

Army Public School, Danapur Cantt
Summer Vacation Holiday Homework
Class XII SCIENCE (2024-25)

Subject: ENGLISH

1. PROJECT WORK

Project to be done in Practical Note-Book:

Note-Book should be covered with Black-Chart Paper.

Choose **ANY ONE** Topic

Paste Pictures and Write Data wherever necessary.

(Detail Guidelines of each topic will be shared in the WhatsApp Group)

a. LISTEN, FOR THE NATURE SPEAKS:

Refer to The Chapters: On the Face of It, Journey to the End Of the Earth, Keeping Quiet, A Thing Of Beauty, The Tiger King.

Explore the beauty of nature through these chapters.

b. GLIMPSES OF WORLD CULTURE:

Refer to The Chapters: The Last lesson, The Rattrap, The Enemy, Memories of Childhood.

The cultural insights provided by these literary works. Here are glimpses into the cultures portrayed in “The Enemy,” “The Rattrap,” and “The Last Lesson,” along with reflections on childhood memories.

c. 3. CHALLENGES AND STRUGGLES OF YOUNG CHILDREN AND YOUTH:

Refer to Chapters: The last Lesson, Lost Spring, Going Places, On the Face of It, Childhood Memories.

2. Prepare and learn Speaking Skill Topic. CHOOSE ONE according to Roll Numbers.

Roll 1&2; Roll 21&22 – Topic-1

Roll 3&4; Roll 23&24 – Topic-2

Roll 5&6; Roll 25&26 – Topic-3.....

TOPICS:

a. Three biggest issues affecting Indian Youth Today

b. Inspiring Speech or Story that has moulded your thoughts.

c. For well-being it's important to manage one's emotions.

- d. AI and DeepFake
- e. The Unsung Heroes of India
- f. How do you motivate yourself?
- g. Science of Landscaping
- h. How to find creativity and purpose in the face of adversity
- i. Which Musical Instrument you identify yourself with and why?
- j. Lesson learnt from each part of nature

3. Watch **ANY ONE** of the following **movies** and pen down a **review** concentrating on the plot, historical/political background, characterization and theme in not more than 200 words.

- a. The Last Lesson
- b. The Enemy
- c. Gandhi (1982)

OR

Write a detailed **book review** of a novel you have recently read elaborating on the plot, Historical/political background, characterization and theme in not more than 200 words.

- 4.** Look at the CBSE Sample papers of 2023-2024, 2022-2023, 2021-2022 and do Reading Section in your English Note-Book.
- 5.** Complete the **worksheets and assignments** for the chapters covered in class.
- 6.** Learn the spellings of the words given in the spelling list.

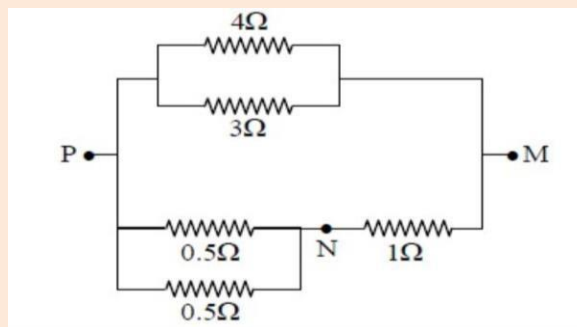
Subject: PHYSICS

* Solve the back questions from chapters 1,2 and 3 of the NCERT textbook.

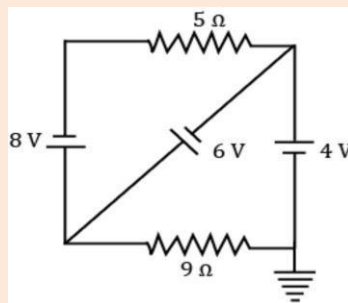
* Complete any pending classwork as well.

* Solve the questions given below.

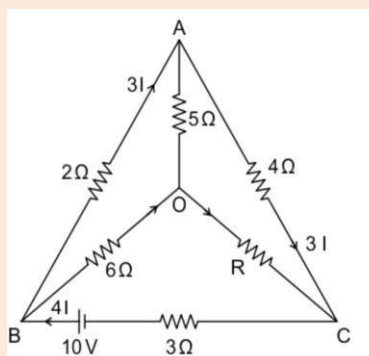
Q1. In the circuit shown, the current through the resistor is 1 amp when the points P and M are connected to a D.C. voltage source. Find the potential difference between the points M and N.



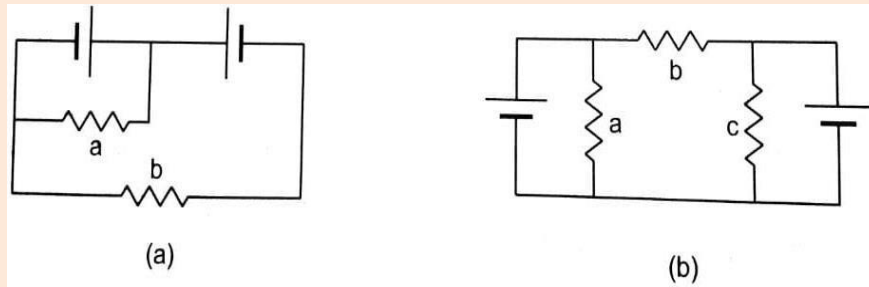
Q2. Find the current through 5 ohm resistor.



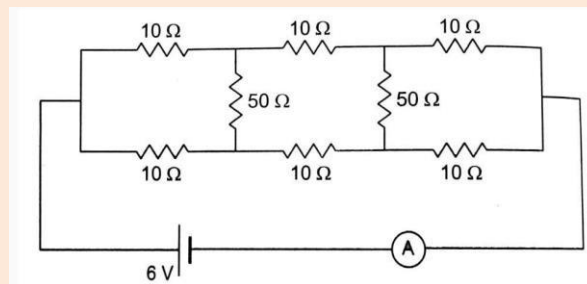
Q3. In the circuit shown in the following figure, Calculate the value of the unknown resistance R when the current in branch OA is zero.



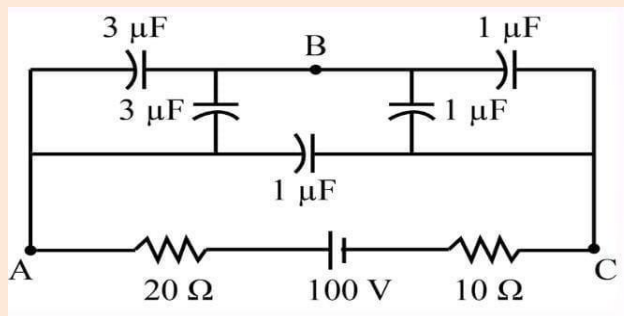
Q4. Each of the resistors shown in figure has a resistance of 10 ohm and each of the batteries has an emf of 10 V. Find the currents through the resistors a and b in the two circuits.



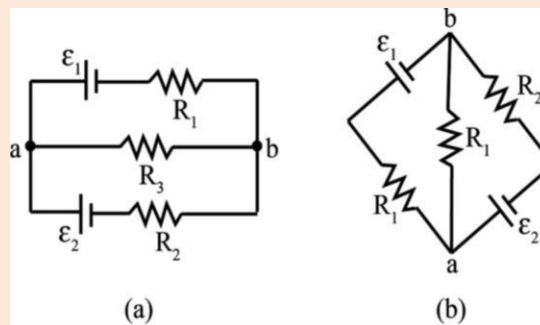
Q5. Find the current measured by the ammeter in the circuit shown in figure.



Q6. Find the potential difference between the points A and B and between the points B and C of figure in steady state.

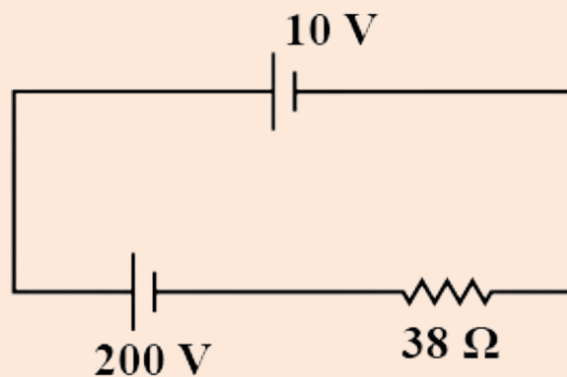


Q7. Find the potential difference $V_a - V_b$ in the circuits shown in figures given below.



Q8. (i) A low voltage supply from which one needs high currents must have very low internal resistance. Why?

(ii) A 10 V cell of negligible internal resistance is connected in parallel across a battery of emf 200 V and internal resistance 38Ω as shown in the figure. Find the value of current in the circuit.

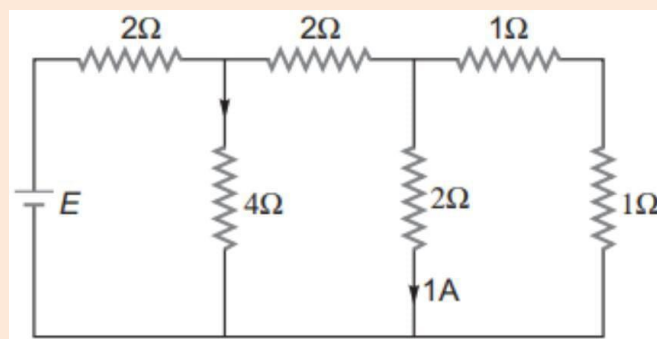


Q9. Four identical cells, each of emf 8 V and internal resistance 2.5 ohm are connected in series and charged by a 100 V DC supply, using a 24 ohm resistor in series. Calculate.

(i) charging current in the circuit

(ii) and potential difference across the cells during recharging.

Q10. Find the emf of the battery shown in circuit below.



Subject: CHEMISTRY

1. PROJECT TOPICS

- Study of the presence of oxalate ions in guava fruit at different stages of ripening.
- Study of quantity of casein present in different samples of milk.
- Preparation of soybean milk and its comparison with the natural milk with respect to curd formation, effect of temperature, etc.
- Study of the effect of Potassium Bisulphate as food preservative under various conditions (temperature, concentration, time, etc.)
- Study of digestion of starch by salivary amylase and effect of pH and temperature on it.
- Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice, etc.
- Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).
- Study of common food adulterants in fat, oil, butter, sugar, turmeric powder, chilli powder and pepper.

NB: Any **ONE** topic from the aforementioned list is to be chosen. Project work to be done within 15-20 pages (**not less than 15 pages**) and submitted in a stick file.

2. TEXT BASED QUESTIONS:

A. Define the following terms: -

- i. Raoult's law
- ii. Colligative properties
- iii. Ideal solutions
- iv. Non-ideal solutions
- v. Inert pair effect
- vi. Enthalpy of atomization
- vii. Transition elements
- viii. Lanthanoid contraction
- ix. Faraday's law of electrolysis
- x. Kohlrausch law of independent migration of ions
- xi. Batteries
- xii. Diffusion
- xiii. Osmosis

- xiv. Fajan's rule
- xv. Salt bridge
- xvi. Electrochemical series

B. Explain (within 30-40 words) :-

- i. The tanks are used by Scooba divers filled with air diluted with He (11.7%), N (56.2%), O (32.1%).
- ii. vapour pressure of solvent is affected when a non-volatile solute is dissolved in it.
- iii. Ni rod is not fit for stirring of CuSO_4 solution.
- iv. To prevent corrosion, Fe objects are painted.
- v. In an electrochemical cell, anions move towards anode and cations move towards cathode.
- vi. Zn, Cd and Hg are not considered to be as transition elements.
- vii. Boiling point of Mn and Tc are low.
- viii. Ag ($4d^{10}$) is transition element, although its d orbital is completely filled as Zn, Cd and Hg.
- ix. Sc is a transition element but Zn is not.
- x. $\text{Lu}(\text{OH})_3$ is a weak base but $\text{La}(\text{OH})_3$ is a strong base.

C. CASE-BASED QUESTIONS:

1.

Read the following passage and answer the questions that follow:

Boiling point or freezing point of liquid solution would be affected by the dissolved solids in the liquid phase. A soluble solid in solution has the effect of raising its boiling point and depressing its freezing point. The addition of non-volatile substances to a solvent decreases the vapour pressure and the added solute particles affect the formation of pure solvent crystals. According to many researches the decrease in freezing point directly correlated to the concentration of solutes dissolved in the solvent. This phenomenon is expressed as freezing point depression and it is useful for several applications such as freeze concentration of liquid food and to find the molar mass of an unknown solute in the solution. Freeze concentration is a high quality liquid food concentration method where water is removed by forming ice crystals. This is done by cooling the liquid food below the freezing point of the solution. The freezing point depression is referred as a colligative property and it is proportional to the molar concentration of the solution (m), along with

vapor pressure lowering, boiling point elevation, and osmotic pressure. These are physical characteristics of solutions that depend only on the identity of the solvent and the concentration of the solute. The characters are not depending on the solute's identity.

[CBSE Question Bank]

(Jayawardena, J. A. E. C., Vanniarachchi, M. P. G., & Wansapala, M. A. J. (2017). Freezing point depression of different Sucrose solutions and coconut water.)

- (a) What will be boiling point of sea water?
- (b) Out of 0.1 M, 0.5 M, 0.2 M glucose present in fruit juices, which one will have highest freezing point and why?
- (c) Calculate the freezing point depression of 0.01 m solution of MgBr_2 if degree of dissociation is 90%.
[$K_f = 1.86 \text{ K kg mol}^{-1}$]

Or

What is concentration of NaCl in blood in mol L^{-1} if its osmotic pressure is 0.821 atm at 310 K.
[$R = 0.0821 \text{ L atm K}^{-1} \text{ mol}^{-1}$]

2.

Read the given passage and answer the questions based on passage and related studied concepts.

Electrochemistry plays a very important part in our daily life. Primary cells like dry cell is used in torches, wall clock; mercury cell is used in watches. Ni—Cd, secondary cell is used in cordless phones, lithium battery is used in laptop, mobile phones and electric vehicles, lead storage battery is used in vehicles and inverters. Fuel cells $\text{H}_2\text{—O}_2$ was used in Apollo space programme. A 38 % solution of H_2SO_4 is used as electrolyte in lead storage battery. Its density is 1.30 g cm^{-3} . The battery holds 3.5 L of the acid. During the discharge of battery, the density of H_2SO_4 falls to 1.14 g cm^{-3} (20% solution by mass, molar mass 98 g mol^{-1}). **[CBSE Sample Paper 2021]**

- (a) Write the chemical reaction at anode when lead storage battery is in use?
- (b) How many Faradays are required to carry out reduction of one mole of PbO_2 ?
- (c) What is molarity of H_2SO_4 before discharge?

Or

What is mass of H_2SO_4 after discharge?

D. NUMERICALS:

1. (a). The molar conductivity of NH_4^+ ion and Cl^- ion are $73.8 \text{ Scm}^2\text{mol}^{-1}$ and $76.2 \text{ Scm}^2\text{mol}^{-1}$ respectively. The conductivity of 0.1 M NH_4Cl is $1.29 \times 10^{-2} \text{ Scm}^{-1}$. Calculate its molar conductivity and degree of dissociation.

(b). When a steady current of 2A was passed through two electrolytic cells A and B containing electrolytes ZnSO_4 and CuSO_4 connected in series, 2g of Cu were deposited at the cathode of cell B. How long did the current flow? What mass of Zn was deposited at cathode of cell A? [Atomic mass: Cu= 63.5 g/mol, Zn= 65 g/mol].

2. (a). Calculate the molality of sulphuric acid solution in which mole fraction of water is 0.8. [H=1u, S=32u, O=16u].

(b). Calculate molality and mole fraction of solute in a sugar syrup of mass 214.2 g containing 34.2 g of sucrose. [M.wt of sucrose, $\text{C}_{12}\text{H}_{22}\text{O}_{11} = 342\text{g/mol}$].

3. (a). A solution of urea in water has a boiling point of 373.18K. Calculate the freezing point of the same solution. [Given: for water $K_f = 1.86 \text{ K/mol}$, $K_b = 0.52 \text{ K/mol}$].

(b). Vapour pressure of water at 293 K is 17.535 mm of Hg. Calculate the vapour pressure of water at 293 K when 25g of glucose is dissolved in 450g of water.

Subject: BIOLOGY

REPRODUCTION IN FLOWERING PLANTS

1. Describe the structure of a microsporangium with a neatly labeled diagram.
2. State any one advantage and disadvantage of pollen grains to humans.
3. Explain the structure of a typical anatropous ovule with a neatly labeled diagram.
4. Explain Megasporogenesis and differentiate with microsporogenesis.
5. Differentiate between cleistogamous and chasmogamous flowers and also mention the examples in which both types of flowers remain present.
6. Differentiate between autogamy, geitonogamy and xenogamy.
7. Mention the characteristics of insect pollinated and wind pollinated flowers.
8. Describe pollen –pistil interaction.
9. What relationship exists between a species of moth and yacca plant?
10. What do you mean by outbreeding devices? Explain various types of these devices.
11. Explain embryogenesis.
12. Differentiate between dicot and monocot embryo.
13. Differentiate between albuminous and non- albuminous seeds with examples. Mention the reasons behind the production of such seeds.
14. Mention the advantages of seeds in angiosperms.
15. What do you mean by apomixis and polyembryony?
16. Mention the significance of apomictic seeds in hybrid industry.

HUMAN REPRODUCTION

1. Explain male and female reproductive systems.
2. Differentiate between spermatogenesis and oogenesis.
3. Explain various aspects of menstrual cycle with a neatly labeled diagram.
4. Draw a well labeled T.S of human testis showing different stages of developing sperms.
5. Describe the structure of a sperm with a diagram.
6. Explain the structure of a human ovary showing different types of follicles along with other structures present in the ovary.
7. Explain the process of fertilization till implantation with a neatly labeled diagram.
8. Explain the process of formation of placenta. Mention the functions of placenta.
9. Placenta is an endocrine gland. Justify.
10. Parturition is controlled by neuroendocrine mechanism. Justify.

11. What are the major features of embryonic development at various months of pregnancy?

REPRODUCTIVE HEALTH

1. Suggest the different aspects of reproductive health which need to be given special attention in the present scenario.
2. Do you think that reproductive health in our country has improved in the past 50 years? If yes, mention some such areas of improvement.
3. What are the suggested reasons for population explosion?
4. Amniocentesis for sex determination is banned in our country. Is this ban necessary? Comment.
5. What are the measures one has to take to prevent from contracting STIs?
6. Why is medical termination of pregnancy carried out?
7. Explain the mode of action of different types of IUDs.
8. Explain different types of ART.

PRINCIPLES OF INHERITANCE AND VARIATION

1. Explain the Law of Dominance using a monohybrid cross.
2. Define and design a test cross.
3. Human Blood group is a classic example of co- dominance and multiple allelism. Justify.
4. Design and explain a cross in which genotypic ratio and phenotypic ratio are same.
5. Who proposed Chromosomal theory of inheritance? How did this theory disclose parallelism in the nature of factors and chromosomes?
6. Why did T.H.Morgan select *Drosophila* for the experiment?
7. Explain the experiment conducted by T.H.Morgan and also explain the conclusions derived after this experiment.
8. Explain :- A. Polygenic inheritance B. Pleiotropy.
9. What is female heterogamety? Explain with the help of an example.
10. Describe the mode of sex-determination in Honey bee.
11. What do you mean by aneuploidy and polyploidy? Mention the reasons of these events.

Subject: INFORMATICS PRACTICES

Instructions :

- a) Read all the questions carefully.
- b) All the answers must be written in Fair IP Notebook.
- c) The codes written must be verified by executing it.
- d) The OUTPUT must be drawn in a Rectangular Box.

1. What is a Series and how is it different from a 1-D array, a list and a dictionary?

2. What is a DataFrame and how is it different from a 2-D array?

3. How are DataFrames related to Series?

4. What do you understand by the size of (i) a Series, (ii) a DataFrame?

5. Create the following Series and do the specified operations:

- a) EngAlph, having 26 elements with the alphabets as values and default index values.
- b) Vowels, having 5 elements with index labels 'a', 'e', 'i', 'o' and 'u' and all the five values set to zero. Check if it is an empty series.
- c) Friends, from a dictionary having roll numbers of five of your friends as data and their first name as keys.
- d) MTseries, an empty Series. Check if it is an empty series.
- e) MonthDays, from a numpy array having the number of days in the 12 months of a year. The labels should be the month numbers from 1 to 12.

6. Using the Series created in Question 5, write commands for the following:

- a) Find the dimensions, size and values of the Series EngAlph, Vowels, Friends, MTseries, MonthDays.
- b) Rename the Series MTseries as SeriesEmpty.
- c) Name the index of the Series MonthDays as monthno and that of Series Friends as Fname.

7. Create the following DataFrame Sales containing year wise sales figures for five sales persons in INR. Use the years as column labels, and sales person names as row labels.

	2014	2015	2016	2017
Madhu	100.5	12000	20000	50000
Kusum	150.8	18000	50000	60000
Kinshuk	200.9	22000	70000	70000
Ankit	30000	30000	100000	80000
Shruti	40000	45000	125000	90000

8. Use the DataFrame created in Question 7 above to do the following:

- a) Display the row labels of Sales.
- b) Display the column labels of Sales.
- c) Display the data types of each column of Sales.
- d) Display the dimensions, shape, size and values of Sales.
- e) Display the last two rows of Sales.
- f) Display the first two columns of Sales.
- g) Create a dictionary using the following data. Use this dictionary to create a DataFrame Sales2.

	2018
Madhu	160000
Kusum	110000
Kinshuk	500000
Ankit	340000
Shruti	900000

h) Check if Sales2 is empty or it contains data.

11. Use the DataFrame created in Question 7 above to do the following:

- a) Append the DataFrame Sales2 to the DataFrame Sales.
- b) Change the DataFrame Sales such that it becomes its transpose.
- c) Display the sales made by all sales persons in the year 2017.
- d) Display the sales made by Madhu and Ankit in the year 2017 and 2018.
- e) Display the sales made by Shruti 2016.

- f) Add data to Sales for salesman Sumeet where the sales made are [196.2, 37800, 52000, 78438, 38852] in the years [2014, 2015, 2016, 2017, 2018] respectively.
- g) Delete the data for the year 2014 from the DataFrame Sales.
- h) Delete the data for sales man Kinshuk from the DataFrame Sales.
- i) Change the name of the salesperson Ankit to Vivaan and Madhu to Shailesh.
- j) Update the sale made by Shailesh in 2018 to 100000.
- k) Write the values of DataFrame Sales to a comma separated file SalesFigures.csv on the disk.
Do not write the row labels and column labels.
- l) Read the data in the file SalesFigures.csv into a DataFrameSalesRetrieved and Display it.
Now update the row labels and column labels of SalesRetrieved to be the same as that of Sales.
- m) Plot the Bar graph for the above data with proper lables and title.

Subject: PHYSICAL EDUCATION

1. What is obesity? Explain all asans for its prevention.
2. Write down the benefits and contradiction of kapalbhati?
3. What is intramural and its objective?
4. Explain women athlete troid?
5. Write down the difference between intramural and extramural?
6. Explain all the deformities? And remedy to cure it?
7. Write in brief about Osteoporosis? What are the causes of Osteoporosis in women?
8. Explain any two benefits of ardhmatsyendrasana?
9. Write down the various committees? And their responsibility.
10. What do you mean by Menarche?
11. Do 10 MCQ from each chapter 1, 2 and 3.

NOTE: Do Holiday homework in separate copy.