



Mother's International Academy

Affiliated to CBSE Delhi (10+2)

A Place To Grow

Holiday – Homework (Session – 2026 – 2027)

Std.: XII

Business Studies

1. Project is to be prepared on the topic "Marketing Management"

Note: The above-mentioned project is mandatory for the students as this is being given for the board exam. For the project you can choose one product of your choice.

Guidelines:

- The total length of the project will be of 25 to 30 pages
- project should be handwritten
- project should be presented in a neat folder
- the project report should be developed in the following sequence-
 - a. cover page should include the title of the project student information school and year
 - b. list of contents
 - c. acknowledgements (acknowledging the institution, the place visited and the persons who have helped)
 - d. certificate and teacher's certificate
 - e. introduction
 - f. topic with suitable heading
 - g. planning and activities done during the project if any
 - h. observations and findings of the visit
 - i. conclusions
 - j. photographs
 - k. appendix
 - l. teacher's observation
 - m. signatures of their teachers

Other details can be seen on the CBSE website

2. Do the questions given below in separate sheets and attach with the printed copy of the set of questions. It has to be submitted in the first week after school reopens.

MCQs

i) Which of the following best indicates the importance of business environment?

- a) identification
- b) coping with rapid changes
- c) improvement in performance
- d) All of these

ii) Which is not a separate function of management?

- a) Staffing
- b) Planning
- c) Cooperating
- d) Controlling

iii) Which is not an organizational/economic objective of management out of the following?

- a) Survival of the organisation
- b) growth of the organisation
- c) Providing employment
- d) earning profits

iv) Celebration of Diwali is the example of:

- a) Social Environment
- b) Political Environment
- c) Technological Environment
- d) Legal Environment

v) A good manager synchronises all the activities of different departments through the process:

- a) Coordination
- b) Planning
- c) Staffing
- d) Supervision

vi) Efficiency is concerned with:

- a) Utilisation of minimum resources
- b) Cooperation
- c) Right man at right job
- d) Completion of task

vii) Who is responsible for the welfare and survival of an organization?

- a) Floor level management
- b) Operational Management
- c) Top level Management
- d) Middle level Management

viii) Liberalisation means:

- a) Integration among economies
- b) Policy of planned disinvestments
- c) Increased government controls and restrictions
- d) Reduced government controls and restrictions

ix) How are principles of management formed?

- a) By experiences of managers
- b) By experiences of customers
- c) By propagation of social scientists
- d) in a laboratory

x) Henry Fayol was a:

- a) Accountant
- b) Production engineer
- c) Social scientist
- d) Mining engineer

xi) Which of the following is not a Principle of management given by Taylor?

- a) Harmony, not discord
- b) Functional Foremanship
- c) Cooperation, not individualism
- d) Science, not rule of the thumb

xii) Gross Domestic Product is concerned with

- a) Legal environment
- b) Social environment
- c) Economic environment
- d) Political environment

Short Questions

i) State the various economic reforms initiated by the Government of India since 1991.

ii) Explain why management is not a pure science.

iii) Why is management considered to be a multi-dimensional concept?

iv) Name and explain the principle of management in which workers should be encouraged to develop and carry out their plans for improvement in the organization.

Long Answer Questions

i) Coordination is the essence of management. Do you agree? Give reasons.

ii) A company wants to modify its existing product in the market due to decreasing sales. You can imagine any product about which you are familiar. What decisions /steps should each level of management take to give effect to this decision?

iii) Taylor's principles of scientific management and Fayol's principles of management are mutually complementary. Do you agree with this view? Give any four reasons in support of your answer

iv) "Social environment of business is important for a business enterprise". Explain?

3. Choose the correct options from the following for Q.No (i) to (iv)

- a) Both A and R are true and R is the correct explanation of A
- b) Both A and R are true but R is not the correct explanation of A
- c) A is true but R is false.
- d) A is false but R is true

i) **Assertion:** Different elements of the business environment are closely interrelated.

Reason: Business environment is a relative concept since it differs from country to country and even region to region.

ii) **Assertion:** Unity of command means one unit one plan.

Reason: The Principle of unity of Command reduces the chances of ego clashes among superiors and leads to more effective working.

iii) **Assertion:** Coordination emphasizes unifying the efforts of different individuals.

Reason: Conflicting efforts may cause damage to the organization.

iv) **Assertion:** Efficiency aims at performing tasks with the least wastage of time and effort

Reason: Efficiency is about doing the job in a cost-effective manner, i.e., getting maximum output with minimum input.

Case based questions.

i) Ashutosh Goenka was working in Axe Ltd., a company manufacturing air purifier. He found that the profits have started declining from the last six months. Profit has an implication for the survival of the firm, so he analysed the business environment to find out the reasons for this decline.

a) Identify the level of management at which Ashutosh Goenka was working.

b) State three other functions being performed by Ashutosh Goenka.

ii) Bharat is running an ice cream parlour in a local market. Keeping in mind the changing perceptions about health among the people, one of his employees Abhiraj suggests to him that they should introduce a range of flavoured yoghurt. Bharat accepts his suggestions as a result both the image and the profitability of his business increases.

In context of the above case:

a) Identify the feature of management which is being highlighted.

b) State the related dimension of the business environment.

c) Name and explain the related principle of general management.

iii) Hritik is desirous of setting up a small factory to manufacture different kinds of eco-friendly packaging materials. He proposes to adopt a logical approach to his business rather than hit and trial method as he knows that this can result in tremendous saving of human energy as well as wastage of time and materials. He plans to adopt paternalistic style of management in practice in order to avoid any kind of class conflict that may emerge between him and the workers. Moreover, he plans to seek the opinion of his workers before taking any important decisions and also offers incentives to them for providing valuable suggestions for the business.

In context of the above case:

a) Identify and explain the various principles of scientific management that Hritik plans to apply in his business packaging material.

iv) "Study Buddy Pvt. Ltd." is a company dealing in stationery items. In order to establish standards of excellence and quality in materials and in the performance of men and machines, the company adheres to benchmarks during production. Moreover, its products are available in limited varieties, sizes and dimensions thereby eliminating superfluous diversity of products.

Identify the technique of scientific management which has been adopted by "Study Buddy Pvt Ltd." Also explain.

Worksheet on Matrix And Determinant

Summer vacation Homework

1	If a matrix has 8 elements, what are the possible orders it can have? What if it has 5 elements?
2	<p>If $A = [a_{ij}] = \begin{bmatrix} 2 & 3 & -5 \\ 1 & 4 & 9 \\ 0 & 7 & -2 \end{bmatrix}$ and $B = [b_{ij}] = \begin{bmatrix} 2 & -1 \\ -3 & 4 \\ 1 & 2 \end{bmatrix}$ then find</p> <p>$a_{22} + b_{21}$</p>
3	<p>If $A = [a_{ij}] = \begin{bmatrix} 2 & 3 & -5 \\ 1 & 4 & 9 \\ 0 & 7 & -2 \end{bmatrix}$ and $B = [b_{ij}] = \begin{bmatrix} 2 & -1 \\ -3 & 4 \\ 1 & 2 \end{bmatrix}$ then find</p> <p>$a_{11} b_{11} + a_{22} b_{22}$</p>
4	<p>Construct a 2×3 matrix $A = [a_{ij}]$ whose elements a_{ij} are given by :</p> <p>$a_{ij} = i \times j$</p>
5	<p>Construct a 2×3 matrix $A = [a_{ij}]$ whose elements a_{ij} are given by :</p> <p>$a_{ij} = 2i - j$</p>
5	<p>Construct a 2×3 matrix $A = [a_{ij}]$ whose elements a_{ij} are given by :</p> <p>$a_{ij} = \frac{(i + j)^2}{2}$</p>
6	<p>Construct a 2×2 matrix $A = [a_{ij}]$ whose elements a_{ij} are given by :</p> <p>$a_{ij} = e^{2ix} \sin xj$</p>

7	<p>Construct a 3×4 matrix $A = [a_{ij}]$ whose elements a_{ij} are given by :</p> $a_{ij} = \frac{1}{2} -3i + j $
8	<p>Find x, y, a and b if</p> $\begin{bmatrix} 3x + 4y & 2 & x - 2y \\ a + b & 2a - b & -1 \end{bmatrix} = \begin{bmatrix} 2 & 2 & 4 \\ 5 & -5 & -1 \end{bmatrix}.$
9	<p>Find x, y, a and b if</p> $\begin{bmatrix} 2a + b & a - 2b \\ 5c - d & 4c + 3d \end{bmatrix} = \begin{bmatrix} 4 & -3 \\ 11 & 24 \end{bmatrix}$
10	<p>Find the values of a, b, c and d from the following equations:</p> $\begin{bmatrix} 2a + b & a - 2b \\ 5c - d & 4c + 3d \end{bmatrix} = \begin{bmatrix} 4 & -3 \\ 11 & 24 \end{bmatrix}$
11	<p>Find x, y and z so that $A = B$, where</p> $A = \begin{bmatrix} x - 2 & 3 & 2z \\ 18z & y + 2 & 6z \end{bmatrix}, B = \begin{bmatrix} y & z & 6 \\ 6y & z & 2y \end{bmatrix}$
12	<p>If $\begin{bmatrix} x & 3x - y \\ 2x + z & 3y - \omega \end{bmatrix} = \begin{bmatrix} 3 & 2 \\ 4 & 7 \end{bmatrix}$, find x, y, z, ω.</p>
13	<p>If $\begin{bmatrix} x + 3 & z + 4 & 2y - 7 \\ 4x + 6 & a - 1 & 0 \\ b - 3 & 3b & z + 2c \end{bmatrix} = \begin{bmatrix} 0 & 6 & 3y - 2 \\ 2x & -3 & 2c + 2 \\ 2b + 4 & -21 & 0 \end{bmatrix}$</p> <p>Obtain the values of a, b, c, x, y and z.</p>
14	<p>The sales figure of two car dealers during January 2023 showed that dealer A sold 5 deluxe, 3 premium and 4 standard cars, while dealer B sold 7 deluxe, 2 premium and 3 premium and 4 standard cars, while dealer B sold 7 deluxe, 2 premium and 3 standard cars. Total sales over the 2 month period of January – February revealed that dealer A sold 8 deluxe 7 premium and 6 standard</p>

	cars. In the same 2 month period, dealer B sold 10 deluxe, 5 premium and 7 standard cars. Write 2 x 3 matrices summarizing sales data for January and 2 – month period for each dealer.
15	<p>Let $A = \begin{bmatrix} 2 & 4 \\ 3 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 3 \\ -2 & 5 \end{bmatrix}$ and $C = \begin{bmatrix} -2 & 5 \\ 3 & 4 \end{bmatrix}$. Find each of the following :</p> <p>i. $2A - 3B$</p> <p>ii. $B - 4C$</p> <p>iii. $3A - C$</p> <p>iv. $3A - 2B + 3C$</p>
16	<p>Let $A = \begin{bmatrix} -1 & 0 & 2 \\ 3 & 1 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 0 & -2 & 5 \\ 1 & -3 & 1 \end{bmatrix}$ and $C = \begin{bmatrix} 1 & -5 & 2 \\ 6 & 0 & -4 \end{bmatrix}$. Compute $2A - 3B + 4C$.</p>
17	<p>If $A = \text{diag} (2, -5, 9)$, $B = \text{diag} (1, 1, -4)$ and $C = \text{diag} (-6, 3, 4)$, find</p> <p>i. $A - 2B$</p> <p>ii. $B + C - 2A$</p> <p>iii. $2A + 3B - 5C$</p>
18	<p>Find X, if $Y = \begin{bmatrix} 3 & 2 \\ 1 & 4 \end{bmatrix}$ and $2X - Y = \begin{bmatrix} 1 & 0 \\ -3 & 2 \end{bmatrix}$.</p>
19	<p>If $\begin{bmatrix} xy & 4 \\ z+6 & x+y \end{bmatrix} = \begin{bmatrix} 8 & \omega \\ 0 & 6 \end{bmatrix}$, then find the values of x, y, z and ω.</p>
20	<p>Find the values of a and b if $A = B$, where</p> $A = \begin{bmatrix} a+4 & 3b \\ 8 & -6 \end{bmatrix}, B = \begin{bmatrix} 2a+2 & b^2+2 \\ 8 & b^2-10 \end{bmatrix}$

21	<p>Find x, y satisfying the matrix equations</p> $x \begin{bmatrix} 2 \\ 1 \end{bmatrix} + y \begin{bmatrix} 3 \\ 5 \end{bmatrix} + \begin{bmatrix} -8 \\ -11 \end{bmatrix} = O$
22	<p>Find the value of λ, a non-zero scalar, if $\lambda \begin{bmatrix} 1 & 0 & 2 \\ 3 & 4 & 5 \end{bmatrix} + 2 \begin{bmatrix} 1 & 2 & 3 \\ -1 & -3 & 2 \end{bmatrix} = \begin{bmatrix} 4 & 4 & 10 \\ 4 & 2 & 14 \end{bmatrix}$.</p>
23	<p>In a certain city there are 30 colleges. Each college has 15 peons, 6 clerks, 1 typist and 1 section officer. Express the given information as a column matrix. Using scalar multiplication, find the total number of posts of each kind in all the colleges.</p>
24	<p>The monthly incomes of Aryan and Babban are in the ration 3: 4 and their monthly expenditures are in the ratio 5: 7. If each saves 15000 per month, find their monthly incomes using the matrix method. This problem reflects which value?</p>
25	<p>Compute the indicated products:</p> <p>1.</p> $\begin{bmatrix} 2 & 3 & 4 \\ 3 & 4 & 5 \\ 4 & 5 & 6 \end{bmatrix} \begin{bmatrix} 1 & -3 & 5 \\ 0 & 2 & 4 \\ 3 & 0 & 5 \end{bmatrix}$
26	<p>Compute the products AB and BA whichever exists in each of the following cases:</p> $A = \begin{bmatrix} 1 & -1 & 2 & 3 \end{bmatrix} \text{ and } B = \begin{bmatrix} 0 \\ 1 \\ 3 \\ 2 \end{bmatrix}$
27	<p>Compute the products AB and BA whichever exists in each of the following cases:</p> $\begin{bmatrix} a, b \end{bmatrix} \begin{bmatrix} c \\ d \end{bmatrix} + \begin{bmatrix} a & b & c & d \end{bmatrix} \begin{bmatrix} a \\ b \\ c \\ d \end{bmatrix}$

28	<p>Evaluate the following:</p> $[1 \ 2 \ 3] \begin{bmatrix} 1 & 0 & 2 \\ 2 & 0 & 1 \\ 0 & 1 & 2 \end{bmatrix} \begin{bmatrix} 2 \\ 4 \\ 6 \end{bmatrix}$
29	<p>If $A = \begin{bmatrix} 4 & 2 \\ -1 & 1 \end{bmatrix}$, prove that $(A - 2I)(A - 3I) = O$.</p>
30	<p>If $A = \begin{bmatrix} ab & b^2 \\ -a^2 & -ab \end{bmatrix}$, show that $A^2 = O$</p>
31	<p>Compute the elements a_{43} and a_{22} of the matrix:</p> $A = \begin{bmatrix} 0 & 1 & 0 \\ 2 & 0 & 2 \\ 0 & 3 & 2 \\ 4 & 0 & 4 \end{bmatrix} \begin{bmatrix} 2 & -1 \\ -3 & 2 \\ 4 & 3 \end{bmatrix} \begin{bmatrix} 0 & 1 & -1 & 2 & -2 \\ 3 & -3 & 4 & -4 & 0 \end{bmatrix}$
32	<p>If ω is a complex cube root of unity, show that</p> $\left(\begin{bmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{bmatrix} + \begin{bmatrix} \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \\ \omega & \omega^2 & 1 \end{bmatrix} \right) \begin{bmatrix} 1 \\ \omega \\ \omega^2 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$
33	<p>If $[1 \ 1 \ x] \begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 1 & 0 \end{bmatrix} \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix} = 0$, find x.</p>

34	$\text{If } \begin{bmatrix} 1 & -1 & x \end{bmatrix} \begin{bmatrix} 0 & 1 & -1 \\ 2 & 1 & 3 \\ 1 & 1 & 1 \end{bmatrix} \begin{bmatrix} 0 \\ 1 \\ 1 \end{bmatrix} = 0, \text{ find } x.$
35	$\text{If } A = \begin{bmatrix} 3 & -2 \\ 4 & -2 \end{bmatrix}, \text{ find } k \text{ such that } A^2 = kA - 2I_2.$
36	$\text{If } A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix} \text{ and } f(x) = x^2 - 2x - 3, \text{ show that } f(A) = 0.$
37	$\text{If } A = \begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix} \text{ and } I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}, \text{ then find } \lambda, \mu \text{ so that } A^2 = \lambda A + \mu I$
38	<p>Solve the matrix equations:</p> $\begin{bmatrix} x & 1 \end{bmatrix} \begin{bmatrix} 1 & 0 \\ -2 & -3 \end{bmatrix} \begin{bmatrix} x \\ 5 \end{bmatrix} = 0$
39	$\text{If } A = \begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix}, \text{ then show that } A \text{ is a root of the polynomial } f(x) = x^3 - 6x^2 + 7x + 2.$

40	<p>If $A = \begin{bmatrix} 0 & 0 \\ 4 & 0 \end{bmatrix}$, find A^{16}.</p>
41	<p>If A and B are square matrices of the same order such that $AB = BA$, then show that $(A + B)^2 = A^2 + 2AB + B^2$.</p>
42	<p>75. To promote making of toilets for women, an organization tried to generate awareness through (i) house calls (ii) letters, and (iii) announcements. The cost for each mode per attempt is given below :</p> <p>(i) ₹ 50 (ii) ₹ 20 (iii) ₹ 40</p> <p>The number of attempts made in three villages X, Y and Z are given below :</p>
43	<p>There are 2 families A and B. There are 4 men, 6 women and 2 children in family A, and 2 men, 2 women and 4 children in family B. The recommended daily amount of calories is 2400 for men, 1990 for women, 1800 for children and 45 grams of proteins for men, 55 grams for women and 33 grams for children. Represent the above information using a matrix. Using matrix multiplication, calculate the total requirement of calories and proteins for each of the two families. What awareness can you create among people about the planned diet from this question?</p>
44	<p>The monthly incomes of Aryan and Babbar are in the ratio 3:4 and their monthly expenditures are in the ratio 5:7. If each saves Rs 15000 per month, find their monthly incomes using matrix method. This problem reflects which value?</p>
45	<p>If $A = \begin{bmatrix} \cos x & \sin x \\ -\sin x & \cos x \end{bmatrix}$, find x satisfying $0 < x < \frac{\pi}{2}$ when $A + A^T = I$.</p>
46	<p>If $A = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ satisfies $A^4 = \lambda A$, then write the value c</p>
47	<p>For any square matrix write whether AA^T is symmetric or skew-symmetric.</p>

48	<p>If matrix $A = [a_{ij}]_{2 \times 2}$, where $a_{ij} = \begin{cases} 1, & \text{if } i \neq j \\ 0, & \text{if } i = j \end{cases}$, then A^2 is equal to</p>
49	<p>If A and B are matrices of the same order, then $AB^T - B^T A$ is a</p> <p>A. skew-symmetric matrix B. null matrix C. unit matrix D. symmetric matrix</p>
50	<p>The matrix $A = \begin{bmatrix} 0 & 0 & 4 \\ 0 & 4 & 0 \\ 4 & 0 & 0 \end{bmatrix}$ is a</p> <p>A. square matrix B. diagonal matrix C. unit matrix D. none of these</p>

SUBJECT :- PHYSICS

TOIPC:- TO STUDY VARIOUS FACTORS ON WHICH THE INTERNAL RESISTANCE/ EMF OF A CELL DEPENDS



Certificate

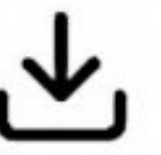
This is to certify that I, _____
of class XII of *Nehru Smaraka Vidyalaya*
has successfully completed the
_____ Investigatory Project as
prescribed by the All India Senior Secondary
Certificate Examination (AISSCE) for the
academic year 2017-18.

Date:

Principal's Signature

*Signature of
External Examiner*

*Signature of
Internal Examiner*



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2	<u>Practical Analysis</u> <i>includes</i> <ul style="list-style-type: none">• <i>Objective</i>• <i>Apparatus</i>• <i>Theory</i>• <i>Circuit diagram</i>• <i>Procedure</i>• <i>Result and Inferences</i>• <i>Precautions</i>• <i>Sources of error</i>	<u>06-15</u>
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Introduction

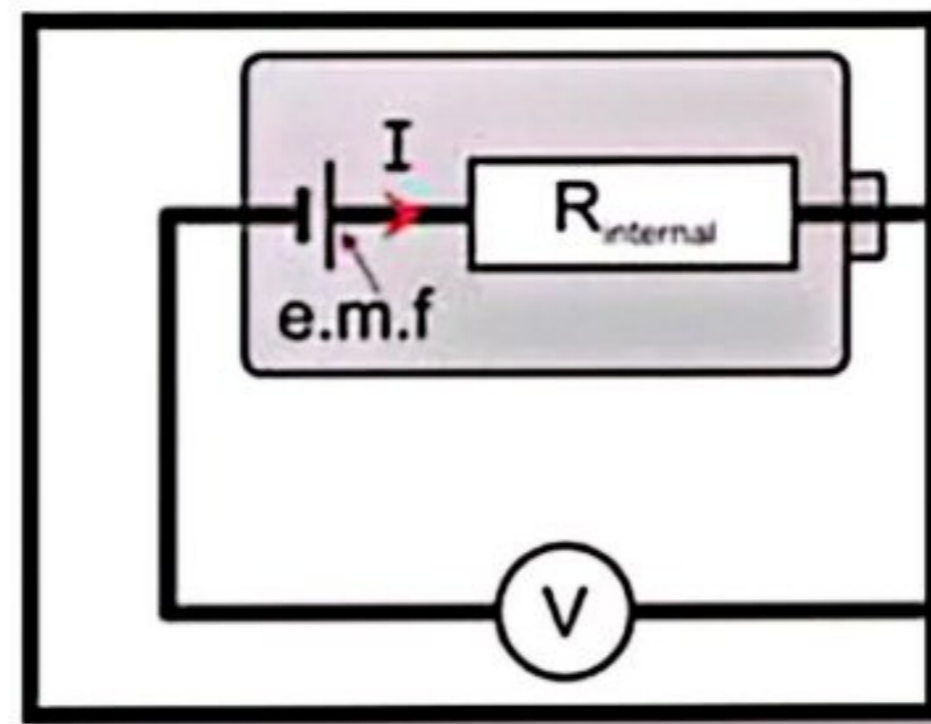
There is a great need of batteries in our daily use electronic appliances and the use is increasing every day. Thus, the batteries need to be made more powerful so that their potential can be increased greatly.

This project report is based on practical analysis for the factors affecting the internal resistance of a cell.

When the internal resistance of the cell is decreased we can increase the potential difference across it, and hence make it more reliable.

Internal Resistance

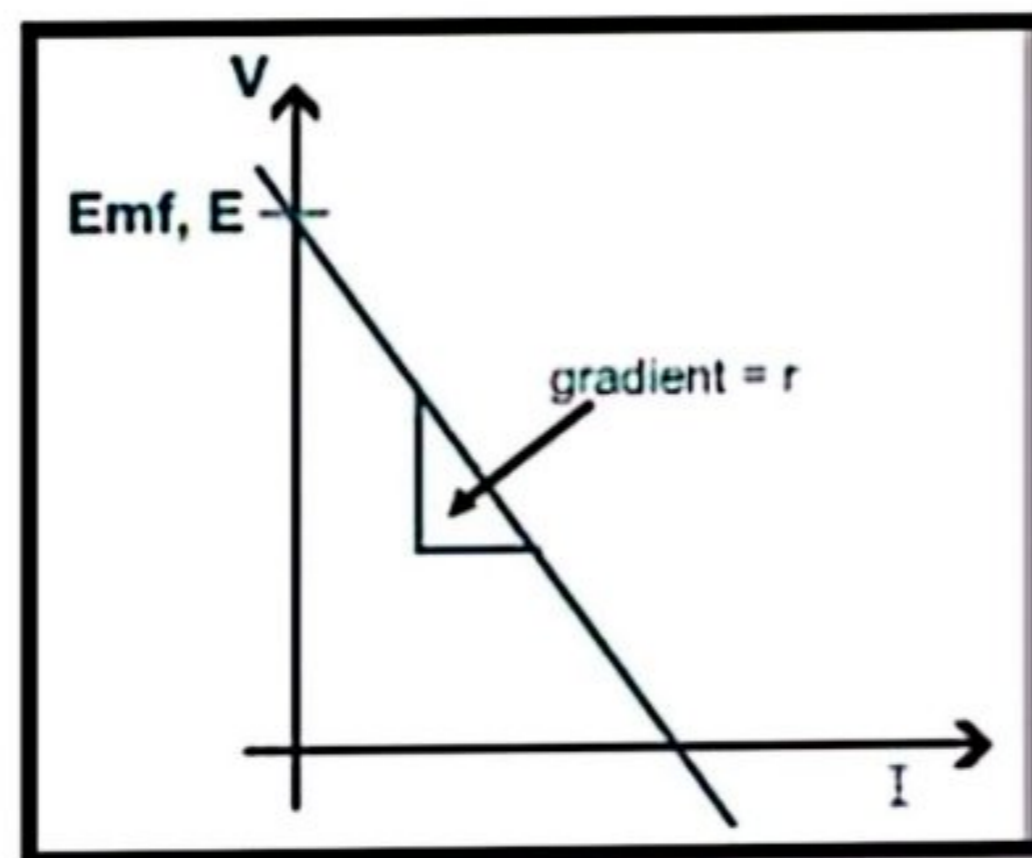
The resistance within a battery, or other voltage source, that causes a drop in the source voltage when there is a current.



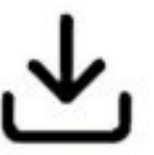
Internal resistance

Internal resistance is defined as the resistance offered by the electrolyte of the cell to the flow of ions.

*Its S.I. unit is **Ohm (Ω)**.*



For a cell of e.m.f. (E) and internal resistance (r), connected to an external resistance (R) such that (I) is the current flowing through the circuit,



$$E = V + Ir$$

Internal Resistance $r = \frac{E-V}{I}$

Practical analysis

➤ OBJECTIVE

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

➤ APPARATUS

A potentiometer, a battery (or battery eliminator), two one way keys, a rheostat, a galvanometer, a resistance box, an ammeter, a cell (Leclanche cell), a jockey, a setsquare, connecting wires and sand paper.



➤ THEORY

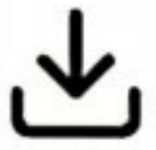
The internal resistance of a cell is the resistance offered by its electrolyte to the flow of ions. The internal resistance of a cell

- *Is directly proportional to the distance between the electrodes. Let x be the distance between the electrodes, then,*

$$r \propto x$$

- *Is inversely proportional to facing surface area of the electrodes in electrolyte. Let A be the surface area of the electrodes, then,*

$$r \propto 1/A$$



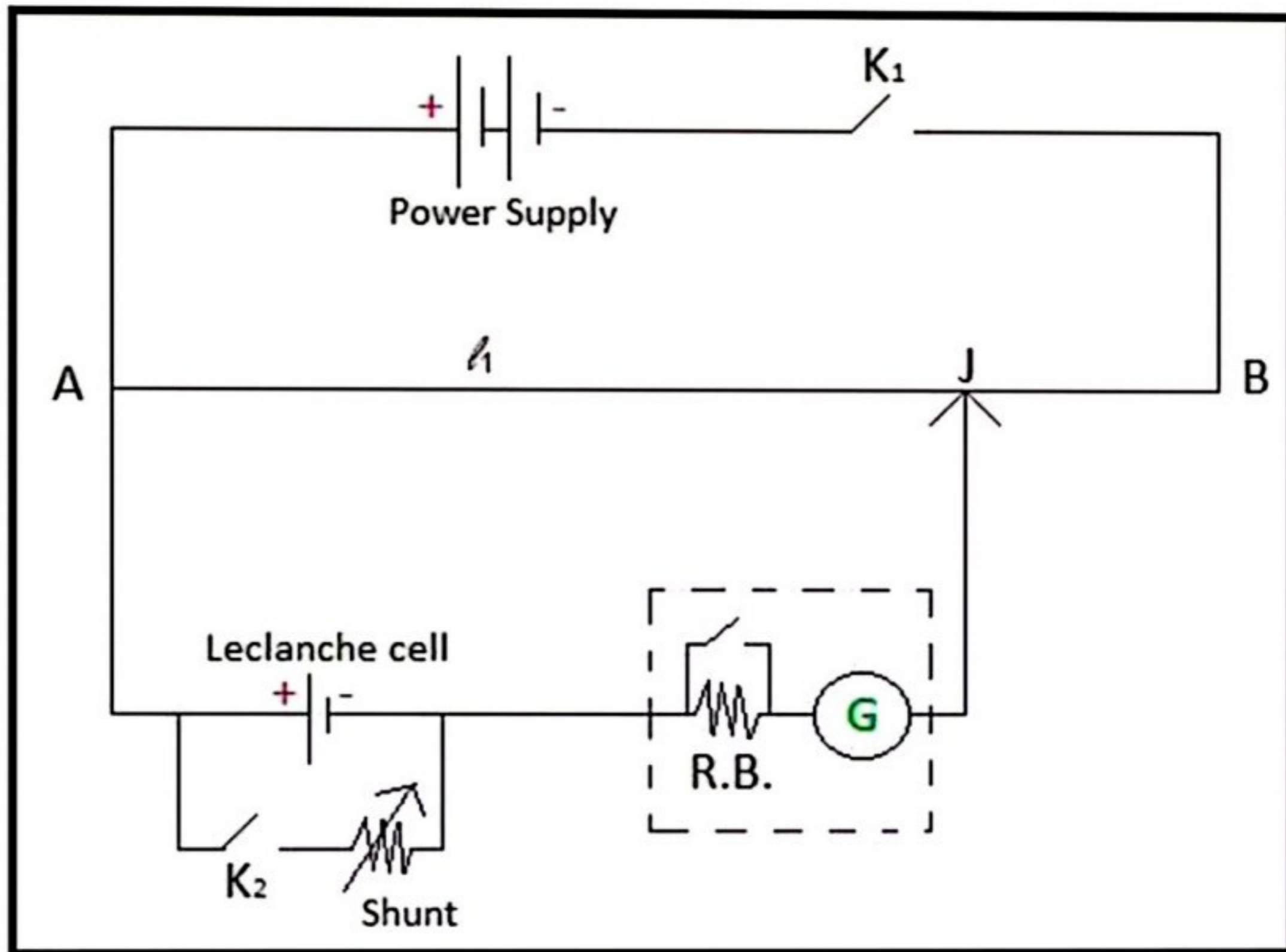


- *Decreases with increase in temperature of electrolyte.*
- *Is inversely proportional to concentration of electrolyte.*

The internal resistance of a cell is given by:

$$r = (E - V) / I$$

➤ **CIRCUIT DIAGRAM**



The above circuit includes:

- ✓ *A power supply*
- ✓ *Two one way keys*
- ✓ *A galvanometer*
- ✓ *A Resistance Box*
- ✓ *A Leclanche cell*
- ✓ *A shunt resistance*

➤ **PROCEDURE**



1. Clean the ends of the connecting wires with sand paper and make tight connections according to the circuit diagram.

2. Tighten the plugs of the resistance box.

3. Check the e.m.f. of the battery and of the cell and make sure that e.m.f. of the battery is more than that of the cell, otherwise null or balance point will not be obtained.

To study variation of internal resistance with distance of separation

4. Keep both the electrodes at a distance of 16 cm.

5. Take maximum current from the battery, making rheostat resistance small.

6. Without inserting a plug in key K_2 , adjust the rheostat so that a null point is obtained on the last wire of the potentiometer.

7. Determine the position of the null point accurately using a set square and measure the balancing length (l_1) between the null point and the end P.

8. Next introduce plugs in both keys K_1 and K_2 . At the same time, take out a small resistance (1 – 5W)



from the shunt resistance box connected in parallel with the cell.

9. Slide the jockey along a potentiometer wire and obtain the null point.

10. Measure the balancing length (l_2) from end P.

Record these observations.

11. Now keep the electrodes 12 cm apart.

12. Then remove the plugs of keys K_1 and K_2 . Wait for some time and repeat steps 7 to 10.

13. Next, keep the electrodes 9 cm apart to obtain another set of observations.

To study variation of internal resistance with area of electrodes

14. Keeping all other factors constant, increase the area of electrodes in the electrolyte by dipping them into the electrolyte at different depths for each observation.

15. Obtain three such observations by repeating steps 7 to 10. Record your readings.

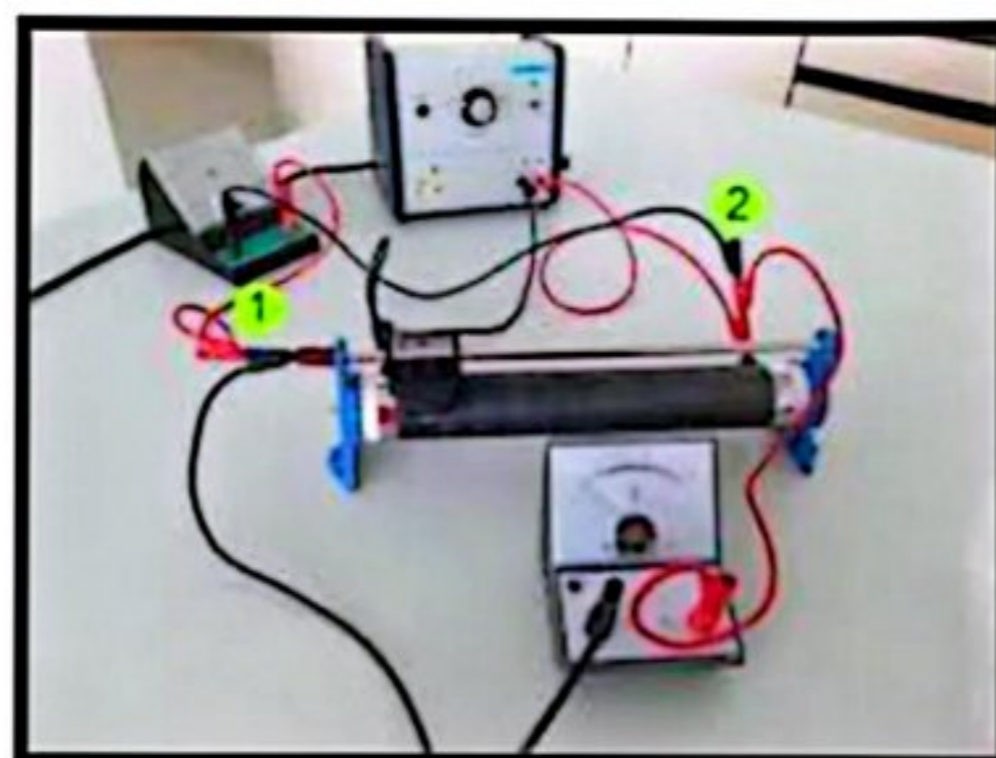
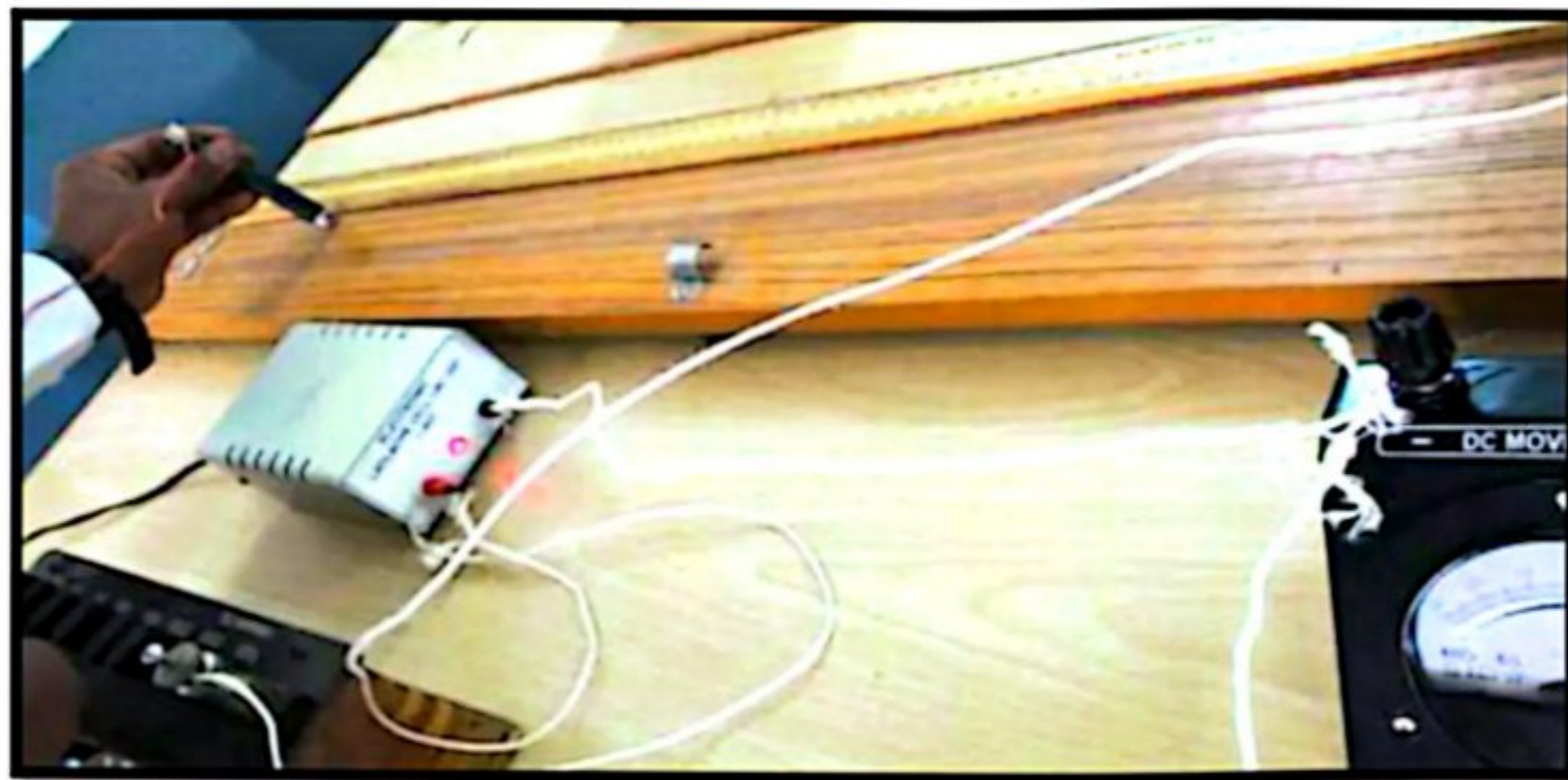




To study variation of internal resistance with concentration of electrolyte.

16. Keeping all other factors constant, decrease the concentration of electrolyte by adding distilled water for different observations.

17. Obtain three such observations by repeating step 7 to 10. Record your readings.



➤ OBSERVATIONS

S.No.	Ammeter Reading	Position of null point (cm)		Shunt Resistance (R)	Internal Resistance (r)
		With R (l_1)	Without R (l_2)		
1.	0.3	660.5	35.5	1	0.94
2.	0.3	660.5	77.2	2	1.77
3.	0.3	660.5	108.3	3	2.51

Table for effect of separation between electrodes:

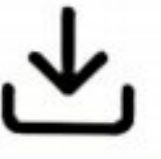
S. No.	Separation between electrodes d (cm)	Balancing point l_1 (cm)	Balancing point l_2 (cm)	Internal resistance r (Ω)	r/d
1.	1.2	326.6	276.9	0.456	0.38
2.	2.5	320.7	219.1	0.45	0.38
3.	3.7	660.5	350.9	1.406	0.38





Table for effect of temperature:

S. No.	Temperature T (°C)	l_1 (cm)	l_2 (cm)	Resistance R (Ω)	Internal Resistance r (Ω)	Tr (ΩK)
1.	1.2	326.6	276.9	0.456	0.38	301.44
2.	2.5	320.7	219.1	0.95	0.38	291.96
3.	3.7	660.5	350.9	1.406	0.38	283.87



➤ RESULT AND INFERENCES

- *The Electromotive Force of the cell is constant and is equal to*

$$E = 0.98 \text{ Volt.}$$

- *The internal resistance of a cell is directly proportional to the separation between the electrodes.*

$$\underline{r \propto d}$$

- *The internal resistance of a cell is inversely proportional to the area of the electrodes dipped in electrolyte.*

$$\underline{r \propto 1/A}$$

- *The internal resistance of a cell is inversely proportional to the temperature of electrolytes.*

$$\underline{r \propto 1/T}$$

- *The internal resistance of a cell is inversely proportional to the concentration of the electrolyte.*

$$\underline{r \propto 1/C}$$

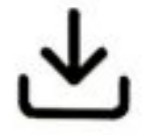


➤ PRECAUTIONS

- *The connections should be neat, clean and tight.*
- *The plugs should be introduced in the keys only when the observations are to be taken.*
- *The positive poles of the battery E and cells E_1 and E_2 should all be connected to the terminal at the zero of the wires.*
- *The jockey key should not be rubbed along the wire. It should touch the wire gently.*
- *The ammeter reading should remain constant for a particular set of observation. If necessary, adjust the rheostat for this purpose.*

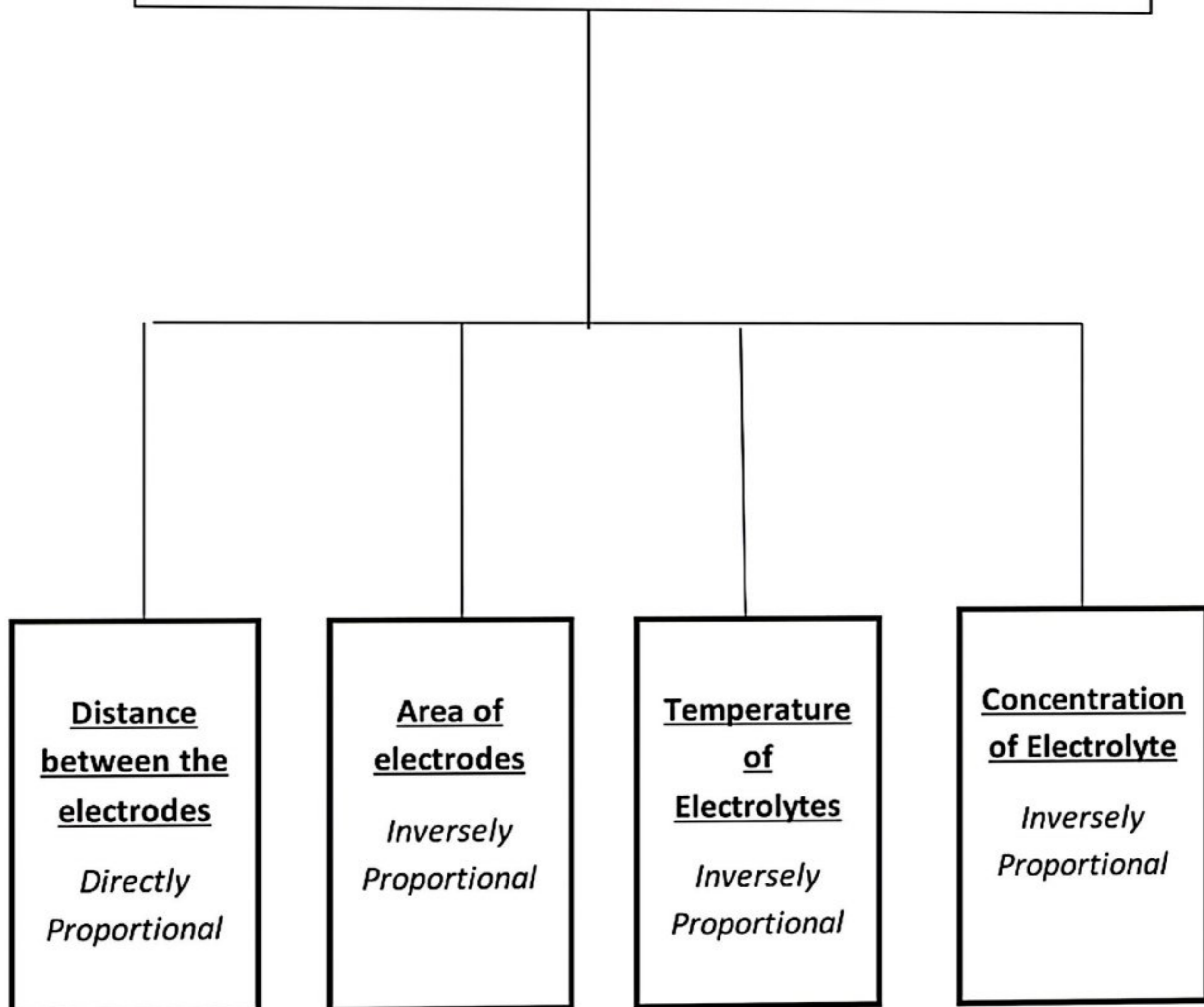
➤ SOURCES OF ERROR

- *The auxiliary battery may not be fully charged.*
- *The potentiometer wire may not be of uniform cross-section and material density throughout its length.*
- *End resistances may not be zero.*



Flowchart CONCLUSION

Factors Affecting Internal Resistance of a Cell





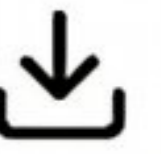
Acknowledgement

I would like to express my thanks of gratitude to our Principal Mr. Arokia Raj sir for giving me the golden opportunity to do this wonderful project on the topic "Factors on which internal resistance of cell depends" which has helped me in doing a lot of research.

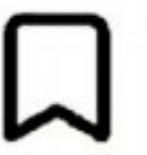
I would extend my heartiest thanks to my Physics teacher Mr. Jaya Prakash sir for providing me with all the support I required at all times.

I would like to gratefully thank my parents for providing me with all the facilities and a favourable environment at home.

I would also thank my friends who have given me support and helped me in finalizing the project in the given time frame.



THANK YOU



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Class 12th

(Chemistry:- Project work)

Study of the presence of oxalate ions in guava fruit at different stages of ripening.

Investigatory Project**Topic: -Possible Effects of Maternal Behavior on Foetal Development****Certificate**

This is to certify that _____, student of Class XII, has successfully completed the biology investigatory project titled “Possible Effects of Maternal Behavior on Foetal Development” under the guidance of _____ during the academic session _____.

Teacher’s Signature: _____

External Examiner: _____

Date: _____

Acknowledgement

I express my sincere gratitude to my biology teacher, my school, and my parents for their support and guidance in completing this project. I also thank various books, journals, and educational websites that helped me gather information regarding maternal behavior and foetal development.

Index

1. Introduction
2. Objectives of the Study
3. What is Foetal Development?
4. Maternal Behavior and Its Importance
5. Positive Maternal Behaviors
6. Harmful Maternal Behaviors and Their Effects
7. Role of Nutrition During Pregnancy
8. Effect of Stress and Mental Health
9. Impact of Substance Abuse
10. Importance of Prenatal Care
11. Case Study / Survey
12. Findings and Analysis

13. Conclusion

14. Precautions and Suggestions

15. Bibliography

Introduction

Pregnancy is one of the most important stages in human life. During this period, the developing foetus depends entirely on the mother for nutrition, oxygen, and protection. Maternal behavior includes the mother's lifestyle, eating habits, emotional condition, medical care, and exposure to harmful substances.

Scientific studies show that maternal behavior can strongly influence the physical, mental, and emotional development of the foetus. Healthy maternal habits promote proper growth, while harmful behaviors may lead to developmental disorders, low birth weight, premature birth, or other complications.

This project aims to study how maternal behavior affects foetal development and why awareness regarding prenatal health is necessary.

Objectives of the Study

- To understand the stages of foetal development.
- To study different maternal behaviors during pregnancy.
- To analyze the positive and negative effects of these behaviors on the foetus.
- To spread awareness about healthy pregnancy practices.

What is Foetal Development?

Foetal development refers to the growth and formation of a baby inside the uterus from conception till birth.

It occurs in three stages:

1. Germinal Stage (0–2 weeks)

- Fertilization occurs.
- Zygote forms and implants in the uterus.

2. Embryonic Stage (3–8 weeks)

- Major organs begin to develop.
- Heart starts beating.

3. Foetal Stage (9 weeks–birth)

- Rapid growth occurs.
- Brain, muscles, lungs, and other organs mature.

Maternal Behavior and Its Importance

Maternal behavior refers to all actions and habits of a mother during pregnancy, such as:

- Food intake
- Physical activity
- Sleep patterns
- Emotional state
- Medical checkups
- Consumption of alcohol, tobacco, or drugs

These behaviors influence the supply of nutrients and hormones reaching the foetus.

Positive Maternal Behaviors

1. Balanced Nutrition

A healthy diet rich in proteins, vitamins, iron, calcium, and folic acid supports proper foetal growth.

Benefits:

- Healthy brain development
- Strong bones and muscles
- Reduced risk of birth defects

2. Regular Medical Checkups

Prenatal care helps detect complications early.

Benefits:

- Monitoring foetal growth
- Prevention of infections
- Vaccination and supplements

3. Moderate Exercise

Activities like walking and prenatal yoga improve blood circulation.

Benefits:

- Better oxygen supply
- Reduced pregnancy stress
- Healthy birth weight

4. Emotional Well-being

Positive emotions and reduced stress create a healthy hormonal environment.

Benefits:

- Better neurological development
- Lower risk of premature birth
- **Harmful Maternal Behaviors and Their Effects**

Maternal Behavior	Possible Effects on Foetus
Smoking	Low birth weight, lung problems
Alcohol consumption	Brain damage, Foetal Alcohol Syndrome
Drug abuse	Premature birth, developmental defects
Poor diet	Malnutrition, weak immunity
Excess stress	Anxiety disorders, low growth
Lack of sleep	Hormonal imbalance
Exposure to pollution	Respiratory and neurological issues

Role of Nutrition During Pregnancy

Proper nutrition is essential because the foetus receives all nutrients from the mother.

Important Nutrients

Nutrient	Function
Folic Acid	Prevents neural tube defects
Iron	Formation of haemoglobin
Calcium	Bone and teeth development

Nutrient	Function
Protein	Tissue growth
Omega-3 fatty acids	Brain development

Effects of Malnutrition

- Stunted growth
- Low birth weight
- Poor brain development
- Weak immune system

Effect of Stress and Mental Health

Stress increases cortisol hormone levels, which may affect the foetus.

Possible Effects:

- Premature birth
- Reduced birth weight
- Emotional and behavioral problems in children

Mothers with good mental health often experience healthier pregnancies.

Impact of Substance Abuse

Smoking

Nicotine reduces oxygen supply to the foetus.

Effects:

- Miscarriage
- Premature birth
- Sudden Infant Death Syndrome (SIDS)

Alcohol

Alcohol passes directly through the placenta.

Effects:

- Learning disabilities
- Facial abnormalities
- Memory problems

Drug Abuse

Illegal drugs may interfere with organ development.

Effects:

- Heart defects

- Brain damage
- Withdrawal symptoms after birth

Importance of Prenatal Care

Prenatal care includes:

- Regular doctor visits
- Ultrasound examinations
- Vaccinations
- Nutritional guidance

Advantages:

- Early detection of complications
- Healthy maternal weight gain
- Reduced risk of maternal and infant mortality

Conclusion

Maternal behavior plays a crucial role in determining the health and development of the foetus. Proper nutrition, emotional stability, regular medical care, and avoidance of harmful substances contribute to healthy growth and safe delivery.

Therefore, spreading awareness regarding healthy pregnancy practices is essential for the well-being of both mother and child.

Precautions and Suggestions

- Eat a balanced diet.
- Avoid smoking, alcohol, and drugs.
- Attend regular prenatal checkups.
- Maintain emotional well-being.
- Get proper rest and sleep.
- Follow medical advice carefully.

Bibliography

Books

1. NCERT Biology Class XII
2. Human Physiology by C.C. Chatterjee
3. Prenatal Development and Health – Medical Reference Guide

Websites

- [World Health Organization \(WHO\)](#)

- [UNICEF](#)
- [Centers for Disease Control and Prevention \(CDC\)](#)



ENGLISH PROJECT

SUMMER VACATION [H.W.]

Theme: Voices of Change – Literature, Language & Society

1. Title Page

- Project Title: *Voices of Change: Literature as a Reflection of Society*
- Name:
- Class: XII
- Subject: English Core
- School:
- Session:

2. Acknowledgement

I express my sincere gratitude to my English teacher for guiding me throughout this project. I also thank my school for providing the opportunity to explore literature in relation to real-life issues. This project helped me understand how language and literature reflect social change and human experiences.

3. Introduction

Literature is not just a form of art but also a mirror of society. Writers use stories, poems, and essays to highlight social issues, human emotions, and cultural values. This project explores how English literature helps us understand themes like identity, environment, inequality, and transformation.

4. Objectives

- To understand literature as a reflection of society
- To analyze social issues presented in texts
- To develop critical thinking and writing skills
- To connect literary themes with real-life situations

5. Literary Analysis (CBSE Textbook Based)

Choose any one from the following:

Flamingo (Prose & Poetry)

- *The Last Lesson* → Importance of language and identity
- *Lost Spring* → Child labour and poverty
- *Deep Water* → Overcoming fear
- *The Rattrap* → Human goodness and redemption
- *My Mother at Sixty-Six* → Aging and emotional bonding

Vistas (Supplementary Reader)

- *The Third Level* → Escapism and imagination
- *The Tiger King* → Satire on power and arrogance
- *On the Face of It* → Disability and acceptance

Economics

12th ECONOMICS PROJECT WORK

SUMMER VACATION [H.W.]

[PREPARE A DETAILED PROJECT FILE ON ANY ONE OF THE GIVEN TOPICS]

- Micro and Small-Scale Industries
- Goods and Services Tax Act and its Impact on GDP
- Self-help group
- Government Budget & its Components
- Alternate fuel – types and importance
- Waste Management in India – Need of the hour
- Rain Water Harvesting – A solution to water crisis
- New Education Policy (NEP) 2020: A Promise for a New Education System
- Food Supply Channel in India
- Human Development Index
- Role of RBI in Control of Credit
- Currency War – reasons and repercussions
- Sarva Shiksha Abhiyan – Cost Ratio Benefits
- Digital India- Step towards the future
- Sustainable Development Goals (SDG's)

12th Geography Projects-

**1. Detailed Description of waterways (World) with the location of the important water ways on chart paper.
AFREEN AND ZAIMA**

2. Geography Projects-

Detailed Description of waterways (India) with the location of the important water ways on chart paper.

RAHUL , SADAB AND VIVEK

Accountancy

Project Work

One specific project based on financial statement analysis of a company covering any two aspects from the following:

1. Comparative and common size financial statements
2. Accounting Ratios
3. Segment Reports
4. Cash Flow Statements

Project work for class xii "D" History.

1. Find out if there are any museums in your town. Visit one of them and write a report on any ten items, describing how old they are, where they were found, and why you think they are on display and also paste some relevant picture .

Std. XII

Political Science

Make a project on the current political situation in India and analysis the outcomes of the three states election. And write and compare about the outcomes of Two Bihar legislative election 2020 and 2025. In these elections which issues effected more. Also paste relevant picture. Make this project in A4 size paper.

CLASS 12 AI (CODE 843) HOLIDAY HOMEWORK ON PYTHON PROGRAMMING

INSTRUCTION: WRITE THESE PROGRAMS IN NOTEBOOK AND PERFORM THESE PROGRAMS ON LAPTOP/COMPUTER DEVICE

Q1). Write a program to check whether a number entered by the user is prime or not.

Q2). Write a program to count the number of vowels in a given string.

Q3). Write a program to input 10 numbers into a list and print the largest and smallest number.

Q4). Write a program to check whether a number is:

- Positive
- Negative
- Zero

Q5). **Grade Calculator**

Input marks and display grades:

Marks	Grade
--------------	--------------

90+	A
-----	---

75-89	B
-------	---

60-74	C
-------	---

40-59	D
-------	---

Below 40 Fail

Q6). Write a program in python to make a **Simple Calculator**

Using if-elif-else, perform:

- Addition
- Subtraction
- Multiplication
- Division

SUMMER VACATION HOLIDAY HOMEWORK & PROJECT SPECIFICATIONS

SESSION : 2026-2027

Subject: Physical Education (Code: 048)

Class: XII

General Submission Guidelines for Students:

- **Section A (Practical Record Book)** must be executed within a standardized physical education practical file or neat A4-sized sheets bound inside a project folder. Hand-drawn diagrams or authentic photographic prints are mandatory.
- **Section B & C** are to be completed within your regular class workbook/notebook designated for Physical Education theory.
- **Timelines:** The fully compiled compilation will be collected on the first working day upon the reopening of the institution post summer recess. Evaluation will directly affect internal assessment grades.

Dear Students,

The summer vacation provides a strategic window to solidify both theoretical framework and internal assessment profiles required for the Board Evaluations. Below is the structured breakdown of your homework task layout, designed to blend practical application with academic rigorousness.

SECTION A: CORE BOARD PRACTICAL RECORD BOOK

This section constitutes a permanent component of your final board portfolio compilation. Ensure immaculate presentation and absolute factual precision.

1. SAI Khelo India Physical Fitness Portfolio

Conduct the standardized fitness assessment test battery on yourself and record the outcomes explicitly. For each test, outline the objective, required equipment, and documented performance values:

- **Body Composition Analysis:** Compute the Body Mass Index using the formula: $BMI = \frac{Weight (kg)}{[Height (m)]^2}$.
- **Speed & Acceleration Profile:** 50-Meter Dash/Sprint timing.
- **Cardiovascular Endurance Index:** 600-Meter Run/Walk timing results.
- **Anterior Trunk Flexibility Check:** Sit and Reach Test score (measured in centimeters).
- **Abdominal Core Strength:** Partial Curl-Up continuous count over a 1-minute period.
- **Upper Body Muscular Endurance:** Push-ups (Boys) or Modified Push-ups (Girls) total repetition metrics.

2. Yoga Asanas as Lifestyle Disease Preventive Measures

Select any **two** classifications of the following lifestyle ailments: *Obesity, Diabetes, Asthma, or Hypertension*. For each selected condition, supply:

- A concise clinical explanation of the condition along with predominant modern-day causes.
- A detailed analysis of **four distinct preventive Asanas** helpful for managing the condition.
- For each Asana, write down the step-by-step **Procedure**, documented **Benefits**, and crucial **Contraindications** (conditions under which the Asana must be completely avoided).
- Affix real-time clear photographic evidence of yourself executing each posture, or insert highly accurate, labeled hand-drawn structural illustrations.

3. Detailed Sports Discipline Profile

Choose **one** specific major sports discipline from the approved listing (e.g., Badminton, Football, Basketball, Cricket, Volleyball, Handball, or Hockey). Document the following elements:

- Historical evolution of the sport across domestic and global platforms.
- A detailed, fully-labeled schematic field/court structural diagram mapping all exact official dimensions and boundary limits.
- The latest authoritative statutory rules, structural modifications, and operational terminologies.
- Fundamental core performance skills required for standard play.
- An overview of elite national/international tournaments and highly recognized sports icons within that discipline.

SECTION B: THEORETICAL APPLICATION & ADVANCED TOURNAMENT DESIGNS

To be answered with comprehensive conceptual explanations inside the primary theory notebook.

1. Tournament Fixture Architecture

- **Knock-out Tournament Framework:** Draft complete, verifiable Knock-out Fixtures for exactly **11 teams** and **19 teams** respectively. Explicitly display all background structural math, containing the calculation for total matches, allocation of teams inside upper and lower halves, and the formulaic distribution of Byes.
- **League Tournament Design:** Construct an organized round-robin fixture configuration for a **6-team league** using both the **Cyclic Method** and the **Staircase Method** layout designs.

2. Case-Study Research: Structural Trajectory of Women in Sports

Locate and conduct a structured interview with an active or former competitive female athlete, sports coach, or physical education professional within your local community. Compile a formal 2-page narrative report encompassing:

- Her early pathway, infrastructural support systems, and institutional or social barriers overcome.

- Her strategic suggestions regarding systemic reforms needed to escalate female sports engagement across rural and urban centers in India.
- Correlate her firsthand empirical insights back to the social, psychological, and physiological dimensions of women's sports performance analyzed within your unit syllabus.

SECTION C: APPLIED ERGONOMICS & DAILY FITNESS TRACKING LOG

To cultivate active physical adherence, maintain a rigorous 4-week daily health and training tracking diary. Replicate the structural template grid below into your notebook to monitor consistent variables:

CALENDAR DATE	WAKE-UP TIME	ACTIVE TRAINING / AEROBIC / YOGIC REGIMEN DETAILS (MIN)	HYDRATION VOL.	SLEEP CYCLE
<i>Sample Day 1</i>	<i>05:00 AM</i>	<i>30 mins Surya Namaskar sequence + 20 mins outdoor interval jogging</i>	<i>3.5 Liters</i>	<i>7.5 Hours</i>

Note: Students are expected to add rows representing all 28 days of the tracking timeline, concluding each week with a brief self-reflective paragraph summarizing physical recovery metrics and energy states.

Evaluation Metric Focus: Portfolios are directly graded on structural authenticity, structural clarity of court layouts, completeness of mathematical fixtures, verification of personal fitness logs, and logical consistency during the eventual Viva-Voce examination.