COMPETENCY/ CASE BASED QUESTIONS
Chapter-1: Solutions

The following questions are case-based questions. Each question has an internal choice and carries 4 (1+1+2) marks each. Read the passage carefully and answer the questions that follow.

1. Henna is investigating the melting point of different salt solutions. She makes a salt solution using 10 mL of water with a known mass of NaCl salt. She puts the salt solution into a freezer and leaves it to freeze. She takes the frozen salt solution out of the freezer and measures the temperature when the frozen salt solution melts. She repeats each experiment.

S.No	Mass of the salt used in g	Melting point in ^{0}C	
		Readings Set 1	Reading Set 2
1	0.3	-1.9	-1.9
2	0.4	-2.5	-2.6
3	0.5	-3.0	-5.5
4	0.6	-3.8	-3.8
5	0.8	-5.1	-5.0
6	1.0	-6.4	-6.3

Assuming the melting point of pure water as 0°C, answer the following questions:
(a) One temperature in the second set of results does not fit in the pattern. Which temperature is that? Justify your answer.
(b) Why did Henna collect two sets of results?
(c) In place of NaCl, if Henna had used glucose, what would have been the melting point of the solution with 0.6 g glucose in it?

OR

(c) What is the predicted melting point if 1.2 g of salt is added to 10 mL of water? Justify your answer.

2. Aarav Sharma is very fond of a special drink made by his grandmother using different fruits available in their hometown. It has an outstanding taste and also provide great health benefits of natural fruits. He thought of utilizing his grandmother recipe to create a new product in the beverage market that provide health benefits and also contain fizziness of various soft drinks available in the market. Based on your understanding of solutions chapter, help Aarav Sharma to accomplish his idea by answering following:

(a) How he can add fizz to the special drink made by his grandmother?
1

(b) What is the law stated in the chapter that can help Aarav to make his drink fizzy?
1

(c) What precautions he should take while bottling so that his product does not lose fizz during storage and

handling across long distances?
2

OR

(c)The mole fraction of helium in a saturated solution at 20°C is 1.2 x 10^{-6}. Find the pressure of helium

above the solution. Given Henry's constant at 20°C is 144.97 kbar.

3. Observe the table in which azeotropic mixtures are given along with their boiling points of pure

components and azeotropes and answer the questions that follow.

Some Azeotropic Mixtures					
A	B	Minimum Boiling Azeotropes	Boiling Points		
			A	B	Mixture Azeotropes
H_2O	C_2H_5OH	95.37%	373K	351.3K	351.15
H_2O	C_3H_7OH	71.69%	373K	370.19K	350.72
CH_3COCH_3	CS_2	67%	329.25K	319.25K	312.30
A	B	Maximum Boiling Azeotropes	A	B	Mixture Azeotropes
H_2O	HCl	20.3%	373K	188K	383K
H_2O	HNO_3	68.0%	373K	359K	393.5K
H_2O	$HClO_4$	71.6%	373K	383K	476K

(a) What type of deviation is shown by minimum boiling azeotropes?
1

OR

(a) Why does H_2O and HCl mixture form maximum boiling azeotropes?

(b) What are azeotropes?
1

(c) Give one example of ideal solution. What type of liquids form ideal solutions?
1

1. Observe the following table in which conductivity and molar conductivity of NaCl at 298K at different concentration & Λ^0_m for diff erent electrolytes are given. Answer the questions based in the table that follows- (1+1+2)

S.No	Conc. (M)	K (S cm^{-1})	Λ_m (S cm^2 mol^{-1})
1	0.001	1.237 x 10^{-4}	123.7
2	0.010	11.85 x 10^{-4}	118.5
3	0.020	23.15 x 10^{-4}	115.8
4	0.050	55.53 x 10^{-4}	111.1
5	0.100	106.74 x 10^{-4}	106.7

Λ^0_m
NaCl = 126.4 S.cm^2.mol^{-1}
HCl = 426.1 S.cm^2.mol^{-1}
CH$_3$COONa = 91.5 S.cm^2.mol^{-1}
NH$_4$Cl = 129.8 S.cm^2.mol^{-1}

(a) What is the change in number of ions per unit volume with decrease in concentration?

(b) Molar conductivity decreases with increase in concentration as shown in table. Why?

(c) Find out the limiting molar conductivity of CH$_3$COOH from the values given.

OR

(c) Conductivity and molar conductivity varies differently with change in concentration. Justify.

2. Read the paragraph and give answers of the questions followed- (1+1+2)

A device used to convert the energy evolved in a redox reaction into electrical energy is called an electrochemical cell. These devices are also called galvanic cells or voltaic cells, after the names of Luigi Galvani (1780) and Alessandro Volta (1800) who were the first to perform experiments on the conversion of chemical energy into electrical energy.

How exactly the chemical energy of a redox reaction is converted into electrical energy can be seen from the following example:

Redox reaction between Zn and CuSO$_4$. The reaction is represented as:

$$Zn(s) + CuSO_4(aq) \rightarrow ZnSO_4(aq) + Cu(s)$$
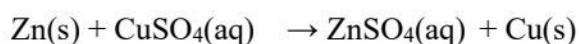
It may also be written in ionic form as: $Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$

The reaction essentially comprises of two half reactions: one for reduction and the other for oxidation. $Zn(s) \rightarrow Zn^{2+}(aq) + 2e^-$ $Cu^{2+}(aq) + 2e^- \rightarrow Cu(s)$

Thus, Zn is oxidized to Zn^{2+} in the oxidation half reaction and Cu^{2+} is reduced to Cu in the reduction half reaction. The overall reaction can be obtained by adding the two half reactions.
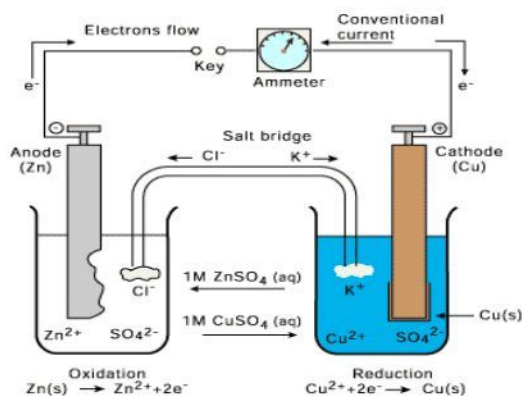
Electrochemical cell based on redox reaction

(a) What is the direction of flow of current in a cell?
(b) Suggest two materials other than hydrogen that can be used as fuels for fuel cell.
(c) The equilibrium can be achieved in chemical reaction at what value of emf?

Or

(c) Why an electrochemical cell stops working after sometime?

3. Read the paragraph carefully and give the answers of the questions followed- (1+1+2)

Recently, a few Researchers have developed a novel Carbon-Based Catalyst called Laser Carbon to make water electrolysis more efficient. Laser Carbon can replace expensive metal-based catalysts in the electrolysis of water to produce hydrogen. The electrolysis of water consumes a lot of energy. The traditional solution is to use a catalyst to induce the water molecules to split at a lower energy.
Laser carbon is a porous carbon material containing nitrogen that acts as both a catalyst and an anode in electrolysis.
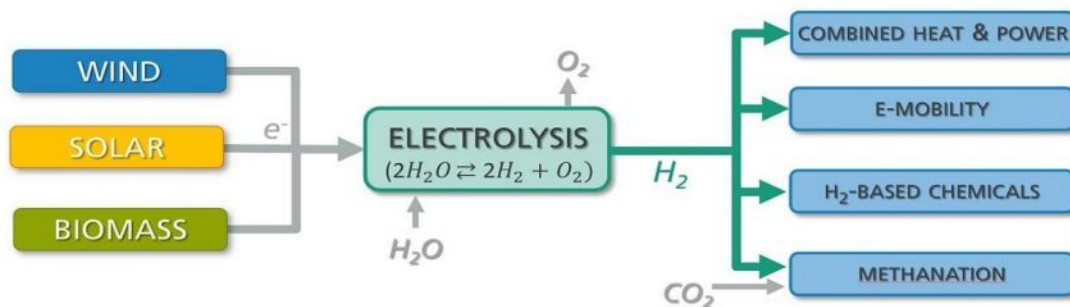
During electrolysis, cations are reduced at cathode and anions are oxidized at anode and a chemical reaction occurs in a non-spontaneous direction. The minimum potential required for any electrode process to occur is called its discharge potential or decomposition potential.
Discharge potential is equal to the electrode potential for cathodic (reduction) process and equal in magnitude but opposite in sign to the electrode potential for anodic (oxidation) process. In many cases, the actual discharge potential exceeds the expected value. The difference between the two is known as over potential. Over potential is commonly observed when gaseous products are formed and depends upon the nature of cathode. Over potential for the discharge of H2 gas is zero on a platinum cathode but it is 1.5 V on mercury cathode.

1. Electrolysis of NaCl solution gives chlorine at anode instead of O_2. Why?

OR

How much charge is required for the reduction of 1 mole of Cu2+ to Cu?

2. How does the pH of Al-NaCl solution be affected when it is electrolyzed?

3. Predict the products of electrolysis in each of the following:

(i) An aqueous solution of $AgNO_3$ with silver electrodes.

(ii) An aqueous solution of $AgNO_3$ with platinum electrodes

COMPETENCY/ CASE BASED QUESTIONS
Chapter – 3: CHEMICAL KINETICS

Q1. Read the passage carefully and answer the questions that follow

Rate of a Reaction

Speed of any event is measured by the change that occurs in any interval of time. The speed of a reaction (reaction rate) is expressed as the change in concentration of a reactant or product over a certain amount of time. Sometimes it is more convenient to express rates as numbers of molecules formed or consumed in unit time.
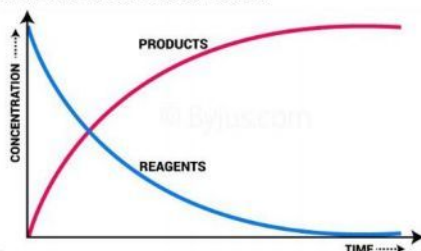
We could also look at the rate of appearance of a product. As a product appears, its concentration increases. The rate of appearance is a positive quantity. We can also say the rate of appearance of a product is equal to the rate of disappearance of a reactant.

Answer the following questions:

(a) Write the rate of the chemical reaction with respect to the variables for the given equation.

$2A+3B \rightarrow C+2D$

(b) In a reaction, $2A \rightarrow$ Products, the concentration of A decreases from 0.5 mol L^{-1} to 0.4 mol L^{-1} in 10 minutes. Calculate the rate during this interval?

(c) In the reaction $H_2O_{2(aq)} \rightarrow H_2O_{(l)} + \frac{1}{2} O_{2(g)}$, the initial concentration of H_2O_2 is 0.2546 M, and the initial rate of reaction is 9.32×10^{-4} M s^{-1}. What will be $[H_2O_2]$ at $t = 35$ s?

OR

(c) How is the rate of disappearance of ozone related to the rate of appearance of oxygen in the following equation?

$2O_{3\ (g)} \rightarrow 3O_{2\ (g)}$
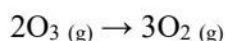
If the rate of appearance of O_2 is 60.0×10^{-5} M/s at a particular instant, what is the value of the rate of disappearance of O_3 at this same time?

Q2 Read the passage carefully and answer the questions that follow

Order of the Reaction

The rate law for a chemical reaction relates the reaction rate with the concentrations or partial pressures of the reactants. For a general reaction, $aA + bB \rightarrow C$ with no intermediate steps in its reaction mechanism, meaning that it is an elementary reaction. The rate law is given by $r = k [A]^x [B]^y$ where [A] and [B] express the concentrations of A and B in moles per litre. Exponents x and y vary for each reaction and are determined experimentally. The value of k varies with conditions that affect reaction rate, such as temperature, pressure, surface area, etc. The sum of these exponents is known as overall reaction order. A zero order reaction has constant rate that is independent of the concentration of the reactants. A first order reaction depends on the concentration of only reactant. A reaction is said to be of second order when the overall order is two. Once we have determined the order of the reaction, we can go back and plug one set of our initial values and solve for k.

Answer the following questions:

(a) Calculate the overall order of the reaction which has the following rate expression:

Rate$= k[A]^{1/2}[B]^{3/2}$

(b) What is the effect of temperature on rate of the reaction?

(c) What is meant by the rate of reaction?
(d) A first order reaction takes 77.78 minutes for 50% completion. Calculate the time required for 30% completion of the reaction. (log 10= 1 , log 7=0.8450)

OR

A first order reaction has a rate constant 1×10^{-3} s^{-1}. How long will 5 gm of this reactant take to reduce to 3 gm? (log 3= 0.4771 , log 5=0.6990)

Q3 Read the passage carefully and answer the questions that follow

Radio Activity

There are nuclear reactions constantly occurring in our bodies, but these are very few of them compared to the chemical reactions, and they do not affect our bodies much. All of the physical processes that take place to keep a human body running are chemical processes. Nuclear reactions can lead to chemical damage, which the body may notice and try to fix. The nuclear reaction occurring in our bodies is radioactive decay. This is the change of a less stable nucleus to a more stable nucleus. Every atom has either a stable nucleus or an unstable nucleus, depending on how big it is and on the ratio of protons to neutrons. The ratio of neutrons to protons in a stable nucleus is thus around 1:1 for small nuclei (Z<20). Nuclei with too many neutrons, too few neutrons, or that are simply too big are unstable. They eventually transform to a stable form through radioactive decay. Wherever there are atoms with unstable nuclei (radioactive atoms), there are nuclear reactions occurring naturally. The interesting thing is that there are small amounts of radioactive atoms everywhere: in your chair, in the ground, in the food you eat, and yes, in your body. The most common natural radioactive isotopes in humans are carbon-14 and potassium-40. Chemically, these isotopes behave exactly like stable carbon and potassium. For this reason, the body uses carbon-14 and potassium-40 just like it does normal carbon and potassium; building them into the different parts of the cells, without knowing that they are radioactive. In time, carbon-14 atoms decay to stable nitrogen atoms and potassium-40 atoms decay to stable calcium atoms. Half-life of C-14 is 6000 years Chemicals in the body that relied on having a carbon14 atom or potassium-40 atom in a certain spot will suddenly have a nitrogen or calcium atom. Such a change damages the chemical. Normally, such changes are so rare, that the body can repair the damage or filter away the damaged chemicals.

(The Practical Science by Paul B. Kelter, Michael D. Mosher and Andrew Scott states)
 Answer the following questions:
(a) Why is Carbon -14 radioactive while Carbon -12 not? (Atomic number of Carbon: 6)
(b) Which are the two most common radioactive decays happening in human body?
(c) Suppose an organism has 20 g of Carbon -14 at its time of death. Approximately how much Carbon -14 remains after 10,320 years? (Given antilog 0.517 = 3.289)

OR

 (C) Approximately how old is a fossil with 12 g of Carbon -14 if it initially possessed 32 g of Carbon -14? (Given log 2.667 = 0.4260)

Q4 Read the passage carefully and answer the questions that follow

Temperature Dependence of Rate of a Reaction

Temperature influences the rate of a reaction. As the temperature increases, the rate of a reaction increases. For example, the time taken to melt a metal will be much higher at a lower temperature but it will decrease as soon as we increase the temperature. It has been found that the rate constant is nearly *doubled* for a chemical reaction with a rise in temperature by 10°. The dependence of the rate of a chemical reaction on temperature can be explained by Arrhenius equation.

$$k = A\, e^{-E_a/RT}$$

According to the Arrhenius equation, a reaction can only take place when a molecule of one substance collides with the molecule of another to form an unstable intermediate. This

intermediate exists for a very short time and then breaks up to form product. The energy required to form this intermediate is known as activation energy (E_a). The fraction of molecules with kinetic energy equal to or greater than E_a at a given temperature may lead to the product. As the temperature rises, the proportion of molecules with energies equal to or greater than activation energy ($\geq E_a$) increases. As a result, the reaction rate would increase.

Answer the following questions:

(a) How does the half life period of a first order reaction vary with temperature?

OR

For an endothermic reaction, the activation energy of forward reaction will be equal to or less than or more than activation energy of backward reaction.

(b) The slope of Arrhenius Plot (ln k vs 1/T) of first order reaction is $-5\times10^3 K$. Calculate the value of E_a of the reaction. [Given R $= 8.314 JK^{-1}mol^{-1}$]

(c) The rate constant of a reaction is 6×10^{-3} s^{-1} at 50° and 9×10^{-3} s^{-1} at 100° C. Calculate the energy of activation of the reaction.

COMPETENCY/ CASE BASED QUESTIONS
Chapter – 4: d-and f-Block Elements

1. The d-block, which lies between s and p-blocks contains, elements of groups 3-12, in which d-orbitals are progressively filled in each of four long periods of periodic table. These elements are also called transition elements or metals.
The elements constituting the f-block are those in which 4 f and 5 f-orbitals are progressively filled. They are place in a separate panel at the bottom of the periodic table. The elements of f-block are also called inner-transition

(i) Transition metal are very good catalyst. Why?
(1)
(ii) Transition metals form a large number of interstitial compounds. Give reason.
        (1)
(iii) Why the paramagnetic characteristic in 3d- transition series increases up to Cr and then decreases? (2) Or

    Out of La(OH)3 and Lu(OH)3, which is more basic and why?

2. In the periodic table, the elements are classified into mainly four blocks, i.e. s, p, d and f. The d-block elements are called transition elements. The s-block contains the elements of the group 3-12. They possess properties that are transitional between the s and p-block elements. Zn, Cd, Hg do not exhibit characteristic properties of transition elements. All the elements belong to this section are metals. There are four rows of the transition elements involving filling of 3d, 4d, 5d and 6d orbitals.

(i) Why does the transition element scandium not exhibit variable oxidation state?
(1)
(ii) Why chromium is a typical hard metal while mercury is a liquid?
        (1)
(iii) Reactivity of transition elements decreases almost regularly from Sc to Cu. Why?
        (2)

                    Or

Copper (I) is diamagnetic, whereas copper (II) is paramagnetic.

3. Within the 3d-series, manganese exhibits oxidation states in aqueous solution from +2 to +7, ranging from Mn^{2+} (aq) to MnO_4^- (aq). Likewise, iron forms both Fe^{2+} (aq) and Fe^{3+}(aq) as well as the FeO_4^{2-} ion. Cr and Mn form oxyions CrO_4^{2-}, MnO_4^-, owing to their willingness to form multiple bonds. The pattern with the early transition metals-in the 3d series up to Mn, and for the 4d, 5d metals up to Ru and Os-is that the maximum oxidation state corresponds to the number of "outer shell" electrons. The highest oxidation states of the 3d-metals may depend upon complex formation (e.g., the stabilization of Co^{3+} by ammonia) or upon the pH (thus MnO_4^{2-}(aq) is prone to disproportionation in acidic solution). Within the 3d-series, there is considerable variation in relative stability of oxidation states, sometimes on moving from one metal to a neighbour; thus, for iron, Fe^{3+} is more stable than Fe^{2+}, especially in alkaline conditions, while the reverse is true for cobalt. The ability of transition metals to exhibit a wide range of oxidation states is marked with metals such as vanadium, where the standard potentials can be rather small, making a switch between states relatively easy.

(i) What is the oxidation state of iron in ferric?   (1)
(ii) Which is more stable Fe^{2+} or Fe^3+?   (1)
(iii) Why is the maximum oxidation state of chromium in its compounds +6?   (2)

OR

Vanadium had the ability to exhibit a wide range of oxidation states. Explain why?

4. Potassium permanganate, ($KMnO_4$) is prepared by fusion of pyrolusite, MnO_2 with KOH in the presence of an oxidising agent like KNO_3. This produces the dark green potassium manganate, K_2MnO_4 which disproportionates in a neutral or acidic solution to give purple permanganate ion. Potassium permanganate is an important oxidising agent in acidic, alkaline as well as neutral medium.

(i) What is the state of hybridisation of Mn in MnO_4^-?
(1)
(ii) Write an application of potassium permanganate.
(1)
(iii) What are the products formed after heating potassium permanganate?
(2)

OR

Draw the structure of permanganate ion. Is it paramagnetic or diamagnetic?

COMPETENCY/ CASE BASED QUESTIONS
## Chapter – 5: COORDINATION COMPOUNDS

CASE BASED QUESTIONS-1

Read the passage given below and answer the following questions:

Alfred Werner, a Swiss chemist was the first to formulate his idea about the structure of coordination compounds. He proposed the concept of primary and secondary valences for a metal ion. The primary valences are normally ionisable and satisfied by negative ions. The secondary valences are non-ionisable and it is equal to coordination number and is fixed for a metal. The groups bound by the secondary linkages to metal have spatial arrangements corresponding to different coordination numbers. Octahedral, tetrahedral and square planar geometrical shapes are more common in coordination compounds of transition metals.

Double salts and coordination complexes are formed by the combination of two or more stable compounds in stoichiometric ratio. Double salts are dissociated into simple ions completely when dissolved in water whereas complexes do not dissociate completely in to its ions. Werner was the first to discover optical activity in certain coordination compounds.

1. What is the oxidation number of cobalt in coordination entity $[Co(H_2O)(CN)(en)_2]^{2+}$?

2. What is the coordination number of chromium in $K[Cr(H_2O)(C_2O_4)_2]$?

3. Arrange the following complexes in increasing order of conductivity of their solution.

$[Co(NH_3)_3Cl_3]$, $[Co(NH_3)_4Cl_2]Cl$, $[Co(NH_3)_6]Cl_3$, $[Co(NH_3)_5Cl]Cl_2$
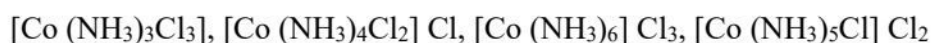
OR

3.i) How many ions are produced from the complex $Co(NH3)_6Cl_2$ in solution?

   ii) When 1 mole $CrCl_3.6H_2O$ is treated with excess of $AgNO_3$, 3mol of AgCl are obtained.

   Write the formula of complex?

CASE BASED QUESTIONS-2

Read the passage given below and answer the following questions:

Valence bond theory considers the bonding between the metal ion and the ligands as purely covalent. On the other hand, crystal field theory considers the metal-ligand bond to be ionic arising from electrostatic interaction between the metal ion and the ligands. In coordination compounds, the interaction between the ligand and the metal ion causes the five d-orbitals to split-up. This is called crystal field splitting and the energy difference between the two sets of energy level is called crystal field splitting energy. The crystal field splitting energy (Δ_o) depends upon the nature of the ligand. The actual configuration of complexes is divided by the relative values of Δ_o and P (pairing energy)

If $\Delta o < P$, then complex will be high spin.

If $\Delta o > P$, then complex will be low spin.

Arrangement of ligands in order of their ability to cause splitting Δ is called spectrochemical series. Ligands which cause large splitting (large Δ) are called strong field ligands while those which cause small splitting (small Δ) are called weak field ligands. When strong field ligands approach metal atom/ion, the value of Δ_o is large, so that electrons are forced to get paired up in lower energy t_{2g} orbitals. Hence, a low-spin complex is resulted from strong field ligand. When weak field ligands approach metal atom/ion, the value of Δ_o is small, so that electrons enter high energy e_g orbitals rather than pairing in low energy t_{2g} orbitals. Hence, a high-spin complex is resulted from weak field ligands. Strong field ligands have tendency to form inner orbital complexes by forcing the electrons to pair up. Whereas weak field ligands have tendency to form outer orbital complex because inner electrons generally do not pair up.

1. What is the electronic configuration of the central atom is $K_4(Fe(CN)_6]$ on crystal field theory.

2. On the basis of crystal field theory, write the electronic configuration of d^4 in terms of t_{2g} and e_g in an octahedral field when $\Delta_O < P$.

3. Explain the violet colour of $[Ti (H_2O)_6]^{3+}$ complex on the basis of the crystal field theory?

OR

3. Which of the following compound is paramagnetic?

a.) Hexaamine chromium (III) ion

b.) Tetraammine zinc (II) ion

CASE BASED QUESTIONS-3

In coordination compound metal show two types of linkages- primary and secondary. Primary valencies are ionisable are satisfied by negatively charged ions .Secondary valencies are non- ionisable and are satisfied by neutral or negative ions having lonepair of electrons. Primary valencies are non-directional while secondary valencies decide the shape of the complexes

1.If $PtCl_2.2NH_3$ does not react with $AgNO_3$, what will be its formula

2.What is the secondary valency of $[CO (en)_3]^{3+}$

3a. Write the formula of Iron [III] hexacyanidoferrate[II]

3b.Write a IUPAC name of $[Co [NH_3]_5Cl] Cl_2$

Or

Write the hybridisation and magnetic behaviour of $[Ni [CN]_4]^{2-}$

[Atomic number; Ni = 28]

CASE BASED QUESTION 4

The coordination compounds are of great importance. These compounds are widely present in the mineral, plant and animal worlds are known to play many important functions in area of analytical chemistry; metallurgy, biological system, industry and medicine. Formation of coordination compound is largely used in analytical chemistry for the qualitative detection and qualitative estimation of metal ions. Coordination compounds also find poisoning caused by ingestion of poisonous metal by human beings.

1. Which complexing material is added to vegetable oil to remove the ill effects of undesired metal ions?

2. Which complex is used in the treatment of cancer?

3. How would you detect the presence of nickel in food sample?

Or

What is chelate therapy?

4. Name the red pigment of blood which acts as an oxygen carrier that is a complex of Fe^{2+} and porphyrin.

COMPETENCY/ CASE BASED QUESTIONS
Chapter – 6: Haloalkanes and haloarenes S_N1 and S_N2

Read the given passage and answer the following questions.

The characteristics reactions of haloalkanes are nucleophilic substitution reactions. The polarity of the carban- halogen bond is responsible for the nucleophilic substitution reactions of alkyl halides. These reactions broadly occur by two different mechanism S_N1 and S_N2. S_N1 reaction are two step reactions involving carbocations as the intermediates. The reactivity in S_N1 reactions depend upon the relative stability of carbocation. In contrast, S_N2 reactions are concerted reaction which occur through a transition state and their relative rates depend upon the steric factors. S_N1 reaction of optically active haloalkanes usually give racemic products with some degree of inversion but S_N2 reactions are always accompanied by only inversion of configuration.

Q. 1 Write the structure of an isomer of compound C_4H_9Br which is most reactive towards

S_N1 reaction. (1)

OR

Arrange the compounds in order of reactivity towards S_N2 displacement

1-Bromo-3-methylbutane, 2-Bromo-2-methylbutane, 3-Bromo-2-methylbutane

Q. 2 What happens when CH_3Br is treated with KCN ? (1)

Q. 3 A solution of KOH hydrolyses $CH_3CHClCH_2CH_3$ and $CH_3CH_2CH_2CH_2Cl$ which one of these is more easily hydrolysed and Why ? (2)

Case Based Question (Polyhalogen compounds)

Read the given passage and answer the following questions

Chloroflourocarbon (CFC) compounds of methane and ethane are collectively known as freons. They are non-inflammable , extremely stable, non-toxic, noncorrosive and low boiling liquids. CFC and gas emitted from the exhaust system of supersonics aeroplanes might be slowly depleting the concentration of the ozone layer in the upper atmosphere.

Q.1 Write the formula of freon. (1)

Q.2 Give any one use of chloroflourocarbons. (1)

Q.3 Do you think the use of CFCs should be banned? Give reason. (2)

OR

How does freon-12 deplete ozone layer?

Case Based Question (Reactivity of halogen compounds)

Read the given passage and answer the following questions

Haloarenes are less reactive than haloalkanes. The low reactivity of haloarenes can be attributed to Resonance effect, Sp^2 hybridisation of C- X bond ,Polarity of C-X bond , Instability of phenyl cation repulsion between the electron rich attacking nucleophiles and electron rich arenes. Reactivity of haloarenes can be increased or decreased by the presence of certain groups atcertain positions for example, nitro (-NO_2) group at ortho or para positions increases there activity of haloarenes towards nucleophilc substitution reactions.

Q.1 What is the Increasing order of rate of Nucleophilic reaction of following compounds? (1)
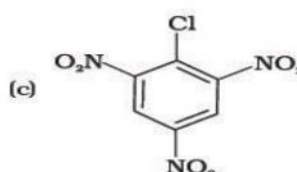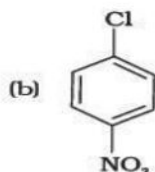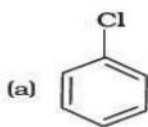
Q.2 What product form when chlorobenzene react with aqueous NaOH ?   (1)

Q.3 Why Aryl halides are less reactive towards nucleophilic substitution reaction as compare to Alkyl halide. ?   (2)

OR

Draw resonance structures of chlorobenzene.

Case Based Question(Melting and BoilingPoints)

Read the given passage and answer the following Questions

Methyl chloride, methyl bromide, ethyl chloride and some chlorofluoromethanes are gases at room temperature. Higher members are liquids or solids. molecules of organic halogen compounds are generally polar. Due to greater polarity as well as higher molecular mass as compared to the parent hydrocarbon, the intermolecular forces of attraction (dipole-dipole and van der Waals) are stronger in the halogen derivatives. The attractions get stronger as the molecules get bigger in size and have more electrons. This is because with the increase in size and mass of halogen atom, the magnitude of van der Waal forces increases. Boiling points of isomeric dihalobenzens are very nearly the same.

Q.1 Melting point of p-dichlorobenzene is higher than o-dichlorobenzene. Why ?   (1)

OR

Arrange methyl chloride, methyl bromide and methyl iodide. Give reason.

Q.2 Arrange 1-bromopropane,2-bromopropane and 2-methyl 2-bromopropane.   (1)

In increasing order of boiling point.explain reason.

Q.3 Boiling points of Haloalkanes are considerably higher than those of the hydrocarbons of

Comparable molecular mass.   (2)

COMPETENCY/ CASE BASED QUESTIONS
Chapter – 7: Alcohol, Phenol and Ethers.

1. Read the passage given below and answer the following questions:

An organic compound (A) having molecular formula C_6H_6O gives a characteristic colour with aqueous $FeCl_3$ solution. (A) on treatment with CO_2 and NaOH at 400 K under pressure gives (B), which on acidification gives a compound (C). The compound (C) reacts with acetyl chloride to give (D) which is a popular pain killer.

1. Name the compound A.
2. How many carbon atoms are there in compound D?
3. Write the equation and name of reaction involved in conversion (A) to (C)
OR
Write the equation for reaction of compound A with neutral $FeCl_3$

2. Read the passage given below and answer the following questions:

Alcohol and phenols are acidic in nature. Electron withdrawing group in phenol increases its acidic strength whereas electron donating groups decreases it. Alcohols undergo nucleophilic substitution reactions with hydrogen halide to give alkyl halide. Oxidation of primary alcohols yields aldehydes with mild oxidising agents and carboxylic acids with strong oxidising agents while secondary alcohols yield ketones. The presence of –OH groups in phenols activates the ring towards electrophilic substitution. various important products are obtained from phenol like salicyal aldehyde, salicylic acid, picric acid.

1.Give the structure of alcohol which is resistant to oxidation?

2.Name any one group that increases the acidic character of phenol.

3.Consider the following equation:

X←----(i)NaOH,CO_2---------- C_6H_5OH---------(i)$CHCl_3$+ NaOH-----→ Y

    (ii)H^+ (ii) H^+

    Identify X and Y

OR

p-nitrophenol is a stronger acid than phenol while p-cresol is a weaker acid. why?

3. Read the passage given below and answer the following questions:
Although chlorobenzene is inert towards nucleophilic substitution, however it gives quantitative yield of phenol when heated with aq. NaOH at high temperature and under high pressure. As far as electrophilic substitution in phenol is concerned the - OH group is an activating group, hence, its presence enhances the electrophilic substitution at o- and p-positions.
1. Name the reaction mechanism involved in conversion of chlorobenzene to phenol?
2. Phenol undergoes electrophilic substitution more readily than benzene. why?

3.Phenol on treatment with excess of conc. HNO_3 gives a yellow coloured explosive compound Name the compound and give reaction involved?

OR

aqueous Br_2 (3.0 equivalents)

→ ?
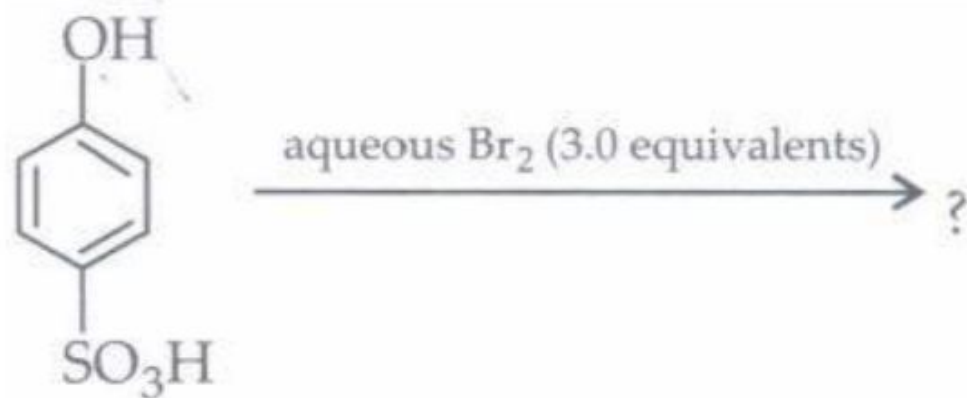
Give major product of reaction?

COMPETENCY/ CASE BASED QUESTIONS
Chapter – 8: ALDEHYDES, KETONES AND CARBOXYLIC ACIDS

CASE BASED QUESTIONS -1

Read the passage given below and answer the following questions:

The carbonyl group of aldehydes and ketones is reduced to -CH2- group on treatment with zinc amalgam and concentrated hydrochloric acid [Clemmensen reduction] or with hydrazine followed by heating with sodium or potassium hydroxide in high boiling solvent such as ethylene glycol (Wolf-Kishner reduction). Aldehydes differ from ketones in their oxidation reactions. Aldehydes are easily oxidised to carboxylic acids on treatment with common oxidising agents like nitric acid, potassium permanganate, potassium dichromate,etc. Even mild oxidising agents, mainly Tollens' reagent and Fehlings' reagent also oxidise aldehydes. Ketones are generally oxidised under vigorous conditions, i.e., strong oxidising agents and at elevated temperatures. Their oxidation involves carbon-carbon bond cleavage to afford a mixture of carboxylic acids having lesser number of carbon atoms than the parent ketone.

(i) Write chemical equations for the following reaction :
.

Acetophenone is treated with Zn(Hg)/Conc. HCl
OR

Identify X and Y in *the following reactions :*

$$CH_3CHO + NH_2NH_2 \xrightarrow{\hspace{3cm}} X \xrightarrow{KOH/Glycol} Y$$

(ii) Name the carboxylic acid which gives Tollen's test?
(iii) (A), (B) and (C) are three non-cyclic functional isomers of a carbonyl compound with molecular formula C_4H_8O. Isomers (A) and (C) give positive Tollens' test whereas isomer (B) does not give Tollens' test but gives positive Iodoform test. Isomers (A) and (B) on reduction with Zn(Hg)/conc. HCl gives the same alkane (D). Write the structures of (A), (B), (C) and (D).

CASE BASED QUESTIONS -2

Read the passage given below and answer the following questions:

The IUPAC names of open chain aliphatic aldehydes and ketones are derived from the names of the corresponding alkanes by replacing the ending -e with -al and -one respectively. In case of aldehydes the longest carbon chain is numbered starting from the carbon of the aldehyde group while in case of ketones the numbering begins from the end nearer to the carbonyl group. The substituents are prefixed in alphabetical order along with numerals indicating their positions in the carbon chain. The same applies to cyclic ketones, where the carbonyl carbon is numbered one. When the aldehydic group is attached to a ring, the suffix carbaldehyde is added after the full name of the cycloalkane. The numbering of the ring carbon atoms start from the carbon atom attached to the aldehyde group. The name of the simplest aromatic aldehyde carrying the aldehyde group on a benzene ring is benzene

carbaldehyde. H, the common name benzaldehyde is also accepted by IUPAC. Other aromatic aldehydes are hence named as substituted benzaldehydes.

The following questions ate multiple choice questions. Choose the most appropriate answer.

(i) The compound with the structure $C_6H_5 – CH=CHCHO$

(a) Cinnamaldehyde (b) Salicylaldehyde (c) Vanillin (d) Acrolein

(ii) Conversion of benzoyl chloride to benzaldehyde using H2/Pd-BaSO4 is an example of

(a) Stephen's reaction (b) Kolbe's reaction (c) Rosenmund's reaction (d) Etard's reaction

(iii) Aldehydes and ketones give

(a) Electrophilic substitution reaction (b) Electrophilic addition reaction

(c) Nucleophilic substitution reaction (d) Nucleophilic addition reaction

OR

(iii) Which of the following does not give Cannizaro's reaction?

(a) HCHO (b) C_6H_5CHO (c) $CH_3C_6H_4CHO$ (d) CH_3CHO

CASE BASED QUESTIONS -3

Read the passage given below and answer the following questions:

Aldehydes and ketones are the simplest and most important carbonyl compounds. In aldehydes, the carbonyl group is bonded to a carbon and hydrogen while in the ketones, it is bonded to two carbon atoms. The IUPAC names of open chain aliphatic aldehydes and ketones are derived from the names of the corresponding alkanes by replacing the ending –e with –al and –one respectively. In case of aldehydes the longest carbon chain is numbered starting from the carbon of the aldehyde group while in case of ketones the numbering begins from the end nearer to the carbonyl group. The substituents are prefixed in alphabetical order along with numerals indicating their positions in the carbon chain. The same applies to cyclic ketones, where the carbonyl carbon is numbered one. When the aldehyde group is attached to a ring, the suffix carbaldehyde is added after the full name of the cycloalkane. The numbering of the ring carbon atoms start from the carbon atom attached to the aldehyde group. The name of the simplest aromatic aldehyde carrying the aldehyde group on a benzene ring is benzenecarbaldehyde. However, the common name benzaldehyde is also accepted by IUPAC. Other aromatic aldehydes are hence named as substituted benzaldehydes.

(i)Write the IUPAC names of the following ketones and aldehydes.

(a) $CH_3CH=CHCHO$ (b) $CH_3CH_2COCH(C_2H_5)CH_2CH_2Cl$

(ii) Write the structures of the following compounds.

(a) α-Methoxypropionaldehyde   (b) 3-Methylcyclohexanecarbaldehyde

(iii)What do you mean by a semicarbazone. Draw the structure of Semicarbazone of cyclobutanone.

OR

(iii) Draw structures of the following derivatives-

(a) The 2,4-dinitrophenylhydrazone of benzaldehyde   (b) Cyclopropanone oxime

CASE BASED QUESTIONS -4

Read the passage given below and answer the following questions:

Effect of substituents on the acidity of carboxylic acids:

Substituents may affect the stability of the conjugate base and thus, also affect the acidity of the carboxylic acids. Electron withdrawing groups increase the acidity of carboxylic acids by stabilising the conjugate base through delocalisation of the negative charge by inductive and/or resonance effects. Conversely, electron donating groups decrease the acidity by destabilising the conjugate base.
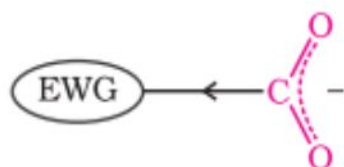
Electron withdrawing group (EWG) stabilises the carboxylate anion and strengthens the acid
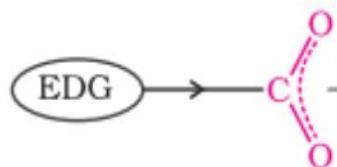
Electron donating group (EDG) destabilises the carboxylate anion and weakens the acid

1. Arrange the following compound in increasing order of their acid character-
   FCH_2COOH, O_2N-CH_2-COOH, CH_3COOH, $HCOOH$
2. Write the conjugate base of acetic acid.
3. Consider the given statement-

   'Direct attachment of groups such as phenyl or vinyl to the carboxylic acid, increases the acidity of corresponding carboxylic acid.'

   Is it correct statement? Justify your answer.

   "OR"

   The resonance structures A, B and C; of the carboxylic acid group are shown below, which of them is the most stable and why?
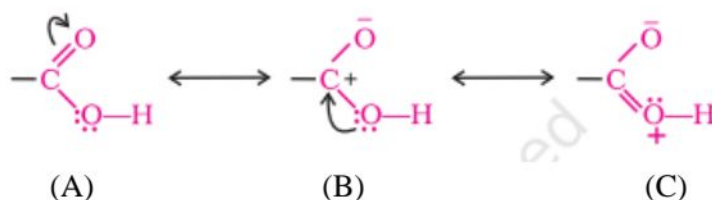
(A)   (B)   (C)

CHAPTER- 6 : APPLICATION OF DERIVATIVES

SOLVE THE FOLLOWING QUESTIONS

1. The side of a square is increasing at the rate of 0.2 cm/ sec. Find the rate of increase of perimeter of the square.

2. A stone is dropped into a quite lake and waves move in circles at a speed of 4 cm/sec. At the instant when the radius of the circular wave is 10 cm. How fast is the enclosed area increasing ?

3. Find the maximum and minimum values of function f(x) = sin 2x + 5.

4. Find the value of a for which the function $f(x) = x^2 - 2ax + 6 > 0$ is strictly increasing.

5. What is the interval on which the function f(x) = $\frac{log x}{x}$, x∈ (0, ∞) is increasing ?

CHAPTER – 7 (INTEGRALS)
INTEGRATE THE FOLLOWING FUNCTIONS:

1. $\int \dfrac{dx}{x^3(1+x^4)^{\frac{1}{2}}}$

2. $\int_0^{2\pi} cosec^7 x \, dx$

3. $\int \dfrac{cos\,2x}{(sinx+cosx)^2} \, dx$

4. $\int_0^1 tan^{-1}(\dfrac{2x-1}{1+x-x^2})dx$

5. $\int \dfrac{5x}{(x+1)(x^2+9)} \, dx$

CHAPTER – 8 (APPLICATION OF INTEGRALS)

1. Sketch the graph of y = $|x + 3|$ & evaluate $\int_{-6}^{0}|x + 3|$ dx.
2. Find the area bounded by the curve y = sinx between x = 0 & x = 2π .
3. Find the area of the region bounded by the line y = 3x+ 2, the x – axis & the ordinates x = -1 & x = 1.
4. Find the area bounded by the curve y = cosx between x = 0& x = 2π .
5. Find the area of the region bounded by the ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1$.

CHAPTER – 9 (DIFFERENTIAL EQUATIONS)

1. **VERIFY THAT THE GIVEN FUNCTIONS IS A SOLUTION OF THE CORRESPONDING DIFFERENTIAL EQUATION :**

a) Y = Ax : $x\frac{dy}{dx} = y$ (x$\neq$ 0) .

b) Y= e^x+ 1 : $y'' - y' = 0$

2. What is the general solution of the differential equation $e^{y'} = x$?

3. Find the general solution of the differential equation $y' = \frac{1+ y^2}{1+x^2}$.

4. Write the Degree & Order of the D.E. $\frac{d^2 y}{dx^2} + \sin\left(\frac{dy}{dx}\right) = 5$.

5. Solve the differential equation (y- sin^2x)dx + tanxdy = 0.

Sr.no	Name	Project topic name
12101	ARCHANA BHUSRA	To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.
12102	DURGESH CHAUHAN	To investigation of total internal reflection:study the critical angle and refractive indices.
12103	HARSHWARDHAN SURYAVANSHI	Analysis of Thermoelectric Effect: Explore the Seebeck and Peltier effects.
12104	HETVI	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.
12105	JAY	To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.
12106	JYOTI YADAV	To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.
12107	KARTIK PATEL	To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.
12108	PRACHI PATEL	Investigate the dependence on spring constant, mass, and damping.
12109	SHRASTI TIWARI	To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.
12110	SHUBHAM DAS	Investigation of Photoelectric Effect: Study the dependence on frequency and intensity.
12111	TANAY PANDEY	To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed transformer.
12112	ANUSHKA PANDEY	Investigation of Photoelectric Effect: Study the dependence on frequency and intensity.

12113	**DHRUV KUMAR PATEL**	To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.
12114	KEVAL HAMIR MAKWANA	Investigation of Photoelectric Effect: Study the dependence on frequency and intensity.
12115	MAITRAYEE DINESH DONGRE	To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.
12116	**PRADUNYA PATIL**	Analysis of Thermoelectric Effect: Explore the Seebeck and Peltier effects.
12117	SHASHWAT	To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.
12118	**SHINY SONI**	To investigation of total internal reflection:study the critical angle and refractive indices.
12119	**SHREYA**	Investigation of Photoelectric Effect: Study the dependence on frequency and intensity.
12120	**TARUN SINGH CHOUDHARY**	Investigate the dependence on spring constant, mass, and damping.
12121	**TEJAS GANESH PATIL**	Investigation of Photoelectric Effect: Study the dependence on frequency and intensity.
12122	VAIBHAV SINGH	To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.
12123	**AYESHA DILAVAR**	Analysis of Thermoelectric Effect: Explore the Seebeck and Peltier effects.
12124	**K KHYATI SRI**	To study various factors on which the internal resistance/EMF of a cell depends.

12125	**SANCHITA**	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.
12126	**ARYA**	Study of Solar Cells: Explore the principles of photovoltaic effect.
12127	**SURAJ**	To study various factors on which the internal resistance/EMF of a cell depends.

KENDRIYA VIDYALAYA SILVASSA

AUTUM BREAK HOLIDAY HW

CLASS XII A BIOLOGY

1. COMPLETE PRACTICAL FILE.

2. COMPLETE INVESTIGATORY PROJECT FILE.

3. SOLVE NCERT QUESTION AND PREVIOUS YEAR QUESTION PAPER PROVIDED.

4. SOLVE THE COMPETENCY FOCISED QUESTION'S MATERIAL PROVIDED IN CLASS.

KENDRIYA VIDYALAYA SILVASSA
AUTUMN BREAK HOLIDAY HOMEWORK (2024-25)
ENGLISH- XII

1. **Art Integrated Project individually any 2 out of the following topics:**

INCLUDE: INDEX & PICTURES, SHOULD BE HAND WRITTEN

(a) Famous artists-Research about famous artists from Chhattisgarh in various fields

(b) Food, dress, and language-Research about the food, dress, and language of Chhattisgarh.

(c) Jewelry-Research about Chhattisgarh a jewelry

(d) folk classical and traditional art and dance forms of Chhattisgarh.

(e) Historical Monuments- Research about the historical monuments of Chhattisgarh

(f) Drawing and Painting - Research about the drawing and paintings of Chhattisgarh.

2. **Do the revision from the KVS & CBSE Study material shared with you in the wtsapp Class group.**
3. **CBSE sample question paper will be Shared in class group which is to be solved in your notebooks.**
4. Listen to the following *famous speeches: *
   a. I Have A Dream by Martin Luther King Junior.
   b. Tryst With Destiny by J L Nehru.

****

केन्द्रीय विद्यालय सिलवासा
शरदकालीन अवकाश गृह कार्य
कक्षा-12
हिन्दी

1 अभियक्ति और माध्यम से संबंधित निम्न विषयों पर वस्तुनिष्ठ प्रश्नों व बहुवैकल्पिक प्रश्नों का लेखन करें।

- जनसंचार

- समाचार पत्र

- पत्रकारिता के विविध आयाम

- पत्रकारिता के प्रकार

- विभिन्न माध्यमों के लिए लेखन

- रेडियो, टी .वी,

- इंटरनेट

- पत्रकारिता लेखन के विभिन्न रूप व लेखन

- आलेख, रिपोर्ट, फीचर

2 कहानी, नाटक, कविता की रचना प्रकिया पर प्रश्न लिखें।

3अप्रत्याशित लेखन पर आधारित प्रश्न लिखे।

4 CBSE द्वारा जारी सैंपल बोर्ड पेपर व गत वर्ष के पेपर के प्रश्नो को हल करना हैं।(प्रश्न पत्र ग्रुप में प्रेषित किया गया हैं)

सुमित्रा देवी मीणा
पी. जी. टी(हिन्दी)

Q. No	Section - A
	This section consists of 25 Questions (1 to 25).
1	Which operator has the highest Priority / Precedence a) ** b) > c) not d) **%**
2	Given String **S="EXAM2021"** what will be the output of **print(S[: : -2])** a)10MX b) EA22 c) XM01 d) 22AE

3	Given a tuple `Tup1=(25,35,43,22,13,56,45,78,90)`, Identify the statement from the options below that will produce the result as `(25,43,13,45)`
	   a. `print(Tup1[-9:-2:2])` b. `print(Tup1[0:7:1])`
	   c. `print(Tup1[::2])` d. `print(Tup1[-8:-2:2])`

4	Which of the following is true for a Python dictionaries ? a) All the keys in dictionary must be of same data type. b) A dictionary can contain any object type except another dictionary. c) Dictionary Values are accessed by the keys. d) Dictionaries are immutable type of data.
5	Which of the following options can be used to print second last line of a text file `"Myfile.txt"`? a. myfile = open('Myfile.txt'); print(myfile.readlines( )[-1]) b. myfile = open('Myfile.txt','r'); print(myfile.readlines( )[-2]) c. myfile = open('Myfile.txt'); print(myfile.readline(last_line-1)) d. myfile = open('Myfile.txt'); print(myfile.readlines( )[n-2])
6	What will be the output of following print statements:- **num= '20'** **print(num*2)** a) 40 b) '40' c) 2020 d) Error
7	If a mixed expression contains Relational, Arithmetic and logical operator, then in which order they will be executed? a) Arithmetic, Logical, Relational b) Relational , Arithmetic Logical c) Arithmetic, Relational , Logical d) Relational, Logical, Arithmetic
8	Pick out odd one option: a) break b) continue c) pass d) while
9	Which is valid statement:- a) List, Tuple & Dictionary are mutable, immutable & mutable data types. b) List, Tuple & Dictionary are immutable, mutable & mutable data types. c) List, Tuple & Dictionary are mutable, mutable & immutable data types. d) All statements are valid.
10	Consider a tuple T1=(2,3,{1:'One',2:'Two',3:'Three'}). Identify the statement that will result in an error. a. `print(2 in T1)` b. `print(T1[0])` c. `print(T1[3])` d. `print(len(T1))`
11	A function can have_____number of return statement(s). a) Only One b) Zero c) Any (but all must execute) d) Any (but execute only one of them)
12	Which function header statement is correct:- (a) def interest (prin, time=2, rate):

	(b) def interest (prin=2000, time=2, rate):
	(c) def interest (prin=2000; time=2; rate)
	(d) def interest (prin, time=2, rate=0.10):
13	Identify which module is used to read/write data from/in the text file?
	a. csv b. CSV c. No special module required. d. Pickle
14	Which types of files stores information in the form of a stream of ASCII or Unicode Characters
	a) Binary Files
	b) Both Text Files and CSV Files
	c) Only Text files
	d) Only CSV Files
15	Consider following Python Code to read text file:
	F=open("Story.txt")
	Data=F.read(10).
	Which of the following statement is True regarding variable Data
	a) Data contains list of 10 lines
	b) Data contain list of 10 characters
	c) Data contains string of 10 characters
	d) Data contains integer value 10
16	Assume that the position of the file pointer is at the beginning of 3rd line in a text file. Which of the following options can be used to read all the remaining lines?
	a) myfile.read(n-3) b). myfile.read(n)
	c) myfile.readline() d) myfile.readlines()
17	Which of the following statements is not correct?
	a) If we try to read a text file that does not exist, an error occurs.
	b) If we try to read a text file that does not exist, the file gets created.
	c) If we try to write on a text file that does not exist, no error occurs.
	d) If we try to write on a text file that does not exist, the file gets created.
18	To read data from binary file_____function is used ?
	a) pickles.load(file_object) b) file_object.load(object)
	c) object=load(file_object) d) object=pickle.load(file_object)
19	*file.seek(56,0),* What relative stream position 0 represent in given seek function?
	a) Relative to beginning of file b) Relative to end of file
	c) Relative to current position of file d) None of the above
20	The process of converting the structure to a byte stream before writing to the file is known as_____
	Pickling b) Unpickling c) Dump d) Load
21	The_____paths are from the topmost level of the directory structure.
	a) Direct b) Relative c) Absolute d) Parent
22	Name the error which raised by pickle.load( ) function when it reaches end of file while reading binary file?
	a) fileError b) ErrorEndofFile c) EOFError d) FileEndError
23	Name the function to read from CSV file.
	a) read() b) csv.reader() c)csv_read() d) read_csv()
24	Write full form of CSV
	a) Comma separated values b) Comma settled values
	c) Common separated values d) None of the above
25	An existing CSV file if open in 'w' mode writing data then:-
	a) new data will be added at the end of file
	b) new data will be added at the beginning of file

c) Old data will be lost and new data will be stored.

d) An Error will occur.

Section – B

This section consists of 24 Questions (26 to 49).

26	What will be the output of following Python Code:

if 5>2 or 8<5 and 0 :

    print("Hello")

else:

    print("Welcome")

a) Error   b) Hello   c) Welcome   d) HelloWelcome

27	What will be the output of following Python Code:

X,Y=10,20

Y,Y,Y=Y+2, X+5, Y-2

print(Y)

a) 20   b) 15   c) 18   d) 22

28	What will be the output of following Python Code:

P,S=1,0

for X in range(-5,15,5):

  P*=X

  S+=X

else:

  print(P, "#", S)

a) 10#5   b) 10#0   c) 0#10   d) 5#10

29	Identify the output of the following Python statements.

L1=[6,4,2,9,7]

L1[3:]= "100"

(a) [6,4,2,9,7,100]   (b) [6,4,2,100]   (c) [6,4,2,1,0,0]   (d) [6,4,2, '1','0','0']

30	What will be the output of following Python Code:

import random as rd

high=4

Guess=rd.randrange(high)+50

for C in range(Guess, 56):

    print(C,end="#")

a) 50 # 51 # 52 # 53 # 54 # 55 #   b) 54 # 53 # 54 # 55#

c) 53 # 54 # 55 # 56 #   d) 51 # 52 # 53 # 54 # 55

31	What will be the output of following Python Code:

data=[10,"ram",20,"sham",30,"anil"]

data.append("Sunil")

data[2]="Raj"

data.pop()

del data[1]

data[-1]="Magic"

print(data)

a) [10, 'Ram', 'sham', 30, 'Sunil']   b) [10, 'Raj', 'sham', 30, 'Magic']

c) [10, 'Magic', 'sham', 30, 'Sunil']   d) [10, 'Ram', 'sham', 30, 'Magic']

| 32 | What will be the output of following Python Code:<br><br>```python
def evenodd(num):
    for i in range(len(num)):
        if num[i]%2==0:
            num[i]/=2
        else:
            num[i]*=2
    return num
#main-coding
numbers=[10,15,20,25]
print(evenodd(numbers))          #function call
```<br>a) [5, 30, 10, 25]                    b) [5.0, 30, 10.0, 50]<br>c) [20.0, 7.5, 40.0, 12.5]          d) [20, 15, 40, 12.5] |
|----|----|
| 33 | What will be the output of following Python Code:<br><br>```python
def convert(name):
    N=' '
    for k in name:
        if k.isupper():
            N=N+k.lower()
        elif k.islower():
            N=N+k.upper()
        else:
            N=N+k
    print(N)
#main-coding
convert('Term-1#EXAM')
```<br>a) tERM-1#exam      b) Term-1#EXAM<br>c) exam-1# tERM     d) #EXAM Term-1 |
| 34 | What will be the output of following Python Code:<br><br>```python
G=10
def fun1():
    global G
    G=20
    print(G, end="*")
    G=G+10
fun1( )      #call to fun1
print(G)
```<br>a) 10*20          b) 20*30          c) 20*20          d) 10*10 |
| 35 | Suppose the content of *"Myfile.txt"* is :-<br><br>*Humpty Dumpty sat on a wall*<br>*Humpty Dumpty had a great fall*<br>*All the king's horses and all the king's men*<br>*Couldn't put Humpty together again*<br><br>What will be the output of the following code?<br><br>```python
myfile = open("Myfile.txt")
record = myfile.readlines()
``` |

```
print(len(record))
myfile.close()
```

a) 4   b) 5   c) 6   d) 3

---

36 | Suppose the content of "story.txt" is :-

> *Always Think Positive,*
>
> *Never THINK Negative*

What will be the output of the following Python code?

```
file1=open("story.txt","r")
data=file1.read( )
word=1
k=data.split()
for i in k:
     if  i.upper()=="THINK":
            word=word+1
print(word)
file1.close()
```
a) 0   b) 1   c) 2   d) 3

---

37 | Suppose the content of "Essay.txt" is :-

> Twinkle twinkle little star
> How I wonder what you are
> Up above the world so high
> Like a diamond in the sky
> Twinkle twinkle little star

What will be the output of the following code?

```
myfile = open("Essay.txt")
line_count = 0
data = myfile.readlines()
for line in data:
        if line[-2] in 'Rr':
            line_count += 1
print(line_count)
myfile.close()
```
a) 2   b) 3   c) 4   d) 5

---

38 | What will be the output of following Python Code:

```
A,B=20,10
if A<B:
   print("Smaller", end= ' ')
   break
   print("Number")
else:
    print("Greater")
```
a) Smaller Number   b) Smaller   **c)** Greater   d) Syntax Error

| 39 | Suppose the content of "Story.txt" is :-
| |
| | God is one
| | GOD is everywhere
| | God bless you
| |
| | What will be the content of the file "Kahani.txt" after execution of following Python Code?
| | **File1 = open("Story.txt")**
| | **File2 = open("Kahani.txt", 'w')**
| | **content = File1.read()**
| | **data=content.split()**
| | **for word in data:**
| | **if 'o' in word :**
| | **File2.write(word+" ")**
| | **File1.close()**
| | **File2.close()**
| | a) God One GOD God   b) God One God you
	c) God One GOD God you d) God GOD God
40	Raj has written following program to copy story.txt file data into file kahani.txt. Help Raj to complete the program by choosing correct option to fill in blank.
	# Program to copy Story.txt file into new file Kahni.txt
	file1=open("story.txt","r")
	file2=open("kahani.txt","w")
	data=file1.read()
	_____ **# to write data in kahani.txt**
	file1.close()
	file2.close()
	print("File copied")
	a) file1.writedata() b) file2.writedata( ) c) file1.write(data) d) file2.write(data)
41	Syntax of seek function in Python is **myfile.seek(offset, reference_point)** where myfile is the file object. What is the default value of reference_point?
	a) 0 b)1 c) 2 d) 3
42	The content of text file INSTITUTE.TXT is :
	KVS is a great organization
	What will be the content of INSTITUTE.TXT after execution of following Python code:
	file1=open("INSTITUTE.TXT","w")
	file.write("of India")
	file1.close()
	a) KVS is a great organization of India b)KVS is a great organization of World
	c) KVS is a great organization d)of India
43	Raj is trying to write an object obj1 = (1,2,3,4,5) on a binary file "test.dat". Consider the following code written by him.
	import pickle
	obj1 = (1,2,3,4,5)
	myfile = open("test.dat",'wb')
	pickle._____ #Statement 1
	myfile.close( )
	Identify the missing code in Statement 1.
	a) dump(myfile,obj1) b) dump(obj1, myfile)

	c) write(obj1,myfile) d) load(myfile,obj1)
44	The content of binary file STUDENT.DAT is :

```
{'rno': 1, 'name': 'raja',      'marks': 95.5}
{'rno': 2, 'name': 'ram singh', 'marks': 78.0}
{'rno': 3, 'name': 'sonia',     'marks': 68.0}
{'rno': 4, 'name': 'rajesh',    'marks': 85.5}
{'rno': 5, 'name': 'raj singh', 'marks': 48.0}
```

What will be the output of following Python Code:

```
import pickle as pk
counter=0
file1=open("student.dat","rb")
try:
     while True:
            rec=pk.load(file1)
            if rec['marks']<80:
                  counter+=1
except EOFError:
     print(counter)
     file1.close()
```

a) 4   b) 3   c)2   d) 6

45	The following program copies all record from binary file games.dat to athelete.dat. Complete the missing statement

```
import pickle as pk
file1=open("games.dat","rb")
file2=open("athelete.dat","wb")
try:
   while True:
                    # statement-1 : to read record
                    # statement-2 : to write record
except EOFError:
   print("file copied ")
   file1.close()
   file2.close()
```

a) statement-1: rec=pk.load(file2), statement-2: pk.dump(rec,file1)

b) statement-1: rec=pk.load(file1), statement-2: pk.dump(rec,file2)

c) statement-2: rec=pk.load(file1), statement-1: pk.dump(rec,file2)

d) statement-2: rec=pk.load(file2), statement-1: pk.dump(rec,file1)

46	Suppose the content of "story.txt" is :-

Always Think Positive

What will be the output of the following Python code?

```
file1=open("story.txt",'r')
print(file1.tell(),end="#")
file1.seek(7,0)
data=file1.read(5)
print(data)
```

	file1.close() a) 0#Think b) 1#Think c) 0#Alway d) 1#Alway
| 47 | What will be the output of following Python Code:<br>```python
def chkdigit(a,b):
    da=a%10
    db=b%10
    if da<db:
        return a
    elif da>db:
        return b
    else:
        return da,db
#main-coding
print(chkdigit(603,297))
```<br>a) 297     b) 603     c) (3,7)     d) [3,7] |
| 48 | What will be the output of following Python Code:<br>```python
def change(num):
   for x in range(0,len(num),2):
        num[x], num[x+1]=num[x+1], num[x]

#main-coding
data=[10,20,30,40,50,60]
change(data)
print(data)
```<br>a) [10, 20, 30, 40, 50, 60]     b) [60, 50, 40, 30, 20, 10]<br>c) [20, 10, 40, 30, 60, 50]     d) [40, 50, 60, 10, 20, 30] |
| 49 | Consider following Python Code and tell which line(s) have error(s):-<br>```python
def  display[num]:                #Line-1
    if num=<0 :                   #Line-2
        print("negative or zero") #Line-3
    elseif num>=0:                #Line-4
        print("positive or zero') #Line-5
    else:                         #Line-6
        print('zero')             #Line-7
#main-coding                      #Line-8
call display(2021)                #Line-9
```<br>a) Line numbers 1,3,4,6 and 9     b) Line numbers 1,2,4,6 and 9<br>c) Line numbers 2,3,4,5 and 9     d) Line numbers 1,2,4,5 and 9 |

Section - C

This section consists of 6 Questions (50 to 55) on case study base.

Sakshi student of class 12 is writing a program to create a CSV file "employee.csv" which will contain employee-code, employee-name and Salary for some entries. She has written the following code. As a programmer, help her to successfully execute the given task

```
import_____          #line-1
#Function to add / write single Employee records
def addemployee(record):
    file1=open('employee.csv','a')
```

```
        csvobj=csv._____(file1)        #line-2
        csvobj._____(record)       #line-3
        file1.close()
#Function to read employee records
def reademployee():
        file1=open('employee.csv','__')     #line-4
        csvobj=csv._____(file1)           #line-5
        for rec in csvobj:
            if int(rec[2])>15000:
                print(rec)
        file1.close()
#main-coding
rec1=[101,'ram',10000]
rec2=[102,'sham',20000]
rec3=[103,'sita',15000]
addemployee(rec1)
addemployee(rec2)
addemployee(rec3)
reademployee()                              #line-6
```

50	Name the module he should import in Line 1. a) import csv b) import CSV c) import csv module d) import Csv
51	Fill in the blank in Line 2 to create CSV object for writing. a) writer b) writerow c) writerows d) write
52	Fill in the blank in Line 3 to write record / data of one student in CSV file. a) writer b) writerow c) writerows d) writeline
53	Fill in the blank in Line 4 with file open mode for reading data from CSV file a) "r" b) "a" c) "w" d) "rb"
54	Fill in the blank in Line 5 to read data from CSV file. a) reader b) read c) readlines d) readline
55	Write the output Sakshi will obtain while executing line 6 a) (102,'sham',20000) b) [102,'sham',20000] c) [103,'sita',15000] d) (103,'sita',15000)

********** End of Holiday Homework **********