Summer Holiday Homework

ACADEMIC SESSION

2024-25

CARMEL CONVENT SCHOOL,JAMMU

HolidayHomework(2024-25)
CLASS XII(SCIENCE STREAM)

English

Assignment No.1. (Project Work)

SUGGESTIONS FOR PROJECT WORK:

The Project is inter-disciplinary in theme. The students must take any one of the techniques Given below as a methodology of project work

Interview-Based Research:

Students can choose a topic and conduct interviews with a few neighbors/ friends/acquaintances etc..on the topic. For that the student will frame questions based on the preliminary Research/background and then he will then write an essay/ write up / report etc. up to 1000 words On his/her research and submit it.

a) Audio/ Video based Researc
b) Students can 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 submitThe ideas/issues highlighted in the chapters/
drama given in the prescribed books can be developed in the form of a project with the suggestive sub topics given below:_

1.RATTRAP-THE STUDY OF CRIME AND Criminals.
a)Circumstances that lead to crime.
b)Case Study
c)Corrective Measures
d)Impact of Criminal Behaviors on Society
e)How to bring them into mainstream.
f)Attitude of society towards criminals.
2. INDIGO
a)Condition of Farmers in Champaran -Then and Now
b) Farm Bill Agitation
c) Gandhi's Contribution
d)Other Political Leaders who brought about a change in the lives of farmers.

e)Farmer Protection Laws in Indigo
f)Condition of Farmers in India vis-à-vis world.
g)Future Prospects-Growth-Suggestions

3.THE ENEMY- WAR AND PEACE
To maintain peace, we need to go to war.
Impact of War on Society
Predicament of War
Escapism and Depression due to war.
Stance of the Political Lobby and Civilians.

- Assignments No.2
- Learn all the lessons done in the class..

Physics

Prepare project report as per the guidelines
Your project should have the following elements:

Synopsis - This is a summary of your idea and should include the purpose of the experiment, procedure used, data, and conclusion

• Research paper - A research paper should be prepared and must be available along with the project data book with relevant written material. A research paper helps organize data as well as thoughts. A good paper includes the following sections:

Title page - Centre the project title, and put your name, address, and school

Aim / Objective - The introduction sets the stage for your report. The aim includes your hypothesis, an explanation of what prompted your research and what you hoped to achieve.

Scientific Principle Involved - In this section describe the principal involved.

Material Used - List all the items used here this will help you in working out the final cost.

Method - This section describes how you did the study. Describe in detail the methodology used to collect your data or make your observations. Your report should be detailed enough for someone to be able to repeat the experiment. Include photographs or drawings of self-designed equipment. The research work conducted by you may have taken more than a year. In such case, include this year's work only.

Discussion - This is the essence of your paper. The results and conclusions should flow smoothly and logically from your data. Be thorough. This should let the reader know exactly what you did, compare your results with theoretical values, published data and expected results. Include a section of possible errors. How did the data vary between repeated observations of a similar

event? How were your results affected by uncontrolled events? What would you do differently if you were to repeat this project? What other experiments should be conducted?

Conclusion - This section describes the findings and conclusion of the project. Briefly summarize your results. Be specific, do not generalize. Never introduce anything in the conclusion that has not been discussed.

Further scope of project - This is a step further; here you describe the future scope of your experiment.

Acknowledgement - You should always give credit to those who assisted you; they may be individuals, educational or research institutions

Reference list - Your reference list should include any documentation that is not your own (i.e. books, journal articles, include specific internet url's).

For help you can click on the following link

https://physics-vision.blogspot.com/2023/10/investigatory-projects-class-xii-physics.html

Investigatory Projects

1. To study various factors on which the internal resistance/EMF of a cell depends.

2. 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)

(b) the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.

3. To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an

adjustable object needle.

4. 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.

5. 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.

6. 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.

7. 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.

8. To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer

ASSIGNMENT

Q.1 Does the Force Between Two Point Charges Change if the Dielectric

Constant of the Medium in Which they are Kept is Increased?

Q.2 A Charged Rod P Attracts a Rod R Whereas P Repels another Charged Rod

Q. What Type of Force is Developed Between Q and R ?

Q.3A Free Proton and a Free Electron are Placed in a Uniform Field. Which of the Two Experiences Greater Force and Greater Acceleration?

Q.4 No Two Electric Lines of Force Can Intersect Each Other. Why?

Q.5 An Electric Dipole When Held at 30o with Respect to a Uniform Electric Field of 104N/CExperiences a Torque of 9x10-26Nm. Calculate Dipole Moment of the Dipole?

Q.6 Explain the Meaning of the Statement 'Electric Charge of a Body is Quantized'.

Q.7 Why Can One Ignore the Quantization of Electric Charge When Dealing With Macroscopic I.e., Large Scale Charge?

Q.8 An Electric Field Line is a Continuous Curve. That is, a Field Line Cannot Have Sudden Breaks. Why Not?

Q.9 Explain Why Two Field Lines Never Cross Each Other at Any Point?

Q.10 What is the Net Flux of the Uniform Electric Field of Exercise 1.15 through a Cube of Side 20cm Oriented So That Its Faces Are Parallel to the Coordinate Planes?

Q.11A Particle of Mass m and Charge q is Released from Rest in a Uniform Electric Field of Intensity E. Calculate the Kinetic Energy Attained by this Particle after Moving a Distance Between the Plates.

Q.12 What is the Force Between Two Small Charged Spheres Having Charges of 2x10-7C and 3x10-7C placed 30cm Apart in Air?

Q.13A Point Charge of 2.0C is Kept at the Center of a Cubic Gaussian Surface of Edge Length 9cm. What is the Net Electric Flux through the Surface?

Q.14 An Infinite Line Charge Produces a Field of Magnitude 9x104N/C at a Distance of 2cm. Calculate the Linear Charge Density.

Q.15 What Is an Equi-Potential Surface? Show That the Electric Field Is Always Directed Perpendicular to an Equi-Potential Surface.

Q.16 Why does the electric field inside a dielectric decrease when it is placed in an external electric field?

Q.17. What is the work done in moving a 2C point change from corner A to corner B of a square ABCD when a 10C charge exists at the centre of the square? Q.18 The distance of the field point on the equatorial plane of a small electric dipole is halved. By what factors will the electric field due to the dipole

changes?

Q.19The Plates of a charged capacitor are connected by a voltmeter. If the plates of the capacitor are moved further apart, what will be the effect on the reading of the voltmeter?

Q.20 State Gauss's Theorem in electrostatics?

Q.21. Three capacitors each of capacitance 9pF are connected in series (a) What is the total capacitance of the combination? (b) Determine the charge on each capacitor if the combination is connected to a 100Vsupply.

Q.22 A 12pFcapacitor is connected to a 50Vbattery. How much electrostatic energy is stored in the capacitor?

Q.23 Show mathematically that the potential at a point on the equatorial line of an electric dipole is Zero.

CHEMISTRY

(Assignment A)

SOLUTION

1. Give reason for the following. Aquatic animals are more comfortable in cold water than in warm water.

2. State Henry’s law. Calculate the solubility of CO_2 in water at 298 K under 760 mm Hg. (KH for
CO_2 in water at 298 K is 1.25 x 106 mm Hg)

3. Calculate the molarity of 9.8% (w/w) solution of H_2SO_4 if the density of the solution is 1.02 gmL^{-1}. [Molar mass of H_2SO_4 = 98 $gmol^{-1}$]

4. State Raoult’s law for a solution containing volatile components. What is the similarity between Raoult’s law and Henry’s law?

5. (i) Gas (A) is more soluble in water than gas (B) at the same temperature. Which one of the two gases will have the higher value of KH (Henry’s constant) and why?

(ii) Explain why a solution of chloroform and acetone shows negative deviation from Raoult’s

law?

6. The vapour pressure of pure liquids A and B are 450 mm and 700 mm of Hg respectively at

350K. Find out the composition of the liquid mixture if total vapour pressure is 600 mm of Hg. Also, find the composition in the vapour phase.

7. A 4% solution (w/w) of sucrose (M = 342 g mol−1) in water has a freezing point of 271.15 K.

Calculate the freezing point of 5% glucose (M = 180 g mol−1) in water. (Given: Freezing point of

pure water = 273.15 K)

8. 45 g of ethylene glycol ($C_2H_6O_2$) is mixed with 600 g of water. Calculate (i) the freezing point depression and

(ii) the freezing point of the solution. (Given, Kf of water = 1.86 K kg mol-1)

9. A solution is prepared by dissolving 10 g of non-volatile solute in 200 g of water. It has a vapour pressure of 31.84 mm of Hg at 308 K. Calculate the molar mass of the solute. (Vapour pressure of pure water at 308 K = 32 mm Hg)

10. Some ethylene glycol, $HOCH_2CH_2OH$, is added to your car′s cooling system along with 5 kg of. water. If the freezing point of water-glycol solution is −15°C, what is the boiling point of the solution? (Kb = − 0.52 K kg mol-1 and Kf = 1.86 K kg mol−1 for water)

(Assignment B).

1. What is a galvanic cell?

2. Give the cell representation for Daniell Cell.

3. Mention the purpose of salt-bridge placed between two half-cells of a galvanic cell?

4. Give the condition for Daniell Cell in which there is no flow of electrons or current.

5. How is electrode potential different from cell potential?

6. Can you store zinc sulphate solution in a copper container? Give suitable reason. (E0. Zn2+/Zn = − 01.76V, E0. Cu2+/Cu = 0.34v)

7. How does electrochemical series help us in predicting whether a redox reaction is feasible or not?

8. Write Nernst equation for the electrode reaction.

Mn+(aq) + ne → M(s) at 298 K and 1 bar pressure.

9.Write the unit of Faraday constant.

10. List the two factors that influence the value of cell potential of a galvanic cell.

11. How is equilibrium constant of a reaction related to standard cell potential?

12. Write the relation between E cell and equilibrium constant (K) of cell reaction.

13. Define cell constant. Write the SI unit of cell constant.

14 How does specific conductance or conductivity of electrolytic solution vary with temperature?

15. What is the SI unit of (i) Conductance; (ii) Conductivity.

16. Represent a concentration cell with a suitable example.

17. State one difference between a primary battery and secondary battery.

18. Write the name of a chemical substance which is used to prevent corrosion.

19. Show is the direction of flow of electrons in the following cell :

Zn (s) | Zn2+ (aq) || Ag+ (aq) | Ag (s)

20. Rusting of iron becomes quicker in saline water?

Assignment C)

Project based on CBSE guidelines.

Prepare one Investigatory Project on any one of the following topic
"Preparation of soya bean milk and its comparison with the natural milk with respect to curd formation, effect of temperature and taste ".
based on concept of Chemistry (as per CBSE guidelines).

a) INTRODUCTORY PAGE

b) CERTIFICATE

c) ACKNOWLEDGEMENT

d) INDEX/CONTENTS

e) INTRODUCTION

f) AIM

g) OBSERVATIONS

h) RESULT

i) CONCLUSION

j) BIBLIOGRAPHY

Mathematics

1.**Project work**

To minimize the cost of the food, meeting the dietary requirements of the staple food of the adolescent students of your school.

Task to be done

Make a survey of at least 100 students to find which staple food they consume on daily basis.

Select two food items constituting one cereal and one pulse.

Find from dietician the minimum requirement of protein and carbohydrate for an adolescent and also find the content of protein and carbohydrate in 1 kg. of selected cereal and pulse respectively.

Find the minimum cost of the selected cereal and pulse from market.

Formulate the corresponding Linear Programming problem.

Solve the problem graphically.

Interpret the result.

2. **Complete your notebook**. Revise all the work done in the classroom.

3.**Lab Manual activities:**

a) To verify that the relation R in the set L of all lines in a plane, defined by R = {(l, m) : l || m} is an equivalence Relation.

b) To demonstrate a function which is not one-one but is onto.

c) To demonstrate a function which is one-one but not onto.

d) To find analytically the limit of a function f (x) at x = c and also to check the continuity of the function at that point.

e) To understand the concepts of decreasing and increasing functions.

f) To understand the concepts of absolute maximum and minimum values of a function in a given closed interval through its graph.

g) To locate the points to given coordinates in space, measure the distance between two points in space and then to verify the distance using distance formula.
h) To explain the computation of conditional probability of a given event A, when event B has already occurred, through an example of throwing a pair of dice.

BIOLOGY

ASSIGNMENT -1

Q1 Draw a T. S. of anther and explain it.

Q2 Explain megasporogenesis with diagrams.

Q3. Explain microsporogenesis.

Q4 Draw a labelled diagram of monocot and dicot seed.

Q5 Explain different types of pollination with example.

Q6. List post fertilization changes in angiosperms.

Q7.Define apomixis. How are apomictic seeds useful to farmers.?

Q8. What is polyembryony. How is it formed?

Q9. What are cleistogamous flowers? Is cross pollination possible in them? Why or why not?

Q10. What are outbreeding devices? Explain.

Q11. A farmer wants to stop inbreeding depression in one of the plants. What method should he adopt to prevent it? Explain.

Q12. Give some characteristics of insect pollinated & wind pollinated flowers.

Q13. How does vallisneria & hydrilla pollinate? Mention the process in brief.

ASSIGNMENT -2

Q1. Compare between oogenesis and spermatogenesis.

Q2. Explain menstrual cycle in human females.

Q3. Explain events of fertilization in humans.

Q4. Define implantation and its events.

Q5. How does placenta work as an endocrine tissue?

Q 6. What is colostrum? How is it important?

Q 7. Explain ART & its various methods.

Q8. Removal of gonads is not considered as a good contraceptive method. Why?

Q9. What are different types of contraceptives? Explain with working & example

of each.

Q10. What is amniocentesis? Why is it banned?

Q11. What are the reasons of population explosion in India?

Q12. Draw a well labelled diagram of human gametes.

3. **PROJECT** Prepare one Investigatory Project on any one of the following topic (as per

CBSE guidelines).

1. Humam Genome Project
2. Tools of Biotechnology
3. Biodiversity insitu and exsitu conservation
4. DNA fingerprinting and it's application

a) INTRODUCTORY PAGE

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Physical Education.

1. Draw the two yoga asanas each of five diseases. Their Procedures, Benefits and Contraindications .
2. Draw khelo India physical fitness test.
   .BMI.
   .50mt dash.
   .600mt Run and walk test.
   .Partial curl up test.
   .sit and reach test.
   .Modified Push-Ups for girls.
3. Do physical exercise daily at home atleast 30min.

Informatics Practices

1.Project Work :
Identify a real-world problem by exploring the environment. e.g. Students can visit shops/business places, communities or other organizations in their localities and enquire about the functioning of the organization, and how data are generated, stored, and managed. You can take data stored in csv or database file and analyze it and generate appropriate charts to visualize.

Suggested topics are:
Climate Change, Unemployment, Gender Equality and any other current scenario.

Project Requirements:

Database: Design a relational database using SQL. Include at least 3 tables with appropriate relationships.
Documentation: Provide detailed documentation of your project, including:

- Project overview
- Database schema
- Interface of the Application

- Logic:Algorithm & Flowchart

2. Prepare Acitivity/Practical file containing the below given content:
Data Management :
1. Create a student table with the student id, name, and marks of at least 5 subjects as attributes where the student id is the primary key.
2. Insert the details of a new student in the above table.
3. Delete the details of a student in the above table.
4. Use the select command to get the details of the students with marks more than 80.
5. Find the min, max, sum, and average of the marks in a student marks table.
6. Write a SQL query to order the (student ID, marks) table in descending order of the marks

Psychology

Select five persons whom you most admire, either from real life or from history. Collect Information about their contributions in their respective fields and identify the characteristics in their personality that have impressed you. Do you find any similarities? Prepare a comparative report.

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