **MCQ**
Question ID : **3666942038**
Option 1 ID : **3666946297**
Option 2 ID : **3666946296**
Option 3 ID : **3666946295**
Option 4 ID : **3666946298**
Status : **Answered**
Chosen Option : **3**

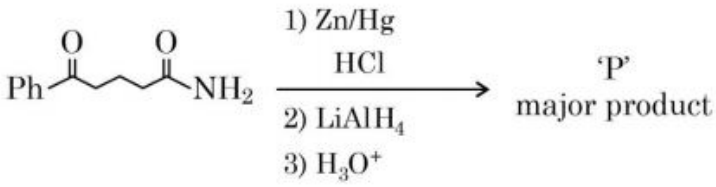
Q.46 The magnetic behavior of Li_2O, Na_2O_2 and KO_2, respectively, are

Options

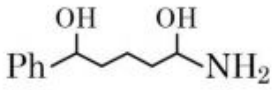
1. diamagnetic, diamagnetic and paramagnetic
2. paramagnetic, paramagnetic and diamagnetic
3. paramagnetic, diamagnetic and paramagnetic
4. diamagnetic, paramagnetic and diamagnetic

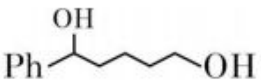
Question Type : **MCQ**
Question ID : **3666942044**
Option 1 ID : **3666946320**
Option 2 ID : **3666946322**
Option 3 ID : **3666946319**
Option 4 ID : **3666946321**
Status : **Answered**
Chosen Option : **2**

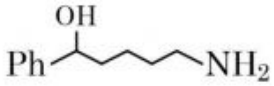
Q.47 The major product 'P' for the following sequence of reactions is:



Options

1. 

2. 

3. 

4. 

Question Type : **MCQ**
Question ID : **3666942052**
Option 1 ID : **3666946351**
Option 2 ID : **3666946354**
Option 3 ID : **3666946352**
Option 4 ID : **3666946353**
Status : **Answered**
Chosen Option : **4**

Q.48 Which of the given compounds can enhance the efficiency of hydrogen storage tank?

Options

1. Li/P_4
2. Di-isobutylaluminium hydride
3. SiH_4
4. $NaNi_5$

Question Type : **MCQ**
Question ID : **3666942042**
Option 1 ID : **3666946312**
Option 2 ID : **3666946314**
Option 3 ID : **3666946313**
Option 4 ID : **3666946311**
Status : **Not Answered**
Chosen Option : **--**

Q.49

Match List I with List II.

List I		List II	
	Reaction		Reagents
(A)	Hoffmann Degradation	(I)	Conc.KOH, Δ
(B)	Clemenson reduction	(II)	$CHCl_3$, $NaOH/H_3O^{\oplus}$
(C)	Cannizaro reaction	(III)	Br_2, NaOH
(D)	Reimer-Tiemann Reaction	(IV)	Zn-Hg/HCl

Choose the correct answer from the options given below:

Options

1. (A) – III, (B) – IV, (C) – I, (D) – II
2. (A) – III, (B) – IV, (C) – II, (D) – I
3. (A) – II, (B) – I, (C) – III, (D) – IV
4. (A) – II, (B) – IV, (C) – I, (D) – III

Question Type : **MCQ**
Question ID : **3666942051**
Option 1 ID : **3666946347**
Option 2 ID : **3666946349**
Option 3 ID : **3666946348**
Option 4 ID : **3666946350**
Status : **Answered**
Chosen Option : **1**

Q.50

The increasing order of pK_a for the following phenols is

(A) 2, 4 - Dinitrophenol

(B) 4 - Nitrophenol

(C) 2, 4, 5 - Trimethylphenol

(D) Phenol

(E) 3-Chlorophenol

Choose the correct answer from the option given below:

Options

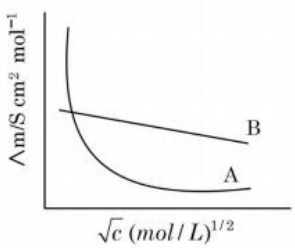
1. (C), (E), (D), (B), (A)
2. (C), (D), (E), (B), (A)
3. (A), (B), (E), (D), (C)
4. (A), (E), (B), (D), (C)

Question Type : **MCQ**
Question ID : **3666942050**
Option 1 ID : **3666946345**
Option 2 ID : **3666946344**
Option 3 ID : **3666946343**
Option 4 ID : **3666946346**
Status : **Answered**
Chosen Option : **4**

Section : **Chemistry Section B**

Q.51

Following figure shows dependence of molar conductance of two electrolytes on concentration. $\Lambda\overset{\circ}{m}$ is the limiting molar conductivity.



The number of **incorrect** statement(s) from the following is _____

(A) $\Lambda\overset{\circ}{m}$ for electrolyte A is obtained by extrapolation

(B) For electrolyte B, Λm vs $\sqrt{c}$ graph is a straight line with intercept equal to $\Lambda\overset{\circ}{m}$

(C) At infinite dilution, the value of degree of dissociation approaches zero for electrolyte B.

(D) $\Lambda\overset{\circ}{m}$ for any electrolyte A or B can be calculated using λ° for individual ions

Given **2**
Answer :

Question Type : **SA**
Question ID : **3666942062**
Status : **Answered**

Q.52

Consider the following reaction approaching equilibrium at 27°C and 1 atm pressure

$A+B \underset{k_r=10^2}{\overset{k_f=10^3}{\rightleftharpoons}} C+D$

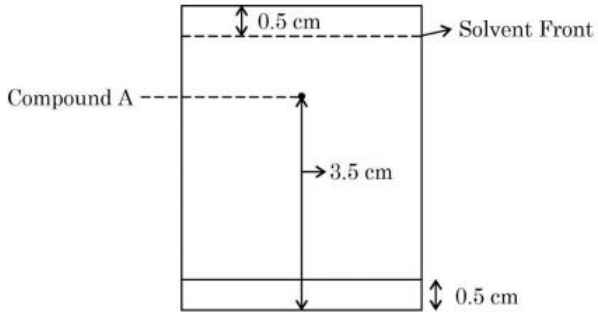
The standard Gibb's energy change ($\Delta_r G^{\theta}$) at 27°C is (–) _____ kJ mol^{-1} (Nearest integer).
(Given: R = 8.3 J K^{-1} mol^{-1} and ln 10 = 2.3)

Given **--**
Answer :

Question Type : **SA**
Question ID : **3666942059**
Status : **Not Answered**

Q.53

Following chromatogram was developed by adsorption of compound 'A' on a 6 cm TLC glass plate. Retardation factor of the compound 'A' is _____$\times 10^{-1}$.



Given **--**
Answer :

Question Type : **SA**
Question ID : **3666942065**
Status : **Not Answered**

Q.54 The sum of bridging carbonyls in $W(CO)_6$ and $Mn_2(CO)_{10}$ is _____.

Given **2**
Answer :

Question Type : **SA**
Question ID : **3666942064**
Status : **Answered**

Q.55 The number of molecules or ions from the following, which do not have odd number of electrons are _____.

(A) NO_2

(B) ICl_4^-

(C) BrF_3

(D) ClO_2

(E) NO_2^+

(F) NO

Given **--**
Answer :

Question Type : **SA**
Question ID : **3666942058**
Status : **Not Answered**

Q.56 Water decomposes at 2300 K

$$H_2O(g) \rightarrow H_2(g) + \frac{1}{2}O_2(g)$$

The percent of water decomposing at 2300 K and 1 bar is _____ (Nearest integer).

Equilibrium constant for the reaction is 2×10^{-3} at 2300 K.

Given **--**
Answer :

Question Type : **SA**
Question ID : **3666942061**
Status : **Not Answered**

Q.57 Millimoles of calcium hydroxide required to produce 100 mL of the aqueous solution of pH 12 is $x\times10^{-1}$. The value of x is _____ (Nearest integer).

Assume complete dissociation.

Given **--**
Answer :

Question Type : **SA**
Question ID : **3666942057**
Status : **Not Answered**

Q.58

Solid Lead nitrate is dissolved in 1 litre of water. The solution was found to boil at 100.15^0 C. When 0.2 mol of NaCl is added to the resulting solution, it was observed that the solution froze at –0.8^0 C. The solubility product of $PbCl_2$ formed is _____ $\times 10^{-6}$ at 298 K. (Nearest integer)

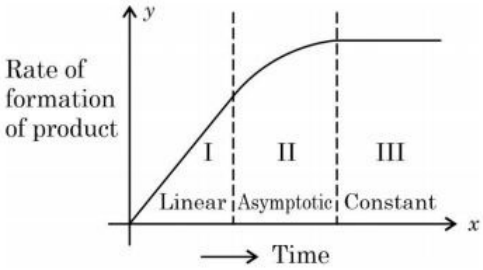
Given : $K_b = 0.5$ K kg mol^{-1} and $K_f = 1.8$ K kg mol^{-1}. Assume molality to be equal to molarity in all cases.

Given --
Answer :

Question Type : **SA**
Question ID : **3666942060**
Status : **Not Answered**

Q.59

For certain chemical reaction $X \rightarrow Y$, the rate of formation of product is plotted against the time as shown in the figure. The number of **correct** statement/s from the following is _____



(A) Over all order of this reaction is one

(B) Order of this reaction can't be determined

(C) In region I and III, the reaction is of first and zero order respectively

(D) In region-II, the reaction is of first order

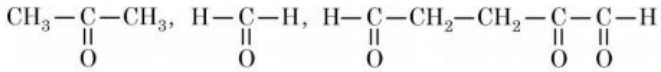
(E) In region-II, the order of reaction is in the range of 0.1 to 0.9.

Given **2**
Answer :

Question Type : **SA**
Question ID : **3666942063**
Status : **Marked For Review**

Q.60

17 mg of a hydrocarbon (M.F. $C_{10}H_{16}$) takes up 8.40 mL of the H_2 gas measured at 0° C and 760 mm of Hg. Ozonolysis of the same hydrocarbon yields



The number of double bond/s present in the hydrocarbon is _____.

Given **5**
Answer :

Question Type : **SA**
Question ID : **3666942066**
Status : **Answered**