SAMPLE PAPER (2023-24)

CHEMISTRY THEORY (043)

Max. Marks:70 **Time: 3 hours**

General Instructions:

Read the following instructions carefully.

(a) There are **33** questions in this question paper with internal choice.

(b) SECTION A consists of 16 multiple-choice questions carrying 1 mark each.

(c) SECTION B consists of 5 short answer questions carrying 2 marks each.

(d) SECTION C consists of 7 short answer questions carrying 3 marks each.

(e) SECTION D consists of 2 case- based questions carrying 4 marks each.

(f) SECTION E consists of 3 long answer questions carrying 5 marks each.

(g) All questions are compulsory.

(h) Use of log tables and calculators is not allowed

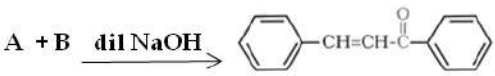
SECTION A

The following questions are multiple-choice questions with one correct answer. Each question carries 1 mark. There is no internal choice in this section.

1. Which of the following solutions will have the highest conductivity at 298 K?

   (a) 0.01 M HCl solution (b) 0.1 M HCl solution

   (c) 0.01 M CH_3COOH solution (d) 0.1 M CH_3COOH solution

2. 

   Identify A and B:

   (a) A = 1-phenylethanal , B = acetophenone (b) A = Benzophenone B = formaldehyde

   (c) A= Benzaldehyde , B = Acetophenone (d) A = Benzophenone , B = Acetophenone

3. The vitamins which can be stored in our body are:

   (a) Vitamin A, B, D and E (d) Vitamin A, C, D and K

   (c) Vitamin A, B, C and D (d) Vitamin A, D, E and K

4. What is IUPAC name of the ketone A, which undergoes iodoform reaction to give $CH_3CH=C(CH_3)COONa$ and yellow precipitate of CHI_3 ?

   (a) 3-Methylpent-3-en-2one (b) 3-Methylbut-2-en- one

   (c) 2, 3-Dimethylethanone (d) 3-Methylpent-4-one

5. Which of the following is not correct?

   (a) In haloarenes, the electron pairs on halogen atom are in conjugation with π-electrons of the ring.

   (b) The carbon-magnesium bond is covalent and non-polar in nature .

   (c) During S_N1 reaction, the carbocation formed in the slow step being sp^2 hybridised is planar.

   (d) Out of $CH_2=CH-Cl$ and $C_6H_5CH_2Cl$, $C_6H_5CH_2Cl$ is more reactive towards S_N1 reaction

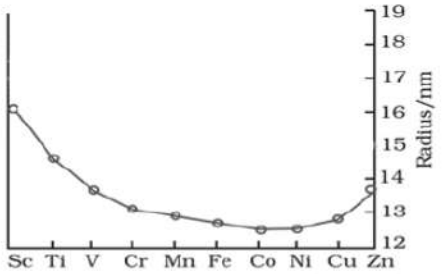
6. Match the properties with the elements of 3d series:

(i) lowest enthalpy of atomisation	(p) Sc
(ii) shows maximum number of oxidation states	(q) Mn
(iii) transition metal that does not form coloured compounds	(r) Zn
	(s) Ti

(a) (i) (r), (ii) (q), (iii) (p) (b) (i) (r), (ii) (s), (iii) (p)

(c) (i) (p), (ii) (q), (iii) (r) (d) (i) (s), (ii) (r), (iii) (p)

7. Which of the following statement is true?
   (a) molecularity of reaction can be zero or a fraction.
   (b) molecularity has no meaning for complex reactions.
   (c) molecularity of a reaction is an experimental quantity
   (d) reactions with the molecularity three are very rare but are fast.
8. In which of the following solvents, the $C_4H_8NH_3 + X^-$ is soluble;
   (a) ether (b) acetone (c) water (d) bromine water
9. Which of the following observation is shown by 2-phenyl ethanol with Lucas Reagent?
   (a) Turbidity will be observed within five minutes
   (b) No turbidity will be observed
   (c) Turbidity will be observed immediately
   (d) Turbidity will be observed at room temperature but will disappear after five minutes.
10. If the initial concentration of substance A is 1.5 M and after 120 seconds the concentration of substance A is 0.75 M, the rate constant for the reaction if it follows zero - order kinetics is:
    (a) 0.00625 $molL^{-1}s^{-1}$ (b) 0.00625 s^{-1} (c) 0.00578 $molL^{-1}s^{-1}$ (d) 0.00578 s^{-1}
11. Anisole undergoes bromination with bromine in ethanoic acid even in the absence of iron (III) bromide catalyst
    (a) Due to the activation of benzene ring by the methoxy group.
    (b) Due to the de-activation of benzene ring by the methoxy group.
    (c) Due to the increase in electron density at ortho and para positions
    (d) Due to the formation of stable carbocation .
12. The trend of which property is represented by the following graph?



(a) ionization enthalpy (b) atomic radii

(c) enthalpy of atomization (d) melting point

For Visually Challenged Learners

12. Which of the following is not considered a transition element?

    (a) Scandium (b) Silver (c) Vanadium (d) Zinc

13. Given below are two statements labelled as Assertion (A) and Reason (R)

    Assertion (A): Alcohols react both as nucleophiles and electrophiles.

    Reason (R): The bond between C–O is broken when alcohols react as nucleophiles.

    Select the most appropriate answer from the options given below:

    (a) Both A and R are true and R is the correct explanation of A

    (b) Both A and R are true but R is not the correct explanation of A.

    (c) A is true but R is false.

    (d) A is false but R is true.

14. Given below are two statements labelled as Assertion (A) and Reason (R)

    Assertion (A): Strong oxidising agents oxidises toluene and its derivatives to benzoic acids.

    Reason (R): It is possible to stop the oxidation of toluene at the aldehyde stage with suitable reagents.

    Select the most appropriate answer from the options given below:

    (a) Both A and R are true and R is the correct explanation of A

    (b) Both A and R are true but R is not the correct explanation of A.

    (c) A is true but R is false.

    (d) A is false but R is true.

15. Given below are two statements labelled as Assertion (A) and Reason (R)

    Assertion : Enzymes are very specific for a particular reaction and for a particular substrate.

    Reason : Enzymes are biocatalysts.

    Select the most appropriate answer from the options given below:

    (a) Both A and R are true and R is the correct explanation of A

    (b) Both A and R are true but R is not the correct explanation of A.

    (c) A is true but R is false.

    (d) A is false but R is true.

16. Given below are two statements labelled as Assertion (A) and Reason (R)

    Assertion (A): During electrolysis of aqueous copper sulphate solution using copper electrodes hydrogen gas is released at the cathode.

    Reason (R): The electrode potential of Cu^{2+} /Cu is greater than that of H^{+}/H_2

    Select the most appropriate answer from the options given below:

    (a) Both A and R are true and R is the correct explanation of A

    (b) Both A and R are true but R is not the correct explanation of A.

    (c) A is true but R is false.

    (d) A is false but R is true.

SECTION B

This section contains 5 questions with internal choice in one question. The following questions are very short answer type and carry 2 marks each.

17. The rate constant for a first order reaction is 60 s^{-1}. How much time will it take to reduce the initial concentration of the reactant to its $\frac{1}{16}$th value? [log2 = 0.30, log4 = 0.60]

18. A 5% solution of $Na_2SO_4.10H_2O$ (MW = 322) is isotonic with 2% solution of non- electrolytic, non volatile substance X. Find out the molecular weight of X.

19. (a) Arrange the isomeric dichlorobenzene in the increasing order of their boiling point and melting points.

    (b) Explain why the electrophilic substitution reactions in haloarenes occur slowly and require more drastic conditions as compared to those in benzene.

20. (a) Out of p-tolualdehyde and p-nitrobenzaldehyde ,which one is more reactive towards nucleophilic addition reactions, why?

    (b) Write the structure of the product formed when acetone reacts with 2,4 DNP reagent .

OR

Convert the following:

(a) Benzene to m-nitrobenzaldehyde

(b) Bromobenzene to benzoic acid

21. (a) DNA fingerprinting is used to determine paternity of an individual. Which property of DNA helps in the procedure?

    (b) What structural change will occur when a native protein is subjected to change in pH?

SECTION C

This section contains 7 questions with internal choice in one question. The following questions are short answer type and carry 3 marks each.

22. (a) Write the formula for the following coordination compound

    Bis(ethane-1,2-diamine) dihydroxidochromium(III) chloride

    (b) Does ionization isomer for the following compound exist? Justify your answer.

    $Hg[Co(SCN)_4]$

    (c) Is the central metal atom in coordination complexes a Lewis acid or a Lewis base? Explain.

23. (a) Can we construct an electrochemical cell with two half-cells composed of $ZnSO_4$ solution and zinc electrodes? Explain your answer.

    (b) Calculate the λ^0_m for Cl^- ion from the data given below:

    $\Lambda^0_m MgCl_2 = 258.6\ Scm^2mol^{-1}$ and $\lambda^0_m Mg^{2+} = 106\ Scm^2mol^{-1}$

    (c) The cell constant of a conductivity cell is 0.146 cm^{-1}. What is the conductivity of 0.01 M solution of an electrolyte at 298 K, if the resistance of the cell is 1000 ohm?

24. Write the name of the reaction, structure and IUPAC name of the product formed when:

(a) phenol reacts with $CHCl_3$ in the presence of NaOH followed by hydrolysis.

(b) $CH_3CH_2CH(CH_3)CH(CH_3)ONa$ reacts with C_2H_5Br

25. You are given four organic compounds "A", "B", "C" and "D". The compounds "A", "B" and "C" form an orange- red precipitate with 2,4 DNP reagent. Compounds "A" and "B" reduce Tollen's reagent while compounds "C" and "D" do not. Both "B" and "C" give a yellow precipitate when heated with iodine in the presence of NaOH. Compound "D" gives brisk effervescence with sodium bicarbonate solution. Identify "A", "B", "C" and "D" given the number of carbon atoms in three of these carbon compounds is three while one has two carbon atoms. Give an explanation for your answer.

26. When sucrose is hydrolysed the optical rotation values are measured using a polarimeter and are given in the following table:

S.No.	Time (hours)	Specific Rotation
1	0	$+66.5^o$
2	∞	-39.9^o

(a) Account for the two specific rotation values.

(b) What is the specific name given to sucrose based on the above observation.

(c) One of the products formed during the hydrolysis of sucrose is a glucose, that reacts with hydroxylamine to give compound A. Identify compound A.

27. An organic compound A with the molecular formula (+)C_4H_9Br undergoes hydrolysis to form (±) C_4H_9OH. Give the structure of A and write the mechanism of the reaction.

28. The rate constants of a reaction at 200K and 500K are $0.02s^{-1}$ and $0.20s^{-1}$ respectively. Calculate the value of Ea (Given $2.303R = 19.15\ JK^{-1}mol^{-1}$)

SECTION D

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.

29. **Crystal field splitting by various ligands**

Metal complexes show different colours due to d-d transitions. The complex absorbs light of specific wavelength to promote the electron from t2g to eg level. The colour of the complex is due to the transmitted light, which is complementary of the colour absorbed.

The wave number of light absorbed by different complexes of Cr ion are given below:

Complex	Wavenumber of light absorbed (cm-1)	Energy of light absorbed (kJ/mol)
$[CrA_6]^{3-}$	13640	163
$[CrB_6]^{3+}$	17830	213
$[CrC_6]^{3+}$	21680	259
$[CrD_6]^{3-}$	26280	314

Answer the following questions:

(a) Out of the ligands "A", "B", "C" and "D", which ligand causes maximum crystal field splitting? Why?

OR

Which of the two, "A" or "D" will be a weak field ligand? Why?

(b) Which of the complexes will be violet in colour? $[CrA_6]^{3-}$ or $[CrB_6]^{3+}$ and why? (Given: If 560 - 570 nm of light is absorbed, the colour of the complex observed is violet.)

(c) If the ligands attached to Cr3+ ion in the complexes given in the table above are water, cyanide ion, chloride ion, and ammonia (not in this order)

Identify the ligand, write the formula and IUPAC name of the following:

(i) $[CrA_6]^{3-}$ (ii) $[CrC_6]^{3+}$

30. We commonly use voltaic cell as convenient, portable sources of energy. Flash-lights and radios are examples of devices that are often powered by the zinc-carbon dry cells or Lclanche cell. This voltaic cell has a zinc can as the anode, a graphite rod in the centre, surrounded by a paste of manganese dioxide, ammonium and zinc chloride and carbon black is the cathode. The voltage of this dry cell is initially about 1.5 V, but it decreases as current is drawn off. The voltage also deteriorates rapidly in cold weather.

An alkaline dry cell is similar to the Lclanche cell but it has potassium hydroxide in place of ammonium chloride. This cell perform better under current drain and in cold weather. The half reaction are:

Anode: $Zn(s) + 2OH^-(aq) \longrightarrow ZnO(s) + H_2O(\ell) + 2e^-$

Cathode: $HgO(s) + H_2O(\ell) + 2e^- \rightarrow Hg(s) + 2OH^-$

A dry cell is not truly 'dry', because the electrolyte is an aqueous paste. Once a dry cell is completely discharged, the cell is not easily reversed or recharged and is normally discarded. Lead storage cell is rechargeable cell. The spongy lead act as anode and lead dioxide as cathode. Aqueous sulphuric acid used as an electrolyte. The half reactions during discharging of lead storage cells are:

Anode: $Pb(s) + SO_4^{2-}(aq) \rightarrow PbSO_4(s) + 2e^-$

Cathode: $PbO_2(s) + 4H^+(aq) + SO_4^{2-}(aq) \rightarrow PbSO_4(s) + 2H_2O$

The lead storage cell can be recharged by using an external electric current. [Chemical demonstration vol 4 University of Wisconsin]

Answer the following questions:

(a) Write the cathodic reaction during the discharging of Lclanche dry cell.

(b) What is the net reaction when the alkaline dry cell is in use and how does the cell potential depends on the concentration of KOH?

(c) How many coulombs have been transferred from anode to cathode in order to consume one mole of sulphuric acid during the discharging of lead storage cell?

OR

How much work can be extracted by using lead storage cell if each cell delivers about 2.0 V of voltage? [F = 96500 C mol^{-1})

SECTION E

The following questions are long answer type and carry 5 marks each. All questions have an internal choice.

31. Attempt **any five** of the following:

(a) Which of the following ions will have a magnetic moment value of 1.73 BM.

Sc^{3+}, Ti^{3+}, Ti^{2+}, Cu^{2+}, Zn^{2+}

(b) In order to protect iron from corrosion, which one will you prefer as a sacrificial electrode, Ni or Zn? Why? (Given standard electrode potentials of Ni, Fe and Zn are -0.25 V, -0.44 V and -0.76 V respectively.)

(c) The second ionization enthalpies of chromium and manganese are 1592 and 1509 kJ/mol respectively. Explain the lower value of Mn.

(d) Give two similarities in the properties of Sc and Zn.

(e) What is actinoid contraction? What causes actinoid contraction?

(f) What is the oxidation state of chromium in chromate ion and dichromate ion?

(g) Write the ionic equation for reaction of KI with acidified $KMnO_4$.

32. (a) What is the effect of temperature on the solubility of glucose in water?

(b) Ibrahim collected a 10mL each of fresh water and ocean water. He observed that one sample labeled "P" froze at 0°C while the other "Q" at -1.3°C. Ibrahim forgot which of the two, "P" or "Q" was ocean water. Help him identify which container contains ocean water, giving rationalization for your answer.

(c) Calculate Van't Hoff factor for an aqueous solution of $K_3[Fe(CN)_6]$ if the degree of dissociation (α) is 0.852. What will be boiling point of this solution if its concentration is 1 molal? (Kb=0.52 K kg/mol)

OR

(a) What type of deviation from Roult's Law is expected when phenol and aniline are mixed with each other? What change in the net volume of the mixture is expected? Graphically represent the deviation.

(b) The vapour pressure of pure water at a certain temperature is 23.80 mm Hg. If 1 mole of a non-volatile non- electrolytic solute is dissolved in 100g water, Calculate the resultant vapour pressure of the solution.

33. (a) Write the structure of the main products when aniline reacts with the following reagents.

(i) Br_2 water (ii) $(CH_3CO)_2O$/pyridine

(b) Arrange the following in the increasing order of basicity in the vapour phase

$C_2H_5NH_2$, $(C_2H_5)_2N$, $(CH_3CH_2)NH$

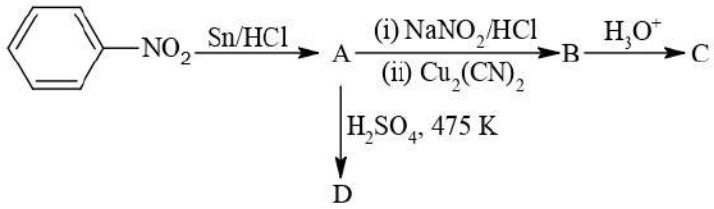
(c) Complete the following:

(i) $CH_3CH_2CH_2NH_2 + CHCl_3 + KOH\ (alc) \rightarrow$

(ii) $CH_3CONH_2 + Br_2 + KOH \rightarrow$

OR

(a) Write the structure of A to D



(b) Arrange in order of increasing boiling point $CH_3CH_2CH_2NH_2$, $CH_3CH_2NHCH_3$, $(CH_3)_3N$,

(c) (i) Prepare propylamine by Gabriel phthalimide synthesis

(ii) What happens when benzene diazonium chloride is being heated with C_2H_5OH?

KENDRIYA VIDYALAYA PASIGHAT
PRACTICE HALF YERALY EXAM
SUBJECT: CHEMISTRY (043) (Set- 1)

1. Which of the following represents largest number of particles?
   (a) Atoms in mole of CH_4 (b) Atoms in 0.5 mol of SO_3 (c) Atoms in 0.5 mole of CO_2 (d) Atoms in 1 mol of CO
2. In which of the following pairs, the ions are isoelectronic?
   (a) Na^+, Mg^{2+} (b) Al^{3+}, O^- (c) Na^+, O^- (d) N^{3-}, Cl^-
3. The order of screening effect of electrons of s, p, d and f orbitals of a given shell of an atom on its outer shell electrons is:
   (a) f > d > p > s (b) s > p > d > f (c) p < d < s > f (d) f > p > s > d
4. Z = 114 has been discovered recently. It will belong to which of the following family group and electronic configuration?
   (a) Carbon family [Rn] $5f^{14}\ 6d^{10}\ 7s^2\ 7p^2$ (b) Oxygen family [Rn] $5f^4\ 6d^{10}\ 7s^2\ 7p^4$
   (c) Nitrogen family [Rn] $5f^{14}\ 6d^{10}\ 7s^2\ 7p^5$ (d) Halogen family [Rn] $5f^{14}\ 6d^{10}\ 7s^2\ 7p^5$
5. Which of the following pair consist of only paramagnetic species?
   (a) O_2, NO (b) O_2^+, O_2^{2-} (c) CO, NO (d) O_2^{2-}, N^-
6. Predict the correct order (where bp is bonded paper and lp is lone pair of electrons)
   (a) bp – bp > lp – bp > lp – bp (b) lp – bp > bp – bp > lp – lp
   (c) lp – lp > lp – bp > bp – bp (d) lp – lp > bp – bp > lp – bp
7. The types of hybrid orbitals of nitrogen in NO_2^+, NO_3^- and NH_4^+ respectively are expected to be
   (a) sp, sp^3 and sp^2 (b) sp, sp^2 and sp^3 (c) sp^2, sp and sp^3 (d) sp^2, sp^3 and sp
8. The correct thermodynamic conditions for the spontaneous reaction at all temperature is
   (a) $\Delta H < 0$ and $\Delta S > 0$ (b) $\Delta H < 0$ and $\Delta S < 0$ (c) $\Delta H < 0$ and $\Delta S = 0$ (d) $\Delta H > 0$ and $\Delta S < 0$
9. Which of the following is an endothermic process?
   (a) $2H_2 + O_2 \rightarrow 2H_2O$; $\Delta H = -$ q kJ (b) $N_2 + O_2 \rightarrow 2NO - Y$ kJ
   (c) $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$; $\Delta H = -$ X kJ mol–1 (d) NaOH + HCl → NaCl + H_2O + Z kJ
10. 2NO2(g) ⇋ N2O4 (g) + 60.0 kJ, the increase in temperature
    (a) favour the formation of N2O4 (b) favour the decomposition of N2O4
    (c) does not affect the equilibrium (d) stops the process
11. Considering the elements F, Cl, O and N, the correct order of their chemical reactivity in terms of oxidizing property is:
    (a) F > Cl > O > N (b) F > O > Cl > N (c) Cl > F > O > N (d) O > F > N > Cl

The following questions given below consist of an "Assertion" (A) and "Reason" (R) Type questions. Use the following Key to choose the appropriate answer.
(A)If both (A) and (R) are true, and (R) is the correct explanation of (A).
(B)If both (A) and (R) are true but (R) is not the correct explanation of (A).
(C)If (A) is true but (R) is false.
(D) If (A) is false but (R) is true.

12. ***Assertion(A):***The number of significant figures in 507000 is three.
    Reason(R): In 507000, all the zeros are significant.
13. ***Assertion(A)*** *:* Formation of Cl^- is exothermic whereas formation of O^{2-} is endothermic.
    Reason (R) : EA_2 of oxygen is endothermic and greater than its exothermic value (EA_1) of oxygen.
14. ***Assertion(A):*** The p^H of pure water is less than 7 at 60°C.
    Reason (R): As the temperature increases, pure water becomes slightly acidic.
15. Calculate the molarity of NaOH in the solution prepared by dissolving its 4 g in enough water to form 250 ml of the solution.
16. The percentage of copper in $CuCl_2$? (Atomic mass of Cu = 63.5 u, Cl =35.5 u)
17. (i) State Hund's maximum multiplicity rule.
    (ii) What is the lowest value of n that allows g-orbital to exist?

    (OR)

    Explain giving reason, which of the following sets of quantum numbers are not possible:

    $$(i)\ n = 1,\ l = 1,\ m_l = 0,\ m_s = +\frac{1}{2}$$
    $$(ii)\ n = 0,\ l = 2,\ m_l = -2,\ m_s = -\frac{1}{2}$$

18. Write the general outer electronic configuration of s, p, d and f -block elements.

    (OR)

    How does electronegativity vary (i) down the group, (ii) across the period from left to right?

19. Why is $BeCl_2$ linear whereas $SnCl_2$ angular molecule?
20. Derive the relationship between C_P and C_V for an ideal gas.
21. (i) Give the number of electrons in the species H_2^+ and O_2^-.
    (ii) Using s, p, d notations, describe the orbital with the quantum numbers:
    (a) n = 3, l = 1, m = 0,(b) n = 1, l = 0

(OR)

    (i) State Heisenberg's uncertainty principle.
    (ii) An electron has a speed of 40 m s^{-1} accurate upto 99.99%. What is the uncertainty in locating its position? [Given, $m_e = 9.11 \times 10^{-31}$ kg]
22. Give a brief account for the following:
    (i) Anions are bigger in size than their parent atom.
    (ii) Oxygen has lesser first ionization enthalpy than nitrogen.
23. Arrange the species in each group in order of increasing ionisation energy and give reason:
    (i) K^+, Cl^-, Ar,
    (ii) Na, Mg, Al,
    (iii) C, N, O
24. What is the hybrid state of
    (i) B in BF_3,
    (ii) S in SF_6,
    (iii) P in PCl_5?

(OR)

    Although geometries of NH_3 and H_2O molecules are distorted tetrahedral, bond angle in water is less than that of ammonia. Discuss.
25. Define the following:
    (a) First law of thermodynamics.
    (b) Standard enthalpy of formation.

SECTION D

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

26. A total of four quantum numbers are used to describe completely the movement and trajectories of each electron within an atom. The combination of all quantum numbers of all electrons in an atom is described by a wave function that complies with the Schrödinger equation. Each electron in an atom has a unique set of quantum numbers; according to the Pauli Exclusion Principle, no two electrons can share the same combination of four quantum numbers. Quantum numbers are important because they can be used to determine the electron configuration of an atom and the probable location of the atom's electrons. Quantum numbers are also used to understand other characteristics of atoms, such as ionization energy and the atomic radius. In atoms, there are a total of four quantum numbers: the principal quantum number (n), the orbital angular momentum quantum number (l), the magnetic quantum number (m_l), and the electron spin quantum number (m_s).

    Answer the following questions:
    (a) Give the sets of quantum numbers that describe an electron in a 3p orbital
    (b) What is the value of azimuthal quantum number for d-subshell ?
    (c) Which of the following orbitals are not possible? 2d, 4f, 4g and 6d

(OR)

    Give the values of the quantum numbers for the electron with the highest energy in sodium atom.
27. The VSEPR Theory is able to predict geometry of a large number of molecules, especially the compounds of p-block elements accurately. It is also quite successful in determining the geometry quite-accurately even when the energy difference between possible structures is very small. Similar to electronic repulsion, orbitals containing electrons also experience electrostatic repulsion from one another. According to VSEPR theory "the orbital occupied by electron in the valence shell of the central atom should be arranged in space in a way that they lie as far away from one another as possible to provide maximum stability to the molecule. The repulsion between different types of electron pair is not the same in magnitude but it follows the following order – " lone-pair-lone pair > lone pair-bond pair > bond pair-bond pair"

    Answer the following questions:
    (a) State True or False. The shape a molecule occupies allows to minimize repulsions among them and maximize the space between them. a) True b) False
    (b) The shape of H_2O according to VSEPR model is…….
    (c) Give reason BeF_2 is linear while SF_2 is angular through both are triatomic.

(OR)

    Decreasing order of bond angle among the following species is CH_4 >NH_3> H_2O. Explain.
    (ii) Round up the following upto three significant figures: (a) 34.216 (b) 10.4107 (2)
    (iii) Calculate the molecular mass of the following : (a) H_2O (b) CO_2 (c) CH_4 (d) NH_3 (2)

(OR)

(i) How much copper can be obtained from 100g of copper sulphate ($CuSO_4$) ? (1)

(ii) Express the following in the scientific notation: (a) 0.0048 (b) 234,000 (2)

(iii) How are 0.50 mol Na_2CO_3 and 0.50 M Na_2CO_3 different? (2)

**********ALL THE BEST**********

KENDRIYA VIDYALAYA PASIGHAT

HOME ASSIGNMENT For Autumn Break 2023

CLASS XII COMMERCE

ACCOUNTANCY

1. **Solve Sample Paper as assigned**
2. **Solve Questions as assigned**

Project work: Select a Public Company engaged in the business of manufacturing or Trading of Goods.

Take the print out of Financial Statements for the year ending 31st March 2023 and 2022.

BUSINESS STUDIES

1. **Solve Sample Paper as assigned**
2. **Project Work: Visit any one of the following:**
   1. **An Industrial Unit 2. A Departmental Store 3. A Fast Food unit**

Make a project on Application of the General Principles of Management advocated by Fayol .

Note: Take photographs in Business unit at various moments

PRAVEN
PGT COMMERCE

KENDRIYA VIDYALAYA PASIGHAT

HOME ASSIGNMENT For Autumn Break 2023

CLASS XI COMMERCE

ACCOUNTANCY

3. **Solve Sample Paper as assigned**
4. **Solve Questions as assigned**
5. **Project work: Visit any Business unit. Collect brief information about it. Collect 20 to 25 transactions of various types from these transactions prepare :**
   (a) Journal or Subsidiary Books (b) ledger (c) Trial Balance

   Note: Take photographs in Business unit at various moments .

BUSINESS STUDIES

3. **Solve sample paper as assigned**
4. **Project Work: Visit any one of the following:**
   2. **An Industrial Unit 2. A Departmental Store 3. A Fast Food unit**
      Collect all the information of the unit selected and make a project

   Note: Take photographs in Business unit at various moments

PRAVEN
PGT COMMERCE

BIOLOGY HOLIDAY HOMEWORK

CLASS - XII Sc

1. Why do moss plants produce very large number of male gametes ? Provide one reason .

What are these gametes called ?

2. List three states the annual and bienneal angiosperms have to pass through during their life cycle .

3. (a) Can a plant flowering in Mumbai be pollinated by pollen grains of the same species growing in New Delhi ? Provide explanation to your answer.

4. Why is fertilization in an angiosperm referred to as double fertilization?Mention the ploidy of the cells involved .

5. Name and explain the role of inner and middle walls of human uterus .

6. Draw a diagrammatic sectional view of the female reproductive system of human and label the parts .

(a) Where the secondary oocyte develop ?

(b) Which help in collection of ovum after ovulation .

(c) Mention the hormones and their functions involved in maturation of ovum.

7. A woman has certain queries as listed below , before starting with contraceptive pills . Answer them .

(i) What do contraceptive pills contain and how do they act as contraceptives ?

(ii) What schedule should be followed for taking these pills?

8. A couple where both husband and wife are producing functional gametes , but the wife is still unable to conceive , is seeking medical aid . . Describe any one method that you can suggest for this situation.

9. Write the chronological order of human ancestor.

10. Explain the methodologies of human genome project.

CLASS IX

Q1Write a short story or a poem on your own.

Q2.write 30 verbs with their form.

Q3.write 20 example of Reported Speech.

AUTUMN BREAK CLASS WORK

CLASS XI

Q1.Write a paragraph on any of the freedom fighter.

Q2 write an essay on any of the following topic.

a. Environment.
b. Drug Abuse.

Q3write the biography of WALT WHITMAN.

AUTUMN BREAK HOME WORK

CLASS XII

Q1. Write an essay on any of the following Topic(350-400) words.

a) Molestation.
b) Women Empowerment.

Q2 write 10 definition of literary devices with an example.

Q3 write the biography of kamla das and john keats.

Q4.write the short story of Evans Tries an O-level.

KENDRIYA VIDYALAYA PASIGHAT

HOLIDAY HOMEWORK (AUTUMN BREAK)

SUBJECT: SOCIAL SCIENCE

CLASS: X

1. Locate and label following on outline political maps (seperately) of India and practice it daily.

Major dams:- Salal, Bhakra Nangal , Tehri, Rana Pratap Sagar, Sardar Sarovar, Hirakud, Nagarjuna Sagar, Tungabhadra

Thermal Power Plants:- Namrup, Singrauli, Ramagundam

Nuclear Power Plants:- Narora, Kakrapara, Tarapur, Kalpakkam

Software Technology Parks: Noida, Pune, Bengaluru, Hyderabad, Gandhinagar, Mumbai, Chennai, Thiruvananthapuram

Major Sea Ports: Kandla, Mumbai, Marmagao, New Mangalore, Kochi, Tuticorin, Chennai, Vishakhapatnam, Paradip, Haldia

International Airport: RajaSansi- Sri Guru Ram Dass Ji, Indira Gandhi, Chhatrapati Shivaji, Meenam Bakkam, Netaji Subhash Chandra Bose, Rajiv Gandhi

2. Solve CBSE sample question paper on A4 size paper.

3. Complete all pending notes of chapters taught till date.