M.R. Citi Public School

Class: XII SCIENCE

"Summer: A time to recharge, rediscover, and rise high "

Dear Parents,

Your child is entering a crucial stage of self-discovery, discipline, and academic growth. **Summer holidays offer a golden chance to shape not just their minds** but also their habits. Here are some Parenting Tips to make this journey rewarding:

Kindly note that the **summer vacation** for your ward will be from **30th May 2025 to 2nd July 2025.** The school will **reopen on 3rd July 2025** at the usual time.

Parenting Tips

1. Talk regularly with your child—ask open-ended questions about their day.
2. Help them plan a daily routine balancing study, screen, and rest.
3. Be available emotionally—adolescents need calm support, not judgment.
4. Encourage self-learning—guide them to find answers, not give them directly.
5. Monitor social media and screen time without invading privacy.
6. Let them fail and learn—mistakes are lessons, not labels.
7. Appreciate effort more than results—this builds inner confidence.
8. Involve them in home management—budgeting, cooking, or organizing.
9. Model discipline and reading—your actions teach louder than words.
10. Promote gratitude and humility through real-life stories.
11. Celebrate small wins—be it fitness, projects, or learning a new skill.
12. Discuss real-life decisions—current events, career paths, etc.
13. Reinforce values of respect, kindness, and time management.
14. Support their individuality—not all children are the same.
15. Maintain open communication with teachers.

Dear Students,

Your future is built by how you use your time today. This summer, relax, reflect, and grow stronger in mind, body, and spirit. Follow these tips to make your holidays meaningful:

Student Tips

1. Design your daily schedule—include 2–3 hours of focused study.
2. Revise key topics of each subject—use mind maps or flashcards.
3. Read at least 2 good books—fiction, biographies, or self-help.
4. Write a daily diary or blog to improve expression and thinking.
5. Practice meditation or yoga—it improves focus and calmness.
6. Limit phone/gaming time—use screen for learning, not addiction.
7. Learn a new skill—coding, cooking, creative writing, or music.
8. Help around the house—teamwork begins at home.
9. Watch educational documentaries or TED Talks weekly.
10. Maintain a fitness routine—walk, skip, dance, or any sport.
11. Spend time in nature—disconnect to reconnect.
12. Set SMART goals (Specific, Measurable, Achievable, Relevant, Time-bound).
13. Practice mock tests or Olympiad papers for self-evaluation.
14. Sleep 7–8 hours and stay hydrated—health fuels success.
15. Reflect weekly—what did I learn, how did I grow, what will I improve?

"This summer, don't just pass the time—
Use it to pass your limits and surprise yourself."
Wishing you a joyful, productive and self-transforming break!

With Best Wishes,

Principal

M.R. Citi Public School

Summer Break - Assignment Session : 2025-2026
CLASS: XII (SCIENCE)

CHEMISTRY :

A. Complete Practical File with following experiments:-
(i) Surface Chemistry
(ii) Chemical Kinetics
(iii) Chromatography
(iv) Organic Preparations
(v) Inorganic Preparations
(vi) Volumetric Analysis
(vii) Salt Analysis

B) Complete the assigned Investigatory project

C) Do the given assignment of following chapters
Ch1 Solutions
Ch 2Electro chemistry
CH3 Chemical Kinetics

ASSIGNEMNT Chapter 1: Solutions

1. Calculate the freezing point of a solution containing 60 g of glucose. (Molar mass = 180 g mol) in 250 g of water. (K, of water 1.86 K kg mol)(-2.48°C)
2. Give reasons for the following:
(i) Measurement of osmotic pressure method is preferred for the determination of molar masses of macromolecules such as proteins and polymers.
(ii) Aquatic animals are more comfortable in cold water than in warm water.
(iii) Elevation of boiling point of 1M KCI solution is nearly double than that of 1 M sugar solution.
3. A 10% solution (by mass) of sucrose in water has freezing point of 269.15 K. Calculate the freezing point of 10% glucose in water, if freezing point of pure water is 273.15 K Given: (Molar mass of sucrose = 342 g mol, Molar mass of glucose 180 g mol)
4. State the formula relating pressure of a gas with its mole fraction in a liquid solution in contact with it. Name the law and mention its two applications.
5. Two liquids A and B boil at 145-C and 190-C respectively. Which of them has a higher vapour pressure at 80C?
6. (a) Why is the vapour pressure of a solution of glucose in water lower than that of water?
(b) A 6.90 M solution of KOH in water contains 30% by mass of KOH. Calculate the density of the KOH solution? (molar mass of KOH = 56 g/mol) (1.288 g/ml)
7. Define azeotropes. What type of azeotrope is formed by positive deviation from Raoult's law? Give an example.
8. Explain with suitable examples in each case why the molar masses of some substances determined with the help of colligative properties are (i) higher (ii) lower than actual values.
9. Calculate the freezing point of solution when 1.9 g of MgCl(M-95 g mol-1) was dissolved in 50 g of water, assuming MgCl.undergoes complete ionization. (K for water 1.86 K kg mol-1)

10. a) Out of 1 M glucose and 2 M glucose, which one has a higher boiling point and why?
b) What happens when the external pressure applied becomes more than the osmotic pressure of solution?

11. State Raoult's law for solutions of volatile liquids. Taking suitable examples explain the meaning of positive and negative deviations from Raoult's law. What is the sign of AH...for positive deviation?

12. a) Define the term osmotic pressure. Describe how the molecular mass of a substance can be determined by a method based on measurement of osmotic pressure.
b) Determine the osmotic pressure of a solution prepared by dissolving 0.025g of K.SO. in 2L of water at 25-C, assuming that is completely dissociated.
(R-0.0821 L atm/K/mol, molar mass of K.SO-174g/mol)

13. 15 g of an unknown molecular material was dissolved in 450 g of water. The resulting solution was found to freeze at -0.34 C. What is the molar mass of this material? K for water 1.86 K Kg mol).
(182 g mol)

14. A solution is prepared by dissolving 1.25g of oil of winter green (methyl salicylate) in 99.0g of benzene has a boiling point of 80.31-C. Determine the molar mass of this compound. (B.P. of pure benzene 80.10-C and Ks for benzene 2.53-C kg mol)
(152.21 g/mol)

15. A 1.00 molal aqueous solution of trichloroacetic acid (CCLCOOH) is heated to its boiling point. The solution has the boiling point of 100.18-C. Determine the van't Hoff factor for trichloroacteic acid (Ka for water 0.512 K Kg mol), (i 0.35)

16. Calculate the temperature at which a solution containing 54 g of glucose, (C.H.O.), in 250g of water will freeze (k for water = 1.86 k mol Kg).

17. Why it is better to find molality of a solution than its molarity?

18. The Henry law constant for oxygen dissolved in water is 4.34 x 10 atm at 25C. If the partial pressure of oxygen in air is 0.2 atm. under ordinary atmospheric conditions. Calculate the concentration (in moles per litre) of dissolved oxygen in water in equilibrium with air at 25-C

19. Define the following terms:
a) Mole fraction b) Isotonic solutions c) Van't Hoff factor
d) ideal solution. e) Colligative properties f) molality

20 . What is the Van't Hoff factor for a compound which undergoes tetramerization in an organic solvent?

21. Benzoic acid completely dimerizes in benzene. What will be the vapour pressure of a solution containing 61 g of benzoic acid per 500 g benzene when the vapour pressure of pure benzene at the temperature of experiment is 66.6 torr? What would have been the vapour pressure in the absence of dimerisation?

22. Two elements A and B form compounds having molecular formulae AB and AB. When dissolved in 20 g of benzene, 1 g of AB, lowers the freezing point by 2.3 K whereas 1g of AB. lowers it by 1.3.K. The molar depression constant for benzene is 5.1 K Kg mol. Calculate the atomic masses of A and B.

23 . Phenol associates in benzene to a certain extent to form a dimer. A solution containing 20 X 10 kg of phenol in 1 kg of benzene has its freezing point lowered by 0.69K. Calculate the fraction of phenol that has dimerised (K-5.1 KKg mol-)

24. 100 g of a protein is dissolved in just enough water to make 10.0 ml of solution. If this solution has an ostomic pressure of 13.3 mm Hg at 25-C, what is the molar mass of the protein?

25. Calculate the amount of KCI which must be added to 1 Kg of water so that the freezing point is depressed by 2K. (Kf for water 1.86/KKg mol)(40.05 g)
26. A decimolar solution of K.[Fe(CN).] is 50% dissociated at 300K. Calculate the osmotic pressure of the solution in atm.
27. Heptane and Octane form an ideal solution at 373 K. The vapour pressures of the pure liquids at this temperature are 105.2 KPa and 46.8 KPa respectively. If the solution contains 25 g of heptane and 28.5 g of octane, calculate
(i) vapour pressure exerted by heptane.
(ii) vapour pressure exerted by solution.
28. A solution is made by dissolving 30 g of a nonvolatile solute in 90 g of water. It has a vapour pressure 2.8 kPa at 298 K. At 298 K, vapour pressure of pure water is 3.64 KPa. Calculate the molar mass of the solute.
29. What type of azeotrope is formed on mixing nitric acid and water?
30. An antifreeze solution is prepared from 222.6 g of ethylene glycol (C.H.(OH).) and 200 g of water. Calculate the molality of the solution. If the density of this solution be 1.072 g ml, what will be the molarity of the solution?

Chapter 2: Electrochemistry

1. Write the cell reaction and calculate the e.m.f of the following cell at 298 K.
Sn(s) | Sn²(0.004 M) | |H (0.020 M) | H(g) (1 bar) | Pt (s) (Given: E-Sn/Sn-0.14 V)
2. For the reaction
2AgCl (s) +H: (g) (1atm)2Ag(s) +2H(0.1M)+2CT (0.1M)
AG-43600 J at 25°C the emf of the cell.
Calculate the emf of the cell
3. Give reasons:
a) On the basis of Evalues, O, gas should be liberated at anode but it is Cl, gas which is liberated in the electrolysis of aqueous NaCI
b) Conductivity of CHCOOH decreases on dilution.
4. (a) Calculate the mass of Ag deposited at cathode when a current of 2 amperes was passed through a solution of AgNO, for 15 minutes. (Given: Molar mass of Ag 108 g mol- IF-96500 C mol-)
(b) Define fuel cell.
5 . Calculate the degree of dissociation (a) of acetic acid if its molar conductivity (A.) is 39.05 Scm/mol. Given (H)-349.65cm-mol-and (CH-COO)-40.95cm mol-
6. Define molar conductivity of a solution and write their units and the relation between the two.
(i) How does molar conductivity changes with change in concentration of solution for weak and strong electrolyte.
ii. Define limiting molar conductivity. Why is the conductivity of an electrolyte solution decrease with the decrease in concentration?
7. Define fuel cells? Give electrode reactions of H-O. fuel cell. Name any other fuel which can be used instead of H. Write its two advantages.
8. From the given cells
Lead storage cell, Mercury cell, Fuel cell and Dry cell

Answer the following:

(i) Which cell is used in hearing aids?
(ii) Which cell was used in Apollo Space Programme?
(iii) Which cell is used in automobiles and inverters?
(iv) Which cell does not have long life?

9. The resistance of a conductivity cell containing 0.001 M KCI solution is 1500 Q at 298K. What is the cell constant, if the conductivity of 0.001 M KCI solution at 298K is 0.146X10-Scm-?
10. Account for the following:
. Alkaline medium inhibits the rusting of iron.
11. Write the reactions occurring during the electrolysis of;
a) Solution of dil. Sulphuric acid using platinum electrodes.
b) Aqueous Silver Nitrate solution using Silver electrodes.
c) Aqueous Sodium Chloride soluions
12. For what concentration of Ag ions will the emf of the cell be zero at 25-C, if the concentration of Cu- is 0.01 M? [log 3.919 0.593] (calc. not reqd.).
13. State Kohlaursch law of independent migration of ions. Write an expression for the molar conductivity of acetic acid at infinite dilution according to Kohlaursch law.
14. Calculate A, for acetic acid. (Given that A'm HCI-426 Scm mol A'm NaCI-126 Scm mol Am CHCOONa 91 Scm mol (391 Scnvmol-)
15. What type of battery is lead storage battery? Write the anode and the cathode reactions and overall reaction occurring in a lead storage battery when current is drawn from it.
16. Conductivity of 0.00241 M acetic acid is 7.896 X 10-Scm. Calculate its molar conductivity. If Ao for acetic acid is 390.5 Scm mol, what is its dissociation constant?
17. Explain with examples the terms weak and strong electrolytes? How can these be distinguished? With the help of a diagram explain the difference in the variation of molar conductivity with concentration for strong and weak electrolytes
18. Calculate the emf of the cell Mg|Mg-(0.1 M) || Cu-(0.0001 M) | Cu at 298 K. Given E -2. 37 V and E+0.34 V.
19. A voltaic cell is set up at 25-C with the following half-cells; Al Al (0.001 M) and Ni Ni (0.50 M) Calculate the cell voltage [E-0,25 V, E-1.66 V
20. The following chemical reaction is occuring in an electrochemical cell Mg(s) 2Ag-(0.0001 M) Mg -(0.1M) + 2Ag(s)
The E-values are Mg-/ Mg = - 2.36V and Ag/ A_{g} = 0.8V
For this cell calculate
(a) The carriers of current within this cell.
(b) E value for the electrode 2 Ag /2 Ag.
(c) Standard cell potential E.
(d) Cell potential E..
(e) How will the value of Echange if the concentration of/ Ag (aq) is increased?
(f) Symbolic representation of the above cell.
(g) Will the above cell reaction be spontaneous?
21. Three electrolytic cells A, B and C containing solutions of zinc sulphate, silver nitrate and copper sulphate, respectively are connected in series. A steady current of 1.5 ampere was passed through them until 1.45 g of silver were deposited at the cathode of cell B. How long did the current flow? What mass of copper and what mass of zinc were deposited in the concerned cells? (Atomic masses of A_{B} = 108 Zn = 65.4 Cu 63.5)

22. How many coulombs of electric charge must be passed through a solution of silver nitrate to coat a silver sheet of area 100 cm-on both the sides with a 0.005 mm thick layer. Density of silver is 10.5 g/cm. Relative atomic mass of silver is 108.

Chapter 3: Chemical Kinetics

1. For the reaction:
   2N:Os (g) → 4NO2 (g) + O2(g)
   The rate of formation of NO: (g) is 2.8 X 10 Ms. Calculate the rate of disappearance of N_2 Os (g).
2. A first order reaction is 50% completed in 40 minutes at 300 K and in 20 minutes at 320 K. Calculate the activation energy of the reaction. (Given: log 2-0.3010, log 4-0.6021, R-8.314 JK mol)
3. For a reaction R-> P, half-life (t1/2) is observed to be independent of the initial concentration of reactants. What is the order of reaction?
4. For a reaction:
   2NH(g) P N:(g) + 3H2(g)
   Rate k
   (i) Write the order and molecularity of this reaction. (ii) Write the unit of k.
5. Explain the following terms:
   (i) Rate constant (k) (ii) Half life period of a reaction(1/2)
   (iii) Order of the reaction (iv) pseudo first order reaction
6. The rate of a particular reaction triples when temperature changes from 50°C to 100°C. Calculate the activation energy of the reaction. [log 3-0.4771, R 8.314 JK mol]
7. The rate constant for the first order decomposition of H_2 O, is given by the following equation:
   Log k 14.2-1.0 x10 T
   Calculate Ea for this reaction and rate constant k if its half-life period be 200 minutes.
   (Given: R-8.314 JK-mol)
8. The rate constant for a reaction of zero order in A is 0.0030 mol Ls. How long will it take for the initial concentration of A to fall from 0.10 M to 0.075 M. (t-8.33 sec)
9. The half life for decay of radioactive 14C is 5730 years. An archaeological arttefact containing wood has only 80% of the "Cactivity as found in living trees. Calculate the age of the artefact.
10. A first order reaction has a rate constant of 0.0051 min. If we begin with 0.10 M concentration of the rectant, what concentration of reactant will remain in solution after 3 hours?

PHYSICS :

1. Complete practical file Experiment no 1 to 8 (4 from Section A and 4 from Section B)
2 Do activities 1 to 6 from lab manual
3 Do given assignments on fair note book
4. Revise :
Ch1 Electric charges and fields
Ch 2 Electric potential and capacitance
Ch 3 Current Electricity
Ch 4 Moving charges and magnetism (PRE mid term syllabus)

M.R. Citi Public School

ASSIGNMENT:
Note Do all these questions on loose sheets

UNIT 1 (ELECTROSTATICS)

1. Draw schematically an equipotential surface of a uniform electrostatic field along x-axis.
2. Sketch filed lines due to (i) two equal positive charges near each other (ii) a dipole.
3. Name the physical quantity whose SI unit is volt/meter. Is it a scalar or a vector quantity?
4. Two point charges repel each other with a force F when placed in water of dielectric constant 81. What will the force between them when placed the same distance apart in air?
5. Electric dipole moment of CuSO4 molecule is . Find the separation between copper and sulphate ions.
6. Net capacitance of three identical capacitors connected in parallel is 12 microfarad. What will be the net capacitance when two of them are connected in (i) parallel (ii) series?
7. A charge q is placed at the centre of an imaginary spherical surface. What will be the electric flux due to this charge through any half of the sphere.
8. Draw the electric field vs distance (from the centre) graph for (i) a long charged rod having linear charge density. (ii) spherical shell of radius R and charge .
9. Diagrammatically represent the position of a dipole in (i) stable (ii) unstable equilibrium when placed in a uniform electric field.
10. A charge Q is distributed over a metal sphere of radius R. What is the electric field and electric potential at the centre?
11. If a body contains electrons and protons then what is the total charge on the body?
12. What is the total positive or negative charge present in 1 molecule of water.
13. How does the energy of dipole change when it in rotated from unstable equilibrium to stable equilibrium in a uniform electric field.
14. Write the ratio of electric field intensity due to a dipole at appoint on the equatorial line to the field at a point at a point on the axial line, when the points are at the same distance from the centre of dipole.
15. Draw equipotential surface for a dipole.
16. An uncharged conductor A placed on an insulating stand is brought near a charged insulated conductor B. What happens to the charge and potential of B?
17. A point charge Q is placed at point O shown in Fig. Is the potential difference positive, negative or zero, if Q is (i) positive (ii) negative charge.
18. An electron and proton are released from rest in a uniform electrostatic field. Which of them will have larger acceleration?
19. In an uniform electric field of strength E, a charged particle Q moves point A to point B in the direction of the field and back from B to A. Calculate the ratio of the work done by the electric field in taking the charge particle from A to B and from B to A.
20. If a dipole of charge is placed inside a sphere of radius , what is the net flux linked with the sphere.

SHORT ANSWER QUESTIONS

1. Show does the force between two point charges change if the dielectric constant of the medium in which they are kept increase?
2. A charged rod P attracts rod R whereas P repels another charged rod Q. What type of force is developed between Q and R?
3. A free proton and a free electron are placed in a uniform field. Which of the two experience greater force and greater acceleration?

4. No two electric lines of force can intersect each other? Why?
5. A particle of mass m and charge q is released form rest in a uniform electric field of intensity E. calculate the kinetic energy it attains after moving a distance s between the plates?
6. Two point charges +q and +9q are separated by a distance of 10 a. Find the point on the line joining the two changes where electric field is zero?
7. Define the term dipole moment of an electric dipole indicating its direction. Write its S.I unit. An electric dipole is placed in a uniform electric field .Deduce the expression for the Torque acting onit.
8. (1) The electric field due to a point change at any point near to it is defined as: where q is the test charge and is the force acting on it. What is the significance of
   (2) Two charges each 2 x 10-7 C but opposite in sign forms a system. These charges are located at points A (0,0, -10) cm and B(0,0, +10) cm respectively. What is the total charge and electric dipole moment of the system?
9. (a) Sketch electric lines of force due to (i) isolated positive change (ie q>0) and (ii) isolated negative change (ie q<0)
   (b) Two point changes q and –q are placed at a distance 2a apart. Calculate the electric field at a point P situated at a distance r along the perpendicular bisector of the line joining the charges. What is the field when r >> a

UNIT 2 (CURRENT ELECTRICITY)

1. If the temperature of a good conductor decreases, how does the relaxation time of electrons in the conductor change?
2. If potential difference V applied across a conductor is increased to 2V, how will the drift velocity of the electron change?
3 For two nichrome wires connected in series with a battery, how does the ratio of drift velocity of electrons in them depend on their (a) lengths and (b) diameters.
4 A cell of emf E and internal resistance r is connected across a variable resistor R. Plot a graph showing variation of terminal voltage V of the cell versus the current I. Using the plot, show how the emf of the cell and its internal resistance can be determined.
5 A potential difference Vis applied across a conductor of length L and diameter D. How are the electric field E and the resistance R of the conductor affected when (i) Vis halved (ii) L is halved iii) D is doubled.

Justify your answer.

6 The thickness of a conductor continuously decreases from its one end (4) to another end (B). It is connected across the terminals of a battery. What will be the effect on the value of
(a) electric field, b) current density, and
(c) mobility of the electron at a point on the conductor as one moves from end A to end B?

7 Two cells of emfs E1&, E2and internal resistances r, and
2 rrespectively are connected in parallel as shown in the figure.
Deduce the expression for
(i) the equivalent emf of the combination,
(i) the equivalent resistance of the combination, and
(iii) the potential difference between the points A and B.

8 The current flowing through a conductor is 2mA at 50V and 3mA at 60V. Is it an ohmic or non-ohmic conductor?

9 An emf of a cell is 1.5 V and its internal resistance is 1 . For what current drawn from the cell will its terminal potential difference be half of its emf?

10 A storage battery of emf 12.0 V and internal resistance 0.5 52 is to be charged by a 120 V de supply of negligible internal resistance. What resistance is required in the circuit for the charging current to be 3 A? What is the terminal voltage of the battery during charging.

Unit 3 Moving charges and magnetism:

1 Two identical circular wires P and l each of radius R and carrying current I are kept in perpendicular planes such that they have a common centre as shown in the figure. Find the magnitude and direction of the net magnetic field at the common centre of the two coils.

2 Two identical circular loops, P and Q, each of radius rand carrying currents I and 21 respectively are lying in parallel planes such that they have a common axis.
The direction of current in both the loops is clockwise as seen from O which is equidistant from both loops. Find the magnitude of the net magnetic field at point O.

3 A wire of uniform cross-section is bent into a circular loop of radius R. Consider two points A and B on the loop, such that < AOB = 0 as shown. If now a battery is connected between A and B, show that the magnetic field at the centre of the loop will be zero irrespective of angle 0.

4 A charged particle of mass m and charge q moving at uniform velocity v, enters a uniform magnetic field B acting normal to the plane of the paper. Deduce expression for the (a) radius of the circular path in which it travels and (b) kinetic energy of the particle.

5 A proton and a deuteron having equal momenta enter in a region of uniform magnetic field at right angle to the direction of the field. Depict their trajectories in the field.

6 (a) Write the expression for the magnetic force acting on a charged particle moving with velocity v in the presence of magnetic field B.
b) A neutron, an electron and an alpha particle moving with equal velocities, enter a uniform magnetic field going into the plane of the paper as shown. Trace their paths in the field and justify your answer.

7 Describe the path of a charged particle moving in a uniform magnetic field with initial velocity
(a) parallel to (or along) the field.
(b) perpendicular to the field.
(c) at an arbitrary angle 0($0° < 0 < 90°$).

8 Both, the electric and magnetic fields can deflect a moving electron. What is the difference between these deflections?

9 A charge q moving along the x-axis with a velocity is subjected to a uniform magnetic field B acting along the z-axis as it crosses the origin 0.
(i) Trace its trajectory.
(ii) Does the change gain kinetic energy as it enters the magnetic field? Justify your answer.

10 A straight wire of length L, carrying a current I, stays suspended horizontally in mid air in a region where there is a uniform magnetic field B. The linear mass density of the wire is 2. Obtain the magnitude and direction of this magnetic field.

MCQ and Assertion Reason questions

1 An electron is projected with velocity v along the axis of a current carrying long solenoid. Which one of the following statements is true?
(a) The path of the electron will be circular about the axis.
(b) The electron will be accelerated along the axis.
(c) The path of the electron will be helical.
(d) The electron will continue to move with the same velocity along the axis of the solenoid.

2 A circular coil of radius 4 cm and of 20 turns carries a current of 3 amperes. It is placed in a magnetic field of intensity of 0.5 weber/m?. The magnetic dipole moment of the coil is
(a) 0.15 ampere-m? (b) 0.3 ampere-m?
(c) 0.45 ampere-m? (d) 0.6 ampere-m?

3 A cubical region of space is filled with some uniform electric and magnetic fields. An electron enters the cube across one of its faces with velocity v and a positron enters via opposite face with velocity -v. At this instant,
(a) the electric forces on both the particles cause identical accelerations.
(b) the magnetic forces on both the particles cause equal accelerations.
(c) Only electron gains or looses energy.
(d) the motion of the centre of mass (CM) is determined by E aloneperpendicular to it.

4 If a charged particle moves through a magnetic field perpendicular to it
(a) both momentum and energy of particle change. perpendicular to it
(b) momentum as well as energy are constant.
(c) energy is constant but momentum changes.
(d) momentum is constant but energy changes.

5 A charged particle after being accelerated through. potential difference V' enters in a uniform magnetie field and moves in a circle of radius r. If V is doubled, the radius of the circle will becomes
(a) 2r (b)root 2 r (c) 4r (d)r/2

6 IF the beams of electrons and protons move parale to each other in the same direction, then they
(a) attract each other. (b) repel each other.
(c) no relation. (d) neither attract nor repel

7 Which of the following is wrong?
Resistivity of a conductor is
(a) independent of temperature. (b) inversely proportional to temperature.
(c) independent of dimensions of conductor. (d) less than resistivity of a semiconductor.

8 A wire is stretched so as to change its length by 0.1%, the percentage increase in its resistance will be
(a) 0.2% (c) 0.5%
(b) 0.02% (d) 0.05%

9 When there is an electric current through a conducting wire along its length, then an electric field must exist
(a) outside the wire but normal to it.
(b) outside the wire but parallel to it.
(c) inside the wire but parallel to it.
(d) inside the wire but normal to it.

10 Kirchhoff's voltage law deals with
(a) conservation of angular momentum. (b) conservation of charge.
(c) conservation of linear momentum. (d) conservation of energy.

Assertion Reasoning questions

1. Assertion: The internal resistance causes dissipation oi heat inside the cell.
   Reason: The internal resistance arises due to flow of ions in a cell through electrolyte.
2. Assertion: When a resistance of given material is cut into half, its resistance reduces to half of its original value.
   Reason: The resistivity of a conductor changes with dimensions, temperature and material of conductor.
3. Assertion: In a simple battery circuit, the point of lowest potential is positive terminal of the battery.
   Reason: The current flows towards the point of the higher potential as it flows in such a circuit from the negative to the positive terminal.
4. Assertion: There is no current in the metals in the absence of electric field.
   Reason: Motion of free electrons in a conductor is random.
5. Assertion: The same amount of current flows through the filament and line wire. But more heat is produced in filament.
   Reason: Filament is made of material having high resistance and high melting point.
6. Assertion: Kirchhoff's junction rule is vaild for only three number of lines meeting at a point in an electrical circuit.
   Reason: When there is a flow of varying current, then there is no accumulation of charge at the junction.
7. Assertion: The wires supplying current to an electric heater are not heated appreciably.
   Reason: Resistance of connecting wires is very high.
8. Assertion: It is advantageous to transmit electric power at high voltage.
   Reason: High voltage means high current.
9. Assertion: Good conductors of heat are also good conductors of electricity and vice-versa.
   Reason: Mainly electrons are responsible for conduction.
10. Assertion (A): The current loop also behaves as a magnetic dipole.
    Reason (R): The magnetic moment of the dipole is dependent on current flowing through it.
11. Assertion (A): When radius of circular loop carrying current is doubled, its magnetic moment becomes four times.
    Reason (R): Magnetic moment depends on the area of the loop.
12. Assertion (A): A charge moving in magnetic field experiences a force.
    Reason (R): Magnetic field is always associated with moving charge which charge which interacts with the external magnetic field.
13. Assertion (A): A charged particle moves perpendicular to a magnetic field. Its K.E. remains constant, but momentum changes.
    Reason (R): Force acts on the charged particle.
14. Assertion (A): Current sensitivity of a galvanometer is the deflection produced in the coil per unit current passed through it.
    Reason (R): Current sensitivity of a galvanometer can be increased by increasing the magnetic field.
15. Assertion (A): Each orbit of an electron in an atom acts like a magnetic field.
    Reason (R): Direction of magnetic dipole is from south to north pole.

MATHEMATICS :

Do given assignment of ch-1,2,3,4,12 on loose sheets.

Ch-1,2,3,4,12

Check if the relation R on the set $A = \{1, 2, 3, 4, 5, 6\}$ defined as $R = \{(x, y) : y \text{ is divisible by } x\}$ is symmetric or transitive.

If A and B are symmetric matrices prove that $AB - BA$ is a skew symmetric matrix.

If $A = \begin{vmatrix} 6 & 0 & 1 \\ 0 & 1 & 2 \\ 0 & 0 & 4 \end{vmatrix}$ then show that $|2A| = 8|A|$.

If $f: \mathbb{R} \to \mathbb{R}$ be defined by $f(x) = \frac{1}{x} \forall\, x \in \mathbb{R}$. Then check whether it is a function or not.

Find the value of $x - y$ if

$$2\begin{bmatrix} 1 & 3 \\ 0 & x \end{bmatrix} + \begin{bmatrix} y & 0 \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} 5 & 6 \\ 1 & 8 \end{bmatrix}$$

Given a non-empty set X define the relation R in $P(X)$ as follows:
For $A, B \in P(X)$, $(A, B) \in R$ iff $A \subset B$. Prove that R is reflexive and transitive but not symmetric.

If $A = \begin{bmatrix} 1 & 3 & 2 \\ 2 & 0 & -1 \\ 1 & 2 & 3 \end{bmatrix}$ then show that $A^3 - 4A^2 - 3A + 11I = 0$.

Evaluate the product AB where-

$A = \begin{bmatrix} 1 & -1 & 0 \\ 2 & 3 & 4 \\ 0 & 1 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 2 & -4 \\ -4 & 2 & -4 \\ 2 & -1 & 5 \end{bmatrix}$

Hence solve the system of linear equations:

$$x - y = 3$$
$$2x + 3y + 4z = 17$$
$$y + 2z = 7$$

Show that the function f in $A = \mathbb{R} - \left\{\frac{2}{3}\right\}$ defined as $f(x) = \frac{4x+3}{6x-4}$ is one-one.

The Palace of Peace and Reconciliation, also known as the Pyramid of peace and Accord is a 62-meterhigh Pyramid in Mursultan, the capital of Kazakhstan that serves as a non-denominational national spiritual centre and an event venue. It is designed by faster and partners with a stained glass apex. It has 25 smaller equilateral triangles as shown in the figure.

(i) If the vertices of one triangle are $(0,0), (3,\sqrt{3})$ *and* $(3,-\sqrt{3})$ then find the area.

[1 Mark]

(ii) Find the area of face of the Pyramid.

[1 Mark]

(iii) Find the length of an altitude of a smaller equilateral triangle. [2 Mark]

If $A^2 - A + I = 0$, then find the inverse of A .

$\begin{vmatrix} x+1 & 3 & 5 \\ 2 & x+2 & 5 \\ 2 & 3 & x+4 \end{vmatrix} = 0$, then find the value of x .

Let $X = \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}$, $A = \begin{bmatrix} 1 & -1 & 2 \\ 2 & 0 & 1 \\ 3 & 2 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 3 \\ 1 \\ 4 \end{bmatrix}$. If AX = B, then find the value of X .

22. $\tan^{-1}(1) + \cos^{-1}\left(-\frac{1}{2}\right) + \sin^{-1}\left(-\frac{1}{2}\right)$

23.Find the domain of $y = \sin^{-1}(x^2 - 4)$

OR,

Find the range of $f(x) = 2\sin^{-1} x + \frac{3\pi}{2}$, where $x \in [-1, 1]$

24.Maximize Z=3x+4y
Subject to the constraints $x+y \leq 4, x \geq 0, y \geq 0$.

OR,

Minimize Z=-3x+4y
Subject to the constraints $x+2y \leq 8, 3x+2y \leq 12, x \geq 0, y \geq 0$.

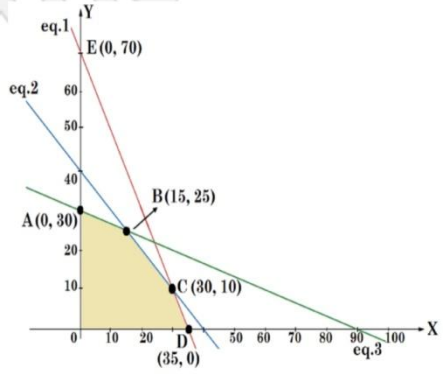
Solve the following Linear Programming Problem using graphical method.

Maximise $Z = 100x + 50y$

Subject to the constraints $3x + y \leq 600$, $x + y \leq 300$, $y \leq x + 200$, $x \geq 0$, $y \geq 0$

Consider the graph shown below.

The feasible region along with corner points for a linear programming problem is shown in the graph. Write all the constraints for the given linear programming problem.



Solve the following Linear Programming Problem graphically.

Minimise $Z = 3x + 5y$

subject to the constraints $x + 2y \geq 10$, $x + y \geq 6$, $3x + y \geq 8$; $x, y \geq 0$.

third runner; keeping in mind that all the speeds are in km/h.

- Do these in Maths practical file (Devjyoti)

1. To demonstrate a function which is not one-one but is onto.
2. To demonstrate a function which is one-one but not onto.
3. To verify that the relation R in the set L of all lines in a plane, defined by R = {(l, m) : l ⊥ m} is symmetric but neither reflexive nor transitive
4. Draw the graph of inverse trigonometric functions.

- **Project(Choose any one) :**

01. Project on history of Mathematicians: It may include history of Indian mathematicians such as Aryabhata, Brahmgupta, Varahamihir, Sridhara, Bhaskaracharya, Ramanujan etc., and history of foreign mathematicians such as Cantor, Pythagoras, Thales, Euclid, Appollonius, Descartes, Fermat, Leibnitz, Euler, Fibonacci, Gauss, Newton, etc.
02. On linear Programming problems related to day-to-day life like collecting data from families of their expenditures and requirements from the factories to maximum out put.
03. Collect data from dieticians, transporters, agents and formulate linear programming problems
04. How we use decoding using Matrices and determination in confidential discussion/ messages.

BIOLOGY :

Complete practical file

SECTION -A

1. Prepare a temporary mount to observe pollen germination.
2. Study the plant population (density and frequency)by quadrat method.
3. To study mitosis in onion root tips.
4. Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc.

SECTION -B

1. Flowers adapted to pollination by different agencies (wind, insects, birds).
2. Pollen germination on stigma through a permanent slide or scanning electron micrograph.
3. Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides.
4. To study Meiosis in onion bud cell or grasshopper testis through permanent slides.
5. T.S. of blastula through permanent slides (Mammalian).

6.1 Study of Mendelian inheritance using seeds of different colour/ size of any plant.

6.2 Study of Mendelian inheritance using seeds of different colours and shapes.

7. Study pedigree charts of genetic traits such as rolling of tongue, blood groups,widow's peak, colour blindness.
8. Study of emasculation amd controlled pollination in garden pea practising bagging amd tagging.
9. To study and identify common disease causing organisms like Ascaris,Entamoeba, Plasmodium,ring worm.
10. Models specimen showing symbiotic association in root nodules of leguminous plants,cuscuta on host, lichens.
11. To study analogous and homologous organs in various plants amd animals using flash card models.

Prepare project report on the assigned topic.

Revise covered chapters for unit test.

Do given assignments on loose sheets.

COMPLETE ASSIGNMENT (UNIT-I)

UNIT: REPRODUCTION

CLASS – XII **SUBJECT – BIOLOGY**

CHAPTERS COVERED

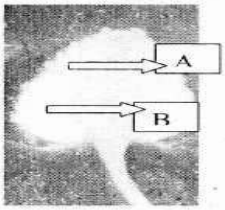
1. REPRODUCTION IN ORGANISMS
2. SEXUAL REPRODUCTION IN FLOWERING PLANTS
3. HUMAN REPRODUCTION
4. REPRODUCTIVE HEALTH

GENERAL INSTRUCTIONS:

1. Draw well labelled diagrams, wherever necessary.
2. The worksheet consists of four sections A, B, C and D. Section-A contains questions of 1 mark each. Section-B contains questions of 2 marks each. Section-C contains questions of 3 marks each. Section-D contains questions of 5 marks.

SECTION-A

1. A diagnostic technique in which a sample of amniotic fluid is taken from the womb of a pregnant woman during the early stages of foetal development. By what name is this method commonly known as? What can be detected by it? **OR** Mention one positive and negative application of amniocentesis.
2. Production of sperms requires low temperature. How is it accomplished in human body? **OR** What is the significance of extra-abdominal testes in a human male?
3. Fill in the blank:
   (a) *Strobilanthus kunthiana* flowers once in_____ years.
   (b) Asexual reproductive structure in *Penicillium* is _____.
4. Will the new organism be formed if syngamy does not occur? Support you answer with examples from both plants & animals.
5. A spermatogonial cell has 30 chromosomes. How many chromosomes will be formed in a) The primary spermatocyte b) A spermatid derived from the cell?
6. (a)How many pollen sacs are present in anther?
   (b) Why are datepalms referred to as dioecious?
7. Mention two characteristics of pollens grains of maize, that suit the type of pollination.
8. Why are some fruits called as false fruits? Look at fruit below and label the parts.



9. What is the hormonal combination of emergency contraceptives?
10. Where are stem cells located in human embryo? And why are they considered as special cells?
11. (a)When do primary oocytes develop in human female? (b)What is the term used for cyclic changes during reproduction in non-primates?

12. What is the sterilization procedure in males known as? Do they prevent gamete formation?

13. What are the two reasons of population explosion?
14. What is seminal plasma? Name one sugar present.
15. How will you justify that placenta acts like endocrine tissue?
16. Name the cells of testes that are stimulated by FSH (follicular stimulating hormone) and the process these cells help in?
17. Even though each pollen grain has 2 male gametes, why are at least 10 pollen grains and not 5 pollen grains are required to fertilize 10 ovules present in a particular carpel?
18. What is the period of periodic abstinence?
19. (a) Name the kind of reproduction in bees in which drones are produced?
    (b) What forms the vital link that ensures continuity of species between organisms of one generation and the next?
20. Why is the human placenta referred to as haemochorial type?
21. An anther with malfunctioning tapetum often fails to produce viable male gametophytes. Give one reason.
22. A bilobed, dithecous anther has 100 microspore mother calls per microsporangium. How many male gametophytes this anther can produce?
23. Indiscriminate diagnostic practices using X-rays etc, should be avoided. Give reason.

SECTION- B

1. Some species of Asteraceae have evolved a special mechanism, to produce seeds without fertilisation. What it is called? How does it lead to polyembryony? Explain its significance.
2. Depict diagrammatically the stages of embryo development in dicots.
3. Draw a diagram of human sperm and label the following parts:
    a) Acrosome
    b) Nucleus
    c) Middle Piece
    d) Axial filament
4. Differentiate between gametogenesis in human males and females on the basis of:
    a) Time of initiation of the process.
    b) Products formed at the end of process.
5. Draw a well labeled diagram of monocot seed to differentiate between the following:
    (a) Hypocotyl & epicotyl (b) Coleoptile and coleorrhiza
6. Name 3 regions of human female fallopian tube? Also give function of each.
7. How does ZIFT differ from GIFT?
8. Differentiate spermiation and spermiogenesis
9. (a) Name the hormone that controls parturition (b) why colostrum recommended by doctors?
10. Complete the statement (with reference to plant reproduction):
7. Describe the process of parturition in humans.

SECTION-D

1. Name the cell that develops into embryo sac. Explain how this cell leads to the formation of embryo sac. Also mention the role played by the various cells of the embryo sac.

BIOLOGY CLASS XII

CHAPTER-5

ASSIGNMENT

NCERT Intext Questions

1. Why siblings sometimes look so similar to each other and sometimes so different?
2. What is the relationship between Genetic variation and sexual reproduction?
3. How our ancestors developed organisms with desirable characteristics?
4. Name the well-known Indian Cow Breed?
5. How do we know that our ancestors knew about the inheritance of characters and where they lacked?
6. Who proposed the laws of Inheritance in living organisms? When? How?
7. Define true breeding line?
8. What were factors according to the Mendel?
9. What is Punnet square? Who developed it?
10. With the help of a Binomial expression $(ax + by)^2$ explain 1:2:1 genotypic ratio obtained by Mendel.
11. Which law of Inheritance is Universal law of inheritance?
12. Why are some alleles dominant and some recessive?
13. Multiple alleles can be found only in population studies. Explain.
14. In a dihybrid cross, the punnet square has 16 sub-squares but 16 genotypes or phenotypes are not present. Why?
15. Who re-discovered the Mendel's laws of inheritance?
16. Who Gave the experimental verification for the chromosomal theory of inheritance?
17. How will you differentiate male fruit flies from the female fruit flies?
18. What was the contribution of Alfred Sturtevant?
19. How are genetic maps useful in whole genome sequencing?
20. What is the principle of polygenic inheritance?
21. What is the principle of pleiotropy?
22. What is the contribution of Henking in sex-determination?
23. Is the number of chromosomes in male and female ae equal in XO type of sex-determination?
24. Why X-chromosome named as Sex-chromosome?
25. What type of sex-determination mechanism is present in *drosophila*?
26. Define parthenogenesis.
27. Name two phenomena which leads to DNA variation?
28. Define Mutagens?
29. What is pedigree analysis? Mention its significance?

30. What are the two categories of a genetic disorder?
31. Give an example of Autosomal dominant genetic disorder in humans.
32. What is the cause of colour blindness in humans?
33. Only 0.4% of the female suffer from colour blindness whereas 8% of the males are sufferer? Give reasons?
34. Mention the cause of Haemophilia.
35. Which genetic disorder was transmitted by Queen Victoria to her progenies?
36. Mention the cause of sickle-cell anaemia?
37. At which position of beta-globin chain of haemoglobin molecule, the Glu acid is substituted by Val.
38. What morphological changes are observed in the mutant haemoglobin molecule?
39. Name the enzyme which converts phenylalanine into tyrosine?
40. Mention the symptoms associated with Phenylketonuria?
41. What is the cause of α thalassemia?
42. What is the cause of β thalassemia?
43. What is the difference between α and β thalassemia?
44. Differentiate between thalassemia and sickle-cell anaemia.
45. How chromosomal disorders are caused?
46. What is aneuploidy? What is polyploidy?
47. Define karyotyping.
48. Mention the cause and symptoms of Down's syndrome?
49. Mention the cause and symptoms of Klinefelter's syndrome?
50. Mention the cause and symptoms of Turner's syndrome?

CHECK YOUR CONCEPTS

1- Mark

1. Why are gametes said to be pure for a character?
2. State difference between a gene and an allele.
3. Write the percentage of F_2 homozygous and heterozygous populations in a typical monohybrid cross.
4. Write the percentage of the pea plants that would be heterozygous tall in the F_2 generation, when tall heterozygous F_1 pea plans are selfed.
5. Which law of Inheritance of Mendel is universally accepted and without any exception?
6. If frequency of parental form is higher than 25% in a dihybrid test cross, what does that indicate about the two genes involved?
7. AaBb was crossed with aabb. What would be the phenotypic ratio of the

M.R. Citi Public School

ENGLISH:

Complete ASL project Files with creative and colourful pages
Link is shared below
https://leverageedu.com/blog/asl-topics/ (topics)
(https://youtu.be/1ciAB38k830) ASL pattern

- Open link and do any ten topics with at least 100-150 words
- 20 marks will be given for (ALS/ ASL)
- During your summer break try to focus on communication skills and help your parents In Domestic task.
- *Do revision of completed chapters.
  * Review and revise Notice, Job Letter, Letter to Editor Report Writing

Do All Answers Of the questions
Make a separate assignment of English.

ASSIGNMENT:

Ch 1 LAST LESSON BY ALPHONSE DOUDET

1- What was Franz expected to be prepared with for school that day?
2-What did Franz notice that was unusual about the school that day?
3- What had been put on the bulletin board?
4-How did Franz's feelings about M Hamel and school change?
5- Why do you think, little Franz was afraid of being scolded?

CHAPTER-2
LOST SPRING By Aneese Jung

Q1-what is Saheb looking for in the garbage dumps? Where is he and where has he come from?
Q2-- What Explanation does the author offer for children not wearing shoes?.
Q3--Is Saheb happy working at the tea stall? Explain.
Q4- What makes the city of Firozabad famous?
Q5. Mention the hazards of working in the glass bangle industry.

Poem-1 My Mother at Sixty Six by Kamala Das.

Q1.Where was the poet driving to? Who was sitting beside her?
2-What did she notice in the World outside?
3- Why is the poet's mother compared to the late winter's moon?
4-What is the poet's familiar ache and why does it return?
5-What was the poet's childhood fear?

Ch.1
The Third Level by Jack Finney

1- What does the third level refer?
2- Would Charlie ever go back to ticket- counter on the third level to buy ticket to Galesburg for himself and his wife?

3- Do you think that the third level was a medium of escape for Charlie? Why?
4- How did Charley reach the Third Level of the grand Central station?
5- What is Charlie's strange experience at Grand Central Station?
6- Why did Charlie run away from the Third Level?

PHYSICAL EDUCATION :

Read these chapters carefully:-

* Chapter 01 Management of sporting events.
* Chapter 02 Children and women in sports.
* Chapter 03 Yoga as Preventive Measure For Lifestyle Disease
* Chapter 04 physical education and sports for cwsn
* Learn & Revise long answer type questions and all mcqs.
* Students need to start working on the Physical Education Practical file.
* Choose a Game of your choice and Write it's history, rules and fundamental skills & Draw a diagram of ground.
* Write a history of athletics & four event's two track events and two fields events from SP publication practical file. Please be neat in your presentation and don't forget to underline important Headings and Topics. This File will be evaluated for your board exam.
* Life skills:- Prepare a beautiful Charts related to Good Habits Yoga asanas and Balance Diet.
* Do physical activities, yoga asanas, pranayam,meditation and sun salutations daily.