



Sanskriti KMV SCHOOL

Session-2023-24

Summer Break Assignments

Grade-XII- Science

Summer holidays are always awaited with lot of planning towards rejuvenation and reunion. Being the responsible individuals, students must expand their vision towards such vacations. Take it as a golden time to repolish, refine and redevelop your life skills.

- Summer Break: -7th June, 2023 to 2nd July 2023.School will reopen on 3rd July 2023
- Student should complete their Holidays Homework and submit it positively post vacation. It should be handed over to the Subject Incharge in a single clear folder labelled properly with student's name, father's name, class and section.
- Prioritize your physical fitness. Follow regular fitness regime and balanced diet.
- Get involved in household chores.
- It is highly recommended to the student to join some Skill Building Programme.
- Spend quality time with the grandparents and reduce the screen time.

Looking forward for a delightful fun filled time ahead!

HAPPY HOLIDAYS!

ENGLISH

Theme for Project Work:

- The Project can be inter-disciplinary in theme. The ideas/issues highlighted in the chapters/ poems/ drama given the prescribed books can also be developed in the form of a project. Students can also take up any relevant and age-appropriate theme.
- Such topics may be taken up that provide students with opportunities for listening and speaking.

Some suggestions are as follows:

a. Interview-Based research:

Example:

Students can choose a topic on which to do their research/ interview, e.g. a student can choose the topic : " Evolving food tastes in my neighbourhood" or "Corona pandemic and the fallout on families." Read the available literature.

- The student then conducts interviews with a few neighbours on the topic. For an interview, with the help of the teacher, student will frame questions based on the preliminary research/background.
- The student will then write an essay/ write up / report etc. up to 1000 words on his/her research and submit it. He / She will then take a viva on the research project. The project can be done in individually or in pairs/ groups.

b. Listen to podcasts/ interviews/radio or TV documentary on a topic and prepare a report countering or agreeing with the speakers. Write an 800 - 1000 words report and submit. Take a viva on the report.

c. Students create their own video/ Audio, after writing a script. Before they decide a format, the following elements can be taken into consideration:

- Theme/topic of the audio / video. Would the child like to pick a current issue or something artistic like theatre?
- What are the elements that need to be part of the script?
- Will the video/audio have an interview with one or more guests?
- Would they prefer to improvise while chatting with guests, or work from a script?
- What would be the duration?
- How would they present the script/report to the teacher, e.g. Can it be in the form of a narrative?

d. Write, direct and present a theatrical production, /One act play

This will be a project which will be done as a team. It will involve planning, preparation and presentation. In short, various language skills will be utilised. There will be researching, discussion, writing the script, auditioning and ultimately producing the play. The project will end with a presentation and subsequently a viva. Teachers will be able to assess the core language skills of the students and help them grow as 21st century critical thinkers.

Project-Portfolio/ Project Report

The **Project-Portfolio/Project Report** is a compilation of the work that the students produce during the process of working on their ALS Project.

The Project-Portfolio may include the following:

- **Cover page, with title of project, school details/details of students.**
- **Statement of purpose/objectives/goals**
- **Certificate of completion under the guidance of the teacher.**
- **Action plan for the completion of assigned tasks.**
- **Materials such as scripts for the theatre/role play, questionnaires for interview, written assignments, essays, survey-reports and other material evidence of learning progress and academic accomplishment.**
- **The 800-1000 words essay/Script/Report.**
- **Student/group reflections.**

- If possible, Photographs that capture the positive learning experiences of the student(s).

- List of resources/bibliography.

The following points must be kept for consideration while assessing the project portfolios:

- **Quality of content of the project**
- **Accuracy of information**
- **Adherence to the specified timeline**
- **Content in respect of (spellings, grammar ,punctuation)**
- **Clarity of thoughts and ideas**
- **Creativity**
- **Contributions by group members**
- **Knowledge and experience gained**

PHYSICS

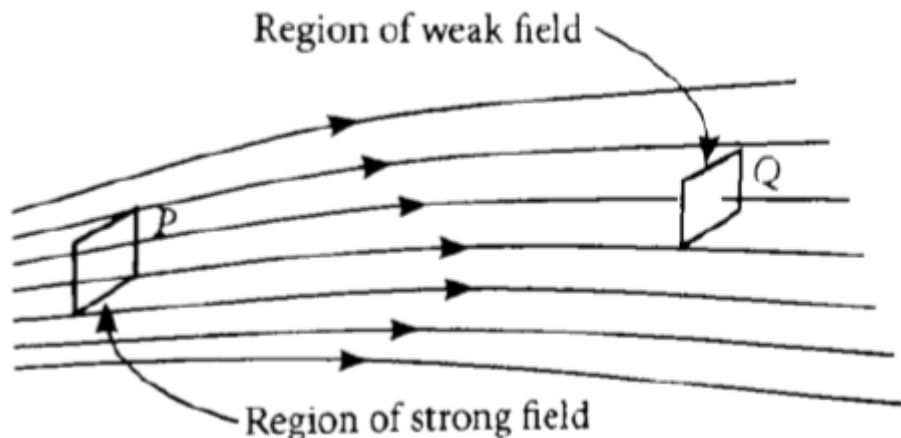
"TELL ME AND
I FORGET.
TEACH ME
AND I
REMEMBER."

ANSWER THE FOLLOWING QUESTIONS:

READ THE PASSAGE AND ANSWER THE QUESTIONS THAT FOLLOW THE PASSAGE:

Case Study based Question

Q.1 Electric field strength is proportional to the density of lines of force i.e., electric field strength at a point is proportional to the number of lines of force cutting a unit area element placed normal to the field at that point. As illustrated in given figure, the electric field at P is stronger than at Q.



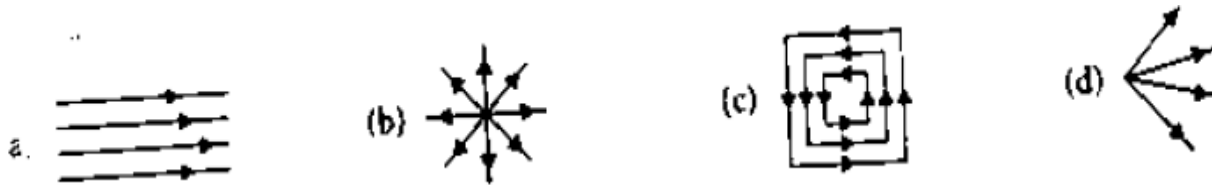
(i) Electric lines of force about a positive point charge are

- (a) radially outwards (b) circular clockwise (c) radically inwards (d) parallel straight lines

(ii) Which of the following is false for electric lines of force?

- (a) They always start from positive charge and terminate on negative charges.
- (b) They are always perpendicular to the surface of a charged conductor.
- (c) They always form closed loops.
- (d) They are parallel and equally spaced in a region of uniform electric field.

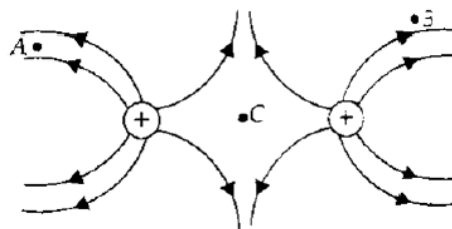
(iii) Which one of the following patterns of electric line of force is not possible in field due to stationary charges?



(iv) Electric field lines are curved

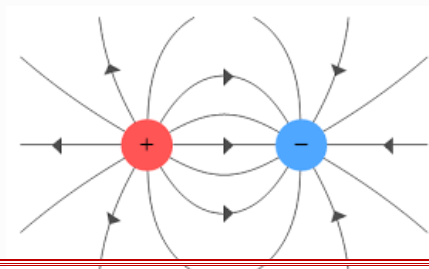
- (a) in the field of a single positive or negative charge
- (b) in the field of two equal and opposite charges.
- (c) In the field of two like charges.
- (d) Both (b) and (c)

(v) The figure below shows the electric field lines due to two positive charges. The magnitudes E_A , E_B and E_C of the electric fields at point A, B and C respectively are related as



- (a) $E_A > E_B > E_C$
- (b) $E_B > E_A > E_C$
- (c) $E_A = E_B > E_C$
- (d) $E_A > E_B = E_C$

Q.2 Electric charge is the physical property of matter that causes it to experience a force when placed in an electromagnetic field. There are two types of charges positive and negative charges. Also, like charges repel each other whereas unlike charges attract each other.



1. Charge on a body which carries 200 excess electrons is:

1. $-3.2 \times 10^{-18} \text{ C}$
2. $3.2 \times 10^{18} \text{ C}$
3. $-3.2 \times 10^{-17} \text{ C}$
4. $3.2 \times 10^{-17} \text{ C}$

1. Charge on a body which carries 10 excess electrons is:

1. $-1.6 \times 10^{-18} \text{ C}$
2. $1.6 \times 10^{-18} \text{ C}$
3. $2.6 \times 10^{-18} \text{ C}$
4. $1.6 \times 10^{-21} \text{ C}$

2. Mass of electron is:

1. $9.1 \times 10^{-31} \text{ kg}$
2. $9.1 \times 10^{-31} \text{ g}$
3. $1.6 \times 10^{-19} \text{ kg}$
4. $1.6 \times 10^{-19} \text{ g}$

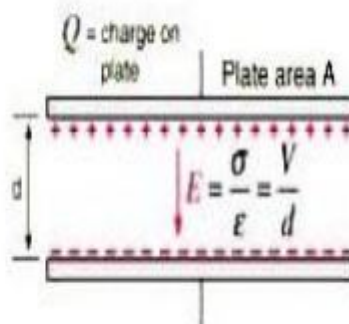
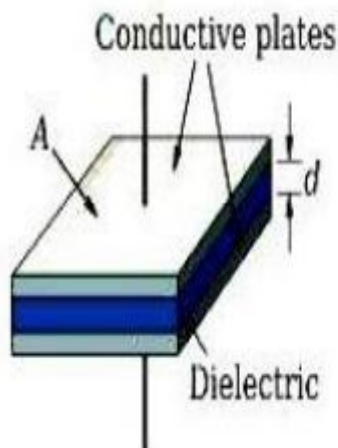
3. A body is positively charged, it implies that:

1. there is only a positive charge in the body
2. there is positive as well as negative charge in the body but the positive charge is more than negative charge
3. there is equally positive and negative charge in the body but the positive charge lies in the outer regions
4. the negative charge is displaced from its position

4. On rubbing, when one body gets positively charged and other negatively charged, the electrons transferred from positively charged body to negatively charged body are:

1. Valence electrons only
2. Electrons of inner shells
3. Both valence electrons and electrons of the inner shell.
4. none of the above

Q.3 Capacitance is the ratio of the change in the electric charge of a system to the corresponding change in its electrical potential. Capacitor consists of two metal plates which are filled with dielectric. When a voltage is applied to these plates an electric current flows charging up one plate with a positive charge with respect to the supply voltage and the other plate with an equal and opposite negative charge. The generalized equation for the charge stored in a capacitor is given by $q=CV$, where C is the capacitance of the capacitor.

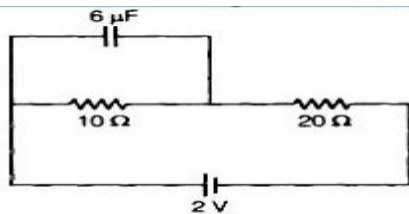


- (i) The capacitance of a capacitor does not depend on
- Area of plates
 - Separation between the plates
 - Applied potential difference
 - Dielectric constant

(ii) A parallel plate air capacitor with no dielectric between the plates is connected to the constant voltage source. How would capacitance and charge change if dielectric of dielectric constant $K=2$ is inserted between the plates. C_0 and Q_0 are the capacitance and charge of the capacitor before the introduction of the dielectric.

- $C=C_0/2$; $Q=2Q_0$
- $C=2C_0$; $Q=Q_0/2$
- $C=C_0/2$; $Q=Q_0/2$
- $C=2C_0$; $Q=2Q_0$

(iii) Find the charge stored in the capacitor in the given circuit



- $3 \mu\text{C}$
- $6 \mu\text{C}$
- $8 \mu\text{C}$
- $4 \mu\text{C}$

(iv) The capacitance is a circuit component that opposes the change in the circuit _____

- current
- voltage
- impedance
- None of the above

(v) Amount of energy stored in a capacitor of $5\mu\text{F}$ when it is charged to a potential of 100 V.

- 2.5 J
- $2.5 \times 10^{-3} \text{ J}$
- $25 \times 10^{-3} \text{ J}$
- $250 \times 10^{-3} \text{ J}$

Q.4 As a thundercloud billows, rising ice crystals collide with falling hailstones. The hail strips electrons from the rising ice and the top of the cloud becomes predominantly positive, while the bottom is mostly negative. Negative charges in the lower cloud repel negative charges on the ground. Electric fields build and a spark ignites a cloud-to-ground lightning flash through a potential difference of hundreds of millions of volts. The lightning bolt featured in Figure dramatically demonstrates that when a charge is placed in an electric field, it will move. The potential to move implies the existence of stored energy. Tremendous amounts of electric energy are “stored” in the electric fields created by the separation of charge between thunderclouds and the ground. This energy is often released in the “explosion” of a lightning bolt.



(i). The insulated spheres of radii R_1 and R_2 having charges Q_1 and Q_2 respectively are connected to each other. There is

- (a) No change in the energy of the system. (b) An increase in the energy of the system.
 (c) Always a decrease in the energy of the system. (d) A decrease in the energy of the system unless $Q_1 R_2 = Q_2 R_1$

(ii) $+2C$ and $+6C$ two charges are repelling each other with a force of 12 N. If each charge is given $-2C$ of charge, then the value of the force will be

- (a) 4N (Attractive) (b) 4N (Repulsive)
 (c) 8N (Repulsive) (d) Zero

(iii) What is the potential energy of the equal positive point charges of $1\mu C$ each held 1 m apart in air (a) $9 \times 10^{-3} J$ (b) $9 \times 10^{-3} eV$
 (c) $2eV/m$ (d) Zero

(iv) Two protons A and B are placed in space between plates of a parallel plate capacitor charged upto V volts (See fig.) Forces on protons are F_A and F_B , then

- (a) $F_A > F_B$ (b) $< F_B$
 (c) $F_A = F_B$ (d) Nothing can be said

(v) If a unit positive charge is taken from one point to another over an equipotential surface, then

- (a) Work is done on the charge (b) Work is done by the charge
 (c) Work done is constant (d) No work is done

Q.5 The concept of electric field was first introduced by Faraday and is now among the central concepts in physics. The effect of electric charge q on the surrounding is called **electric field** due to charge q inspace around it. The electric field intensity at a point in an electric field is the force experienced by a unit positive test charge placed at that point, provided the presence of this charge does not disturb the field. If a test charge q_0 (Positive and negligible small) placed at a point in electric field experience a force F, then electric intensity at that point will be

$$E = F/q_0$$

Due to quantization, test charge q_0 cannot be less than e . however, on macroscopic scale, this is good as taking limit $q_0 \rightarrow 0$

Electric intensity is a vector quantity, its direction is same as that of the force F is experienced by a unit positive charge. The direction of electric intensity is the direction in which the unit positive charge (or q_0) begins to move, if it is free to do so.

(i) At a certain distance from a point charge, the electric field is 600 Vm^{-1} and the potential is 2400V.

The distance is:

1. To determine resistivity of two / three wires by plotting a graph for potential difference versus current.
2. To find resistance of a given wire / standard resistor using metre bridge.
3. To verify the laws of combination (series) of resistances using a metre bridge.
4. To verify the laws of combination (parallel) of resistances using a metre bridge.
5. To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.
6. To convert the given galvanometer (of known resistance and figure of merit) into a voltmeter of desired range and to verify the same.
7. To convert the given galvanometer (of known resistance and figure of merit) into an ammeter of desired range and to verify the same.

LIST OF THE PHYSICS INVESTIGATORY PROJECT

Guidelines for the project work:

- ❖ Project work should be based on individual research.
- ❖ Project should be working model along with its video.
- ❖ Prepare a synopsis of working model in 500 words.

S. No.	Medical/Non-Medical	Topic (Project Name)
1	AMISHA SIDHANA	To study various factors on which the internal resistance/EMF of a cell depends.
2	BHAVYA SHARMA	To study the variations in current flowing in a circuit containing an LDR because of a variation in (a) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). (b) the distance of an incandescent lamp (of fixed power) used to 'illuminate' the LDR
3	CHAHAT SAINI	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.
4	GAGANDEEP KAUR	To study the earth's magnetic field using a tangent galvanometer..
5	GURLEEN KAUR	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.
6	HARLEEN KAUR	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.
7	HARLEEN KAUR	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equi convex lens (made from a glass of a known refractive index) and an adjustable object needle.
8	ISHNOOR KAUR	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.
9	JAGDEEP KAUR	To design an appropriate logic gate combination for a given truth table.
10	JASKAMAL	Application based step down transformer.
11	JASMEEN	Application based Step up transformer.
12	JEEVANSR RANDEV	Application Base half wave rectifier.
13	KANIKA KAUSHAL	Application based full wave rectifier.
14	KHUSHREET KAUR	Application based AC Generator.
15	KOMALDEEP KAUR	To study various factors on which the internal resistance/EMF of a cell depends.
16	KRITIKA SHARMA	To study the variations in current flowing in a circuit containing an LDR because of a variation in (a) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). (b) the distance of an incandescent lamp (of fixed power) used to 'illuminate' the LDR

17	MUSKAN GUPTA	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.
18	NAVROOP KAUR	To study the earth's magnetic field using a tangent galvanometer..
19	NISHTHA KHEPAR	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.
20	PALAK	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.
21	PRABHJOT BHATTI	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equi convex lens (made from a glass of a known refractive index) and an adjustable object needle.
22	RABJOT KAUR	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.
23	REETI SHARMA	To design an appropriate logic gate combination for a given truth table.
24	RITIKA	Application based step down transformer.
25	RUHANI	Application based Step up transformer.
26	SANIYA MALIK	Application Base half wave rectifier.
27	SANJANA BADHAN	Application based full wave rectifier.
28	SHIVANKAR	Application based AC Generator.
29	SHUBHLEEN SAINI	To study various factors on which the internal resistance/EMF of a cell depends.
30	SRISHTI	To study the variations in current flowing in a circuit containing an LDR because of a variation in (a) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). (b) the distance of an incandescent lamp (of fixed power) used to 'illuminate' the LDR
31	SUKHVIR KAUR	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.
32	TAMMANA	To study the earth's magnetic field using a tangent galvanometer.
33	TANUREET KAUR	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.
34	TANUREET SAHA	Application based full wave rectifier.
35	VAANI KAPOOR	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.
36	VRITI	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equi convex lens (made from a glass of a known refractive index) and an adjustable object needle.
37	YAMINI	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.
38	YASHVI SHARMA	To design an appropriate logic gate combination for a given truth table.
39	YATIN BADHAN	Application based step down transformer.
40	YUVRAJ	Application based Step up transformer.
NON MEDICAL		

41	AKSHAT CHABRA	Application Base half wave rectifier.
42	ANEESH CHAWLA	Application based full wave rectifier.
43	ASHUTOSH CHOUBEY	Application based AC Generator.
44	BALRAJ SINGH	To study various factors on which the internal resistance/EMF of a cell depends.
45	CHETAN ARORA	To study the variations in current flowing in a circuit containing an LDR because of a variation in (a) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). (b) the distance of an incandescent lamp (of fixed power) used to 'illuminate' the LDR
46	DEVANSH BARMOTA	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.
47	DIVYANSH SHARMA	To study the earth's magnetic field using a tangent galvanometer.
48	GEETANSHI	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.
49	GURJAP 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.
50	HARKAMAL	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equi convex lens (made from a glass of a known refractive index) and an adjustable object needle.
51	HARSHIT PAUL	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.
52	JAGRAJ SINGH	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.
53	JANVI	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.
54	JAPLEEN	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.
55	JASHAN BHATIA	To study the earth's magnetic field using a tangent galvanometer.
56	JASHANPREET SINGH	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.
57	JASIKA	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.
58	JASKIRAT	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equi convex lens (made from a glass of a known refractive index) and an adjustable object needle.
59	JIYA RANI	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.

60	KANCHI GUPTA	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.
61	KARTIK DUA	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.
62	KARTIK PAHWA	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.
63	MANRAJ SINGH	To study the variations in current flowing in a circuit containing an LDR because of a variation in (a) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). (b) the distance of an incandescent lamp (of fixed power) used to 'illuminate' the LDR
64	NIHARIKA	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.
65	NOOR RATTAN	To study the earth's magnetic field using a tangent galvanometer.
66	PAWANI KAKKAR	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.
67	PIYUSH	Application based full wave rectifier.
68	PREMPREET 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.
69	RACHIT	To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equi convex lens (made from a glass of a known refractive index) and an adjustable object needle.
70	SALONI	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.
71	SANCHIT JOSHI	To design an appropriate logic gate combination for a given truth table.
72	SEHAJVIR KAUR	Application based step down transformer.
73	SHUBHAM PANDEY	Application based Step up transformer.
74	SORYA	Application Base half wave rectifier.
75	SUMIT PRASAD	Application based full wave rectifier.
76	TANISHA	Application based AC Generator.
77	VARUNDEEP	To study various factors on which the internal resistance/EMF of a cell depends.
78	VYOMKESH GUPTA	To study various factors on which the internal resistance/EMF of a cell depends.
79	YASHIKA	To study the variations in current flowing in a circuit containing an LDR because of a variation in (a) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). (b) the distance of an incandescent lamp (of fixed power) used to 'illuminate' the LDR

CHEMISTRY

(A) ANSWER THE FOLLOWING QUESTIONS:(Complete your work on loose sheets)

1 Define the following modes of expressing the concentration of a solution. Which of these modes are independent of temperature and why?

- | | |
|-------------------------------|------------------------|
| (i) w/w (mass percentage) | (ii) x (mole fraction) |
| (iii) V/V (volume percentage) | (iv) M (Molarity) |

2. Raoult's law explain how the total vapour pressure over the solution is related to mole fraction of components in the following solutions.

- | | |
|--|---|
| (i) CHCl_3 (l) and CH_2Cl_2 (l) | (ii) NaCl (s) and H_2O (l) |
|--|---|

3. Explain the terms ideal and non-ideal solutions in the light of forces of interactions operating between molecules in liquid solutions

4. Why is it not possible to obtain pure ethanol by fractional distillation? What general name is given to binary mixtures which show deviation from Raoult's law and whose components cannot be separated by fractional distillation. How many types of such mixtures are there?

5. When kept in water, raisin swells in size. Name and explain the phenomenon involved with the help of a diagram. Give three applications of the phenomenon.

6. Discuss biological and industrial importance of osmosis.

7. How can you remove the hard calcium carbonate layer of the egg without damaging its semipermeable membrane? Can this egg be inserted into a bottle with a narrow neck without distorting its shape? Explain the process involved.

8. Why is the mass determined by measuring a colligative property in case of some solutes abnormal? Discuss it with the help of Van't Hoff factor.

9. Under what condition molality and molarity of a solution are identical. Explain with suitable reason.

10. Addition of HgI_2 to KI (aq.) shows decrease in vapour pressure. Why?

(B) Complete the Practical file as instructions given in class .The pdf of the practical will be sent in the group .

Topics for Investigatory projects

Prepare an investigatory project on the topics given below. This project weighs 4 marks in your final chemistry practical. The investigatory project must include the following pages:

1. Heading of the project, your name, class.
2. Certificate
3. Acknowledgement
4. Index
5. Introduction
6. Matter of the project as per given topics
7. Relevant pictures
8. Conclusions
9. Bibliography

S.No.	Students name	Name of the Project
	NONMEDICAL	
1.	Akshat Chhabra	Chemicals in food
2.	Aneesh Chawla	Biomolecules
3.	Ashutosh	Study of Drugs and medicines
4.	Balraj	Applications of colloids
5.	Chetan	Chemistry in everyday life
6.	Devansh	Study of different types of batteries
7.	Divyansh Sharma	A comparative study on soaps and detergents
8.	Geetanshi	Study of pesticides in food
9.	Gurjap singh	Chemical kinetics
10.	Harkamal Singh	Use of organic compounds in daily life.
11.	Harshit Paul	Applications of co-ordination compounds.
12.	Jagraj Singh Mokha	Study of Proteins
13.	Janvi	Extraction of metals
14.	Japleen Kaur	Study of Antibiotics
15.	Jashan Bhatia	Chemistry of polymers
16.	Jashanpreet Singh	Study of role of drugs

17.	Jessika Arora	Study of different types of antacids
18.	Jaskirat Singh	To study the effect of corrosion on metals.(Reference to iron)
19.	Jiya Rani	Electrochemistry
20.	Kanchi Gupta	Industrial use of catalyst and enzymes
21.	Kartik Dua	Chemicals in food
22.	Kartik Pahwa	Biomolecules
23.	Manraj Singh	Study of Drugs and medicines
24.	NIHARIKA	Applications of colloids
25.	NOOR RATTAN	Chemistry in everyday life
26.	PAWANI KAKKAR	Study of different types of batteries
27.	PIYUSH	A comparative study on soaps and detergents
28.	PREMPREET SINGH	Industrial use of catalyst and enzyme
29.	RACHIT	Chemical kinetics
30.	SALONI	Use of organic compounds in daily life.
31.	SANCHIT JOSHI	Applications of co-ordination compounds.
32.	SEHAJVIR KAUR	Study of Proteins
33.	SHUBHAM PANDEY	Extraction of metals
34.	SORYA	Study of Antibiotics
35.	SUMIT PRASAD	Chemistry of polymers
36.	TANISHA	Study of role of drugs
37.	VARUNDEEP	Study of different types of antacids
38.	VYOMKESH GUPTA	To study the effect of corrosion on metals.(Reference to iron)
39.	YASHIKA	Electrochemistry
	MEDICAL GROUP	
40.	AMISHA SIDHANA	Industrial use of catalyst and enzymes
41.	BHAVYA SHARMA	Chemistry in everyday life
42.	CHAHAT SAINI	Industrial use of halo alkanes and haloarenes
43.	GAGANDEEP KAUR	A comparative study on soaps and detergents
44.	GURLEEN KAUR	Study of pesticides in food
45.	HARLEEN KAUR	Chemical kinetics
46.	HARLEEN KAUR	Use of organic compounds in daily life.

47.	ISHNOOR KAUR	Applications of co-ordination compounds.
48.	JAGDEEP KAUR	Study of Proteins
49.	JASKAMAL	Extraction of metals
50.	JASMEEN	Study of Antibiotics
51.	JEEVANSR RANDEV	Chemistry of polymers
52.	KANIKA KAUSHAL	Applications of co-ordination compounds.
53	KHUSHREET KAUR	Electrochemistry
54.	KOMALDEEP KAUR	Industrial use of catalyst and enzymes
55.	KRIKA SHARMA	Chemistry in everyday life
56	MUSKAN GUPTA	Chemicals in food
57	NAVROOP KAUR	Study of pesticides in food
58	NISHTHA KHEPAR	To study the rate of evaporation of liquids(reference to surface area ,temperature and nature)
59	PALAK	To determine the foaming capacity of soaps.
60	PRABHJOT BHATTI	Study of pesticides in food
61	RABJOT KAUR	To study the adulterations of food(How to detect adulterants in food items like pulses, ghee, black pepper, red chili powder, turmeric,sugar, honey etc.)
62	REETI SHARMA	To study corrosion of metals. [With special reference to iron
63	RITIKA	Study of different types of antacids
64	RUHANI	Industrial use of halo alkanes and haloarenes
65	SANIYA MALIK	Applications of co-ordination compounds
66	SANJANA BADHAN	Applications of colloids
67	SHIVANKAR	To study different commercial antacids. [With the help of internet find different types of antacid and find which one is best]
68	SHUBHLEEN SAINI	Brief description on different types of food preservatives.
69	SRISHTI	Comparative study of different types of batteries.
70	SUKHVIR KAUR	Comparative study of the rate of fermentation of different material.[With special reference to wheat flour, gram flour, potato juice, carrot juice, etc.]
71	TAMMANA	Industrial use of catalyst and enzymes
72	TANUREET KAUR	To study the rate of evaporation of liquids(reference to surface area ,temperature and nature

73	TANUREET SAHA	To prepare soybean milk and compare its properties with natural milk
74	VAANI KAPOOR	To study the adulterations of food(How to detect adulterants in food items like pulses, ghee, black pepper, red chili powder, turmeric,sugar, honey etc.)
75	VRITI	To study different types of Polymers.[Collect different samples of polymers used in daily life and classify them, paste them in your file,give uses of those polymers]
76	YAMINI	To study the role of drugs and medicines in our life.
77	YASHVI SHARMA	Comparative study of different samples of tea and compare the caffeine content in it.
78	YATIN BADHAN	A comparative study on soaps and detergents
79	YUVRAJ	Industrial use of catalyst and enzymes

BIOLOGY

NOTE – Complete the following experiments in the lab manual

SECTION – A

- 1 Prepare a temporary mount to observe pollen germination.
- 2 Study of plant population density by quadrant method.
- 3 Study of plant population frequency by quadrant method.
- 4 Study of mitosis in onion root tip.
- 5 To separate DNA from living plant tissues.

SECTION – B

- 1 Study of flowers adapted to pollination by different agencies.
- 2 Study of pollen germination on stigma through a permanent slides.
- 3 Study and identify stages of gametes development i.e. T S of testis and T S of ovary.
- 4 Study meiosis in onion bud or grasshopper testis through permanent slide.
- 5 Study T S of blastula
- 6 Study Mendelian inheritance using seeds of different plants.
- 7 Prepare pedigree charts of genetic traits as per the lab manual.
- 8 Exercise on controlled pollination – Emasculation, tagging and bagging.
- 9 To identify the common disease causing organisms through permanent slides.

10 To study model specimens showing symbiotic association in root nodules of legumes, cuscuta and lichens.

11 To study homology and analogy with the help of preserved specimens.

PROJECT

Complete the project allotted to you and submit your first copy of the project file.

MATHS

Instruction: Do the following questions on loose sheets.

1. Find the inverse of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 5 & 7 \\ -2 & -4 & -5 \end{bmatrix}$

2. For the given matrix $A = \begin{bmatrix} -1 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$. Prove that $AA^{-1} = I$

3. Let $A = \begin{bmatrix} 2 & -1 \\ 3 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 5 & 2 \\ 7 & 4 \end{bmatrix}$, $C = \begin{bmatrix} 2 & 5 \\ 7 & 8 \end{bmatrix}$ find a matrix D such that $CD - AB = O$.

4. Find the matrix A such that $\begin{bmatrix} 2 & -1 \\ 1 & 0 \\ -3 & 4 \end{bmatrix} A = \begin{bmatrix} -1 & -8 \\ 1 & -2 \\ 9 & 22 \end{bmatrix}$

5. If $A = \begin{bmatrix} 2 & 0 & 1 \\ 2 & 1 & 3 \\ 1 & -1 & 0 \end{bmatrix}$ find $A^2 - 5A + 4I$ and hence find a matrix X such that $A^2 - 5A + 4I + X = O$

6. A square matrix A is said to be skew symmetric, if.....

7. If the matrix $A = \begin{bmatrix} 0 & a & -3 \\ 2 & 0 & -1 \\ b & 1 & 0 \end{bmatrix}$ is skew symmetric, find the values of a and b.

8. For a 2×2 matrix, $A = (a_{ij})$ whose elements are given by $a_{ij} = \frac{i}{j}$ write the value of a_{12}

9. If a matrix has 5 elements, then write all the possible orders it can have.

10. Prove that $\begin{vmatrix} -a^2 & ab & ac \\ ba & -b^2 & bc \\ ca & cb & -c^2 \end{vmatrix} = 4a^2b^2c^2$

11. Prove that $\begin{vmatrix} x-2 & 2x-3 & 3x-4 \\ x-4 & 2x-9 & 3x-16 \\ x-8 & 2x-27 & 3x-64 \end{vmatrix} = 0$

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

12. Using matrices, solve the system of equation: $2x + 3y + 2z = 2$

$$3x - 3y - 4z = 11$$

13. Use product $\begin{bmatrix} 1 & -1 & 2 \\ 0 & 2 & -3 \\ 3 & -2 & 4 \end{bmatrix} \begin{bmatrix} -2 & 0 & 1 \\ 9 & 2 & -3 \\ 6 & 1 & -2 \end{bmatrix}$ to solve the system of equations

$$x + 3z = 9, -x + 2y - 2z = 4, 2x - 3y + 4z = -3$$

14. If A is a square matrix of order 3 and $|A| = 5$, then find the value of $|2A|$

15. If A is skew symmetric matrix of order 3, then find the value of $|A|$

16. If A is 3×3 matrix such that $|A| = 8$, then find $|3A|$

17. For what value of x is $A = \begin{bmatrix} 2(x+1) & 2x \\ x & x-2 \end{bmatrix}$ a singular matrix?

18. Find $(AB)^{-1}$ if $A = \begin{bmatrix} 1 & 0 \\ -4 & 2 \end{bmatrix}$ and $B^{-1} = \begin{bmatrix} 3 & 1 \\ 5 & 2 \end{bmatrix}$

19. Given $A = \begin{bmatrix} 2 & -3 \\ -4 & 7 \end{bmatrix}$, compute A^{-1} and show that $2A^{-1} = 9I - A$

20. If $A = \begin{bmatrix} 1 & -2 & 3 \\ 0 & -1 & 4 \\ -2 & 2 & 1 \end{bmatrix}$, find $(A')^{-1}$

AIL Activity: Do the comparison study of literacy rate of any five cities of Punjab and Orissa through Mean, Median and Mode from last five years. (Do this activity on loose sheets)

PAINTING

You have to go for research and creative art skill and make 3 compositions and 2 still life. Students your research should be on the figurative of nonfigurative work which helps you to make and build your own art style.

COMPUTERS

PART A

1. With help of functions make a menu driven program using TEXT FILE.
perform following tasks :

```
1. for View all records  
2. for insert a new record
```

e.g.

```
Enter you choice:2  
Enter number of records you want to add2  
Enter Name:Amar  
Enter Department:computer  
Enter Salary:45000  
Enter Name:Harwinder  
Enter Department:commerce  
Enter Salary:45000  
Do you want to continue.....y
```

2. Make a Quiz game on Orissa using Python. (Minimum 20 questions should be there)

PART B) PROJECT WORK

Create a well defined layout of the project assigned below and explain the working of the project with help of a flowchart.

Topics :

- 1) Bank management
- 2) Hotel management
- 3) School management
- 4) Online movie ticket booking
- 5) Online shopping
- 6) Library management etc.

APPLIED MATHS

PRACTICE QUESTIONS

Q1.

If $3A - B = \begin{bmatrix} 5 & 0 \\ 1 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 3 \\ 2 & 5 \end{bmatrix}$ then find the value of matrix A.

Q2. Find the value of $x - y$ if

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

Q3. Find the value of 'x'

$$\begin{bmatrix} 2x & 3 \end{bmatrix} \begin{bmatrix} 1 & 2 \\ -3 & 0 \end{bmatrix} \begin{bmatrix} x \\ 3 \end{bmatrix} = 0$$

Q4.

If $2 \begin{bmatrix} 3 & 4 \\ 5 & x \end{bmatrix} + \begin{bmatrix} 1 & y \\ 0 & 1 \end{bmatrix} = \begin{bmatrix} 7 & 0 \\ 10 & 5 \end{bmatrix}$, then find $(x - y)$

Q5.

Find value of $2a + 3b - c$, if $A = \begin{bmatrix} 0 & -1 & 28 \\ a - 8 & 0 & 3b \\ -c + 2 & 2 & 0 \end{bmatrix}$ is a skew-symmetric matrix

Q6.

There are two real value(s) of x , for which the value of the determinant $\Delta = \begin{vmatrix} 1 & -2 & 5 \\ 2 & x & -1 \\ 0 & 4 & 2x \end{vmatrix}$ is 86.

Find the value(s) of x

Q7.

Two badminton teams A and B are staying in the same hotel. Team A has 2 male and 3 female players accompanied by 1 coach. Team B comprises of 1 male, 2 female players and 2 coaches. The daily diet requirement (calories and protein) for each person is as given below:

	Calories	Protein
Male player	2500	65 g
Female player	1900	50 g
Coach	2000	54 g

Use matrix algebra to calculate the total diet requirement of calories and protein for each team.

Q8. Find the derivative of the given function

$$f(x) = \frac{x^4}{4} - 2x^3 + \frac{11x^2}{2} - 6x,$$

Q9.

Find the equations of the tangent and the normal to the curve $16x^2 + 9y^2 = 145$ at the point (x_1, y_1) , where $x_1 = 2$ and $y_1 > 0$.

Q10.

The equation of tangent at $(2, 3)$ on the curve $y^2 = ax^3 + b$ is $y = 4x - 5$. Find the values of a and b .

Q11.

Find the points on the curve $x^2 + y^2 - 2x - 3 = 0$ at which tangent is parallel to X-axis.

Q12.

Find the equation of tangent to the curve $y = x^4 - 6x^3 + 13x^2 - 10x + 5$ at point $x = 1, y = 0$.

Q13.

Find $|AB|$, if $A = \begin{bmatrix} 0 & -1 \\ 0 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 5 \\ 0 & 0 \end{bmatrix}$.

Q14.

Write the value of the determinant

$$\begin{vmatrix} p & p+1 \\ p-1 & p \end{vmatrix}$$

Q15.

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

Q16.

If $\begin{vmatrix} x+1 & x-1 \\ x-3 & x+2 \end{vmatrix} = \begin{vmatrix} 4 & -1 \\ 1 & 3 \end{vmatrix}$, then write the value of x .

Q17.

For what value of x , $A = \begin{bmatrix} 2(x+1) & 2x \\ x & x-2 \end{bmatrix}$ is a singular matrix?

Q18.

Write the value of $\Delta = \begin{vmatrix} x+y & y+z & z+x \\ z & x & y \\ -3 & -3 & -3 \end{vmatrix}$

Q19.

Using properties of determinants, show that

$$\begin{vmatrix} 3a & -a+b & -a+c \\ -b+a & 3b & -b+c \\ -c+a & -c+b & 3c \end{vmatrix} = 3(a+b+c)(ab+bc+ca)$$

Q20.

Using properties of determinants, prove the following

$$\begin{vmatrix} a+b+c & -c & -b \\ -c & a+b+c & -a \\ -b & -a & a+b+c \end{vmatrix} = 2(a+b)(b+c)(c+a)$$

Q21.

Using properties of determinants, prove that

$$\begin{vmatrix} a^2+2a & 2a+1 & 1 \\ 2a+1 & a+2 & 1 \\ 3 & 3 & 1 \end{vmatrix} = (a-1)^3$$

Q22. Prove that

$$\begin{vmatrix} 5a & -2a+b & -2a+c \\ -2b+a & 5b & -2b+c \\ -2c+a & -2c+b & 5c \end{vmatrix} = 12(a+b+c)(ab+bc+ca).$$

Q23. Using properties of determinants, prove that

$$\begin{vmatrix} x & x+y & x+2y \\ x+2y & x & x+y \\ x+y & x+2y & x \end{vmatrix} = 9y^2(x+y).$$

Q24. Prove:-

$$\begin{vmatrix} a^2 & bc & ac+c^2 \\ a^2+ab & b^2 & ac \\ ab & b^2+bc & c^2 \end{vmatrix} = 4a^2b^2c^2$$

Q25.

Using properties of determinants, solve the following for x.

$$\begin{vmatrix} a+x & a-x & a-x \\ a-x & a+x & a-x \\ a-x & a-x & a+x \end{vmatrix} = 0$$

Q26.

Using properties of determinants, prove that

$$\begin{vmatrix} (a+1)(a+2) & a+2 & 1 \\ (a+2)(a+3) & a+3 & 1 \\ (a+3)(a+4) & a+4 & 1 \end{vmatrix} = 2$$

Q27.

Using properties of determinants, prove that

$$\begin{vmatrix} b+c & c+a & a+b \\ q+r & r+p & p+q \\ y+z & z+x & x+y \end{vmatrix} = 2 \begin{vmatrix} a & b & c \\ p & q & r \\ x & y & z \end{vmatrix}$$

Q28. Using properties of determinants , prove that

$$\begin{vmatrix} x+y & x & x \\ 5x+4y & 4x & 2x \\ 10x+8y & 8x & 3x \end{vmatrix} = x^3$$

Q29. Prove:

$$\begin{vmatrix} b+c & a & a \\ b & c+a & b \\ c & c & a+b \end{vmatrix} = 4abc$$

Q30 . Find the derivative of

$$y = \frac{x-7}{x^2-5x+6}$$

AIL ACTIVITY

Prepare a project file on the topic ‘ Correlation between temperature and pressure’ of any two cities of Punjab and Odisha each for the month of May 2023.