PRAGYAN PUBLIC SCHOOL, JEWAR

Summer Vacation Homework

Class: 12th Science

ENGLISH
Part A – Writing Skills Practice **Notice Writing: (Let me make you aware)** 1. Your school is organizing a workshop on Cyber Safety for students. Draft a notice inviting students to attend the workshop. 2. You have lost your library card on the school premises. Write Write a notice for the school notice board. 3. As the Secretary of the Music Club of your school, draft a notice inviting students to audition for the Annual Music Competition. 4. Your school is organizing a tree plantation drive on the occasion of World Environment Day. Write a notice informing students about the event. **Job Application: (Let us explore the opportunities)** 1. Apply for the post of an English teacher at a public school, giving your academic and professional details. 2. Draft an application for the post of a Content Writer in an online education company. **Letter to the editor (Let us solve your problem)** 1. Write a letter to the editor expressing concern over the rising cases of cybercrime. 2. Write a letter to the editor regarding the increasing traffic jams and suggest solutions. **Article Writing : (Let us Understand)** 1. Write an article on "The Role of Technology in Modern Education." 2. Write an article on "Fitness and Healthy Living in the Modern Age." **Report Writing : (Let me tell you How it happened)**

1. Write a report on the Annual Science Exhibition held in your school.
2. Write a report for your school magazine about the Swachh Bharat Abhiyan drive carried out in your school.

Part B – Journal Writing

Daily Journal Entries (For 10 Days)
Tips: Reflect on your day: activities, thoughts, and feelings and write them down in the book. Include at least 2 travelogues if you travel during holidays (include where you went, what you saw, experiences, photos if possible).

Read Newspaper Editorials Daily
Read editorial or opinion pages of The Hindu / The Indian Express / Times of India. Summarize any 10 interesting editorial or articles s or news articles (title, date, newspaper name, and a 100-word summary).

Part C – Watching/ Listening and Critical Thinking
Watch and Reflect on the following TED Talks and write 150 -200 words for each, summarizing your takeaway from each:
1. https://youtu.be/7Lc_dlVrg5M?si=lQSaUpCd4cxKkX2f.

2. https://youtu.be/vacGRuHDtO0?si=pr4_P0mO3sQnKnwy.

3. https://youtu.be/aDG1T0kJnd4?si=JcZPUUWUCr4L2RXi.

Part D – Experiential Writing:

Cooking and Reporting Try Cooking 5 Staple Vegetarian Recipes Choose any five simple recipes which are regularly cooked at home. For each recipe, document: Recipe (ingredients + steps),Photos of the process and final dish How it turned out (taste, texture) Reactions of family members.

MATHS

12 A2
Solve NCERT Exemplar of ch 4, Determinants,ch 5 Continuity and Differentiability,ch 6 Application of Derivatives :

Complete lab manuals

BIOLOGY

Investigatory File:
Each student must complete their Physics/Chemistry/Biology investigatory project file as per the prescribed guidelines.

Lab Manual Written Work:
Complete all the written practical work in the lab manual carefully and maintain proper presentation.

20 Questions of Subjective Assignment

Sexual Reproduction in Flowering Plants

1. *Remembering*: Describe the structure of a mature embryo sac in angiosperms. Draw a neat, labelled diagram showing 7-celled, 8-nucleate stage.
2. *Understanding*: Explain the process of double fertilization in flowering plants. Why is it called so? What is the fate of the products formed?
3. *Analysis*: Differentiate between wind-pollinated and insect-pollinated flowers. Give 5 adaptive features of each with examples.
4. *Competency*: In papaya, male and female flowers are present on different plants. How does this prevent self-pollination? Explain two other devices used by flowering plants to promote cross-pollination.
5. *Analysis*: Apomixis and polyembryony are common in citrus. Explain both terms and discuss their significance for

horticulture and agriculture.

Human Reproduction

6. *Remembering*: Draw a labelled diagram of the human male reproductive system. Describe the role of Sertoli cells and Leydig cells.
7. *Understanding*: Explain spermatogenesis in humans with the help of a flow chart. How is it hormonally controlled?
8. *Analysis*: The menstrual cycle is controlled by ovarian and pituitary hormones. Explain the hormonal changes during follicular phase, ovulatory phase, and luteal phase with a graph.
9. *Competency*: A couple comes to a fertility clinic. Semen analysis shows low sperm count. Suggest possible causes and name two Assisted Reproductive Technologies that can help them. Explain the procedure of any one.
10. *Understanding*: Describe the major events during embryonic development from zygote to morula and blastocyst. Why is implantation considered a critical event?

Reproductive Health

11. *Remembering*: What is MTP? When is MTP legally allowed in India? Write any three risks associated with it.
12. *Understanding*: Explain the following contraceptive methods: a) IUDs b) Oral pills c) Sterilization. Mention their mode of action.
13. *Analysis*: The population of India crossed 1.4 billion in 2023. Analyze how reproductive health programs like family planning and RCH have contributed to controlling population growth. Mention 3 measures taken by the government.
14. *Competency*: A 17-year-old girl asks you about emergency contraceptive pills. What advice will you give her regarding their use, effectiveness, and side effects? Also discuss the importance of sex education for adolescents.
15. *Analysis*: STDs are a major reproductive health issue. Differentiate between bacterial, viral, and protozoan STDs with examples. Why are Hepatitis-B and AIDS called silent killers?

Principles of Inheritance and Variation

16. *Remembering*: State Mendel's Law of Independent Assortment. Explain it with a dihybrid cross using pea plant characters. Write the phenotypic and genotypic ratios obtained in F2 generation.
17. *Understanding*: What is incomplete dominance? Explain with the example of flower colour in snapdragon. How is it different from co-dominance?
18. *Analysis*: Haemophilia is a sex-linked recessive disorder. A haemophilic man marries a normal woman whose father was haemophilic. Work out the cross and predict the probability of their children being haemophilic. Also draw a pedigree chart.

19. *Competency*: In a family, father has blood group A and mother has blood group B. Their child has blood group O. Explain how this is possible using blood group genetics. Can this couple have a child with AB blood group? Justify.
20. *Analysis*: Differentiate between point mutation and chromosomal aberration. Explain Down's syndrome, Turner's syndrome, and Klinefelter's syndrome on the basis of karyotype and symptoms.

CHEMISTRY

Task 1:- Investigatory File:
Each student must complete their Chemistry investigatory project file as per the prescribed guidelines.

Task2:- Lab Manual Written Work:
Complete all the written practical work in the lab manual carefully and maintain proper presentation.

Task3 :- 10 Questions Assignment : Complete all solved and unsolved questions/exercises from the NCERT textbook up to MAY syllabus.

Q1. An organic compound (A) with molecular formula C8H8O gives a positive DNP test and forms a yellow precipitate with I2 and NaOH. Compound (A) on vigorous oxidation with KMnO4 gives a monocarboxylic acid (B), which on heating with sodalite forms benzene. Identify (A) and (B) and write the reactions involved.

Q2. An alkene (A) on ozonolysis gives two products, (B) and (C). Product (B) gives a positive Fehling's test and undergoes Cannizzaro reaction. Product (C) does not reduce Tollen's reagent but undergoes the iodoform test. Deduce the structures of (A), (B), and (C).

Q3. An organic compound (A) C5H{10}O forms a phenylhydrazone and gives a negative Tollen's test but a positive

iodoform test. On reducing (A) with Zn-Hg/HCl, n-pentane is obtained. What is the structure of (A)? Explain the steps.

Q4. A sweet-smelling liquid (A) with molecular formula C4H8O2 undergoes acid-catalyzed hydrolysis to yield a carboxylic acid (B) and an alcohol (C). Alcohol (C) can be oxidized back to acid (B) using acidified K2Cr2O7. Identify (A), (B), and (C).

Q5. Compound (A), C7H6O, reduces Tollen's reagent and, when treated with concentrated NaOH. yields compounds (B) and (C). Compound (B) undergoes electrophilic substitution faster than benzene, while compound (C) can be easily converted into a substance used as a food preservative. Identify (A), (B), and (C).

Q6. Arrange the following compounds in increasing order of their reactivity toward nucleophilic addition reactions and justify your arrangement analytically:

Ethanal

Propanal

Propanone

Butanone

Q7. Why does Benzaldehyde undergo nucleophilic addition reactions less readily than Cyclohexanecarbaldehyde? Analyze the structural and electronic factors involved.
Q8. When acetaldehyde is treated with a dilute base, it forms 3-hydroxybutanal (Aldol), but when it is treated with a strong, bulky base like Lithium diisopropylamide (LDA) at low temperatures followed by a ketone, a specific crossed-aldol product is formed. Explain the analytical significance of controlled enolate generation in this process.
Q9. Propose a detailed step-by-step mechanism for the acid-catalyzed nucleophilic addition of ethanol to propanone to form a ketal. Why is it necessary to use dry HCl gas instead of aqueous HCl?
Q10. Carboxylic acids have higher boiling points than alcohols of comparable molecular masses. However, when dissolved in benzene, ethanoic acid shows a molecular mass of approximately 120 instead of 60. Analyze this phenomenon.

Q.11onwards - NCERT Exemplar Chapter -Aldehyde ketone & carboxylic acid.

PHYSICS

Investigatory File:
Each student must complete their Physics/Chemistry/Biology investigatory project file as per the prescribed guidelines.

Lab Manual Written Work:
Complete all the written practical work in the lab manual carefully and maintain proper presentation.

Science Exhibition Model:
Students who have been assigned a science exhibition model must complete the preparation of their respective models during the vacation.

20 Questions of Subjective Assignment

Class 12 Physics – Long Answer Questions
Chapters:

1. **Electric Charges and Fields**
2. **Electrostatic Potential and Capacitance**
3. **Current Electricity**

Chapter 1: Electric Charges and Fields

Q1.State and explain Coulomb's law in vector form. Define the SI unit of charge and write the limitations of Coulomb's law.
Q2.Derive the expression for electric field intensity at a point on the axial line of an electric dipole. Also discuss its direction.
Q3.Derive the expression for electric field intensity at a point on the equatorial line of an electric dipole.
Q4.Using Gauss's theorem, derive the expression for electric field due to: (a) an infinitely long straight charged wire (b) a uniformly charged spherical shell.
Q5.State Gauss's theorem and explain its significance. Using it, derive the electric field due to an infinite plane sheet of charge.
Q6.Define electric flux. Explain Gauss's law mathematically and discuss its applications in electrostatics.

Q7.Derive the expression for torque acting on an electric dipole placed in a uniform electric field. Define dipole moment.

Chapter 2: Electrostatic Potential and Capacitance
Q8.Define electrostatic potential. Derive the relation between electric field intensity and potential difference.
Q9.Derive the expression for electric potential due to: (a) a point charge
(b) an electric dipole at an axial point.
Q10.Define capacitance. Derive the expression for capacitance of a parallel plate capacitor without dielectric medium.
Q11.Derive the expression for capacitance of a parallel plate capacitor when a dielectric slab is inserted between the plates.
Q12.Explain the combination of capacitors in: (a) series
(b) parallel
Derive expressions for equivalent capacitance in both cases.
Q13.Derive the expression for energy stored in a capacitor. Also derive the formula for energy density of electric fields.
Q14.Explain the principle and working of a Van de Graaff generator with a neat labelled diagram.

Chapter 3: Current Electricity

Q15.State Ohm's law. Derive the expression for drift velocity of electrons in a conductor and establish the relation between current and drift velocity.
Q16.Define electrical resistance and resistivity. Derive the relation:Q17.State Kirchhoff's rules and explain them. Use these rules to determine current in a Wheatstone network.
Q18.What is a potentiometer? Explain its principle and working. How is it used to compare the emf of two cells?
Q19.Explain the principle, construction, and working of a metre bridge. Derive the condition for balance.
Q20.State and explain Wheatstone bridge. Derive the condition for a balanced bridge and write its applications.

PAINTING

Dear Students,

I have shared 2 links with you. You have to draw one painting from each link as your Summer Vacation Task. Please complete the work during the summer vacation and submit it after the vacation ends.

1. https://drive.google.com/drive/folders/1XU-tVR6Nf8tiuGEeRM_is2HNH1doavGu
2. https://drive.google.com/drive/folders/1Z5jFQuJ3T6jmAXgPF81jdC55gqe92K0i

MUSIC

Raga Malkans. Listen to them and write the alap up to 100 matra and the 10 taan of 8 matra of Raga Malkans.
Jhaptala

2- Write Jhaptala dugun tigun Chauhan for practice.

Alankar
3- Complete this Alankar Topic Raag malkaunsh -
1-Search for movie songs based on
-1 Sa ga ma ga
2- Re Ga sa ga
3- Sa sa re sa

Phy. Edu.
IT
Chapter 4 - Java Programming with Netbeans

Part A – Subjective Work

Read the chapter properly and understand the theoretical part in the chapter and do the following:-

Write the Answer of following Questions:

1. What are the different ways to write comments in Java?
2. What is the main method in Java? Explain each keyword used in it.
3. What is the difference between print() and println() methods in Java?
4. What are the different primitive data types in Java?
5. What are the best practices for naming variables in Java?
6. What are the various types of operators in Java and what are they used for?
7. Write a short note on the conditional operator in Java.
8. Explain the switch statement in Java.
9. What are the different types of loops in Java?
10. Explain the syntax of for loop and while loop.
11. What is the difference between while loop and do-while loop?
12. Write a short note on Access Modifiers in Java.
13. What are getter and setter methods? Explain.
14. What is the purpose of java.util.Scanner class?

15. What are assertions in Java?

16. Name any two primitive data types in Java.

AI

🏫 **Pragyan Public School, Jewar**
📘 **Holiday Homework (2026-27)**
📚 **Subject: Artificial Intelligence (843)**
🗓️ **Class: XII | Stream: Skill Education**

🌞 **Summer Holiday Homework**
Objective: To reinforce practical knowledge of Python, Data Science Methodology, Orange Data Mining, and Data Storytelling in alignment with CBSE guidelines.

✍️ **Instructions:**
All work must be done neatly in your Practical File with proper headings and comments.
Attach screenshots of outputs and workflows wherever necessary.
Submit the completed file on the first day after vacation to your AI teacher.
Marks will be awarded for completion, presentation, and accuracy.
Follow the curriculum mentioned in the CBSE AI Syllabus 2026–27.
📌 **Part A – Python Programming (Unit 1)**
Write and execute the following 10 Python programs and paste outputs in the practical file:

1. Create a Pandas DataFrame and display first 5 and last 10 records.
2. Load a CSV file into a Pandas DataFrame and check for missing values.
3. Handle missing values using fillna() and dropna().
4. Export DataFrame to CSV.

5. NumPy – Create and manipulate arrays.
6. NumPy – Reshape and perform slicing
7. Simple Linear Regression using sklearn.
8. Evaluate model with R^2, MSE, RMSE.
9. Compute precision, recall, F1 score using confusion_matrix.
10. Plot a basic line chart using matplotlib.
11. Group data in Pandas using groupby().
12. Sort values in a DataFrame.
13. Read CSV and perform statistical summary.
14. Generate random NumPy data and save to CSV.
15. Create a DataFrame using NumPy random data.

📌 **Part B – Orange Data Mining (Unit 4)**
Perform the following 3 practical activities in Orange and paste workflow screenshots:

1.Load and visualize the Iris dataset using Scatter Plot.

2.Perform classification using Decision Tree and evaluate with Confusion Matrix.

3.Use Word Cloud to visualize word frequency in a text dataset.

📌 **Part C – Data Storytelling (Unit 8)**
Prepare a data story on the topic:
"Impact of Mid-Day Meal Scheme on Dropout Rates since 1995"

Include the following in your project report (typed/printed and attached in file):

Title, Introduction, and Problem Statement

Use visuals (charts/graphs)

Apply Freytag's Pyramid structure to narrate

Highlight trends, patterns, correlations

Include conclusion and recommendations

🗂️ **Optional (For Enrichment):**
Use Google Gemini or ChatGPT to generate creative text prompts.

Explore TensorFlow Playground and try a classification task.

🗓️ **Submission Deadline:**
On the first working day after summer vacation.

📣 **Note to Students:**

This holiday homework is a part of your internal assessment and practical file. Ensure originality and clarity in your work. Let your creativity and analytical thinking shine!

JIVA HOMEWORK