



**RAMJAS SCHOOL ANAND PARVAT NEW DELHI – 110005**  
**SUMMER HOLIDAY HOMEWORK (SESSION 2024-25)**  
**CLASS XII - SCIENCE**

**SUBJECT: ENGLISH**

1. Create an Invitation Card (any social event) using coloured sheets.

**Note: -Creativity and originality using eco-friendly/best out of waste material will be appreciated.**

2. Project (**On Any One Topic**) – General Studies (Two - Four students per topic)

- |                        |  |
|------------------------|--|
| a) Science and Society | d) Contemporary Problems of Indian Society |
| b) Career Pathways     | e) Social Responsibility                   |
| c) Human Rights        |  |

3. Project (**On Any One Topic**) – English (Two – Four students per topic)

- Topic 1 – Racism is Universal
- Topic 2 – Indigo & Civil Disobedience Movement
- Topic 3 – Development & Disasters are Interlinked
- Topic 4 - Human Rights – A Reality Check
- Topic 5 – All is not Well – Climate Change & its Consequences
- Topic 6 – Positive All the Way – Inspiring Men & Women
- Topic 7 - Social biases in India
- Topic 8 – Women Empowerment
- Topic 9 - Children of Lesser God
- Topic 10 – Stereo-Typical Portrayal of Women in Indian Films

- **Ensure that there are no spelling or grammatical error in your presentation.**
- **All assignments will be awarded marks.**

**SUBJECT: PHYSICS**

**PART 1 ASSIGNMENT**

1. The electric potential  $V$  at any point  $O(x, y, z)$  all in meters in space is given by  $V = 4x^2$  volts. The electric field at any point  $(1m, 0, 2m)$  in  $V/m$  is:
  - (a) 8 along negative x-axis.
  - (b) 8 along positive x-axis.
  - (c) 16 along negative x-axis.
  - (d) 16 along positive x-axis.
2. A glass rod acquires charge by rubbing it with silk cloth. The charge on glass rod is due to:
  - (a) Friction (b) Conduction (c) Induction (d) Radiation
3. A parallel plate capacitor is charged by a battery. Once it is charged battery is removed. Now a dielectric material is inserted between the plates of the capacitor, which of the following does not change?
  - (a) electric field between the plates
  - (b) potential difference across the plates
  - (c) charge on the plates
  - (d) energy stored in the capacitor
4. State Gauss's theorem. Derive an expression for electric field intensity at a perpendicular distance  $r$  from the infinite plane sheet of charge.
5. Derive an expression for electric field intensity at a point on axial line of dipole.
6. Show that in a uniform electric field, a dipole experience only a torque but no net force. Derive an expression for torque.
7. Define Electric potential. Write an expression for electric potential due to a point charge at a distance  $r$  from the charge.
8. Two-point electric charges  $+q$  and  $+4q$  are separated by a distance of  $6a$ . Find the point on the line joining the two charges where the electric field is zero
9. Define dipole moment of an electric dipole. Derive an expression for electric field intensity at any point on equatorial line of dipole.
10. Four charges each of charge  $q$  are placed at the corner of a square of side  $b$ . Calculate the potential energy of the system.
11. Derive an expression for electric field intensity at a perpendicular distance  $r$  from an infinite line charge.

12. What is a capacitor. Write the formula for capacitance of parallel plate capacitor. Derive an expression for capacitance of a parallel plate capacitor with a dielectric slab of thickness  $t$  in between the plates.

### **PART 2—ART INTEGRATED PROJECT**

Topics:

1. Electrostatics 2. Current electricity 3. Wave optics 4. Dual nature of matter	5. Atoms and Nuclei 6. Semiconductor devices 7. Ray optics
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\*Mode of performing AIL\*

1. Arts 2. Collage 3. PPT	4. Poster 5. Flow charts
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### **SUBJECT: CHEMISTRY**

• Revise Ch-1 & Ch-2 and solve all the NCERT back exercise questions of these two chapters on A-4 Size white sheets.

• Prepare any self-composed meme/ poster/ poem (on A-3 size sheet) related to any topic of Ch-1 or Ch-2. Make it creative and aesthetic by using different colours/ paints/ craft-work.

• Prepare an Investigatory Project (handmade) on any topic of your choice. The project should be of 13-15 pages, excluding the title page. It should contain the following headings:

- Cover page (having school name, name of student, class, topic of project)
- Table of contents
- Certificate ➤ Acknowledgement
- Introduction to project
- Theory
- Experimental Analysis / Investigation done
- Observation
- Conclusion / Inference
- Bibliography / References

• Suggested Topics:

Analysis of fertilizers used in agriculture.

Chemistry in black and white photography.

Presence of oxalate ions in guava fruit and different stages of ripening.

Effect of Potassium Bisulphate as a food preservative.

Quantity of the presence of casein in different samples of milk.

Extraction of various essential oils present in Ajwain (Carum), Illaichi (Cardamom) and Saunf (Fennel Seeds).

Common food adulterants in fat, butter, oil, turmeric powder, pepper, chilli powder, sugar, etc. Determination of contents in cold drinks.

Removal of alcohol from the body through Esterification.

Check the ions present in a toothpaste.

### **SUBJECT: MATHS**

**\*Do AIL on any one of the topics of the following Topics:**

- |                                    |  |
|------------------------------------|--|
| 1. Indefinite Integration          | 6. AOI (Area under the bounded curves)                         |
| 2. Inverse Trigonometric Functions | 7. Continuity and Differentiability                            |
| 3. Matrices                        | 8. Maximum and Minimum values of a function in closed interval |
| 4. Determinants                    | 9. Types of function   |
| 5. Differential Equations          | 10. Relation of Geometry and Maths                             |

**\*Mode of performing AIL\***

- |            |                |
|------------|----------------|
| 1. Art     | 4. Poster      |
| 2. Collage | 5. Mind Map    |
| 3. PPT     | 6. Flow charts |

## # Solve 10 years CBSE QUESTIONS on following topics

- 1) Derivatives
- 2) AOD
- 3) Inverse Trigonometry
- 4) Integration

### SUBJECT: PSYCHOLOGY

1. Make a model on any one intellectual approach.
2. Write a case profile including Introduction, Definitions, Types, Causes, Intervention and Management.
3. Learn and write all MCQ's from chapter 1 and 2.
4. Write 2 Practicals on practical file included questionnaire.
5. Revision of all NCERT Textbook read questions.

### SUBJECT: BIOLOGY

1. Complete the back exercise and assignments of Chapter-1- Sexual reproduction in flowering plants, Ch-2- Human Reproduction, Ch-3 Reproductive Health in your notebook.
2. Write following experiments in your practical file and draw all the relevant diagrams.
  - Prepare a temporary mount of onion root tip to study mitosis.
  - Flowers adapted to pollination by different agencies (wind, insects, birds).
  - Identification of stages of gamete development, i.e., T.S. of testis and
  - T.S. of ovary through permanent slides (from grasshopper/mice).
  - Meiosis in onion bud cell or grasshopper testis through permanent slides.
  - T.S. of blastula through permanent slides (Mammalian).
  - Common disease-causing organisms like Ascaris, Entamoeba, Plasmodium, any fungus causing ringworm through permanent slides, models or virtual images or specimens. Comment on symptoms of diseases that they cause.

3. Prepare investigatory projects on the topics of your choice.

You can also use the topics which were provided to you in class 11<sup>th</sup>. The topic of your investigatory project must be informed to your classmates to ensure that one topic is selected by only one student.

The project must include the following headings-

- Acknowledgement
- Certificate (Must have space for signatures of both internal and external examiner)
- Index
- Aim of Project
- Theory
- Material Required
- Experimental Procedure
- Results
- Observation
- Conclusion
- Bibliography

Data and Graphs can be included in the project. Stick all the relevant pictures and make the project artistically attractive.

### SUBJECT: COMPUTER SCIENCE

Q1. Carefully observe the code and write the output:

```
def example(a):  
    a = a + '2'  
    a = a*2  
    return a  
example("hello")
```

Q2. **Write a function COUNT() in Python to read contents from file "REPEATED.TXT", to count and display the occurrence of the word "Catholic" or "mother".**

For example:

If the content of the file is "Nory was a **Catholic** because her **mother** was a **Catholic** , and Nory's **mother** was a **Catholic** because her father was a **Catholic** , and her father was a **Catholic** because his **mother** was a **Catholic** , or had been

The function should display:

**Count of Catholic, mother is 9**

Q3. Read the code and write the output of the given code:

```
def show( ):  
    x = ['ab', 'cd']
```

```
for i in x:
    x.append(i.upper())
print(x)
```

Q4. Predict the output of the following code:

```
x="abcdef"
while i in x:
    print(i, end=" ")
```

Q5. Consider the given code:

```
x="xyzyxzyxzxyy"
```

Write the output of the following statements:

- print(x.count("xyy"))
- print(x.count("xyy",-10,-1))

Q6. Predict the output of the following:

```
names=["Sonali","Pranali","Meetal","Kanishka"]
names2=names
names2[1]="Vishakha"
names[3]="Pratichi"
print(names)
print(names2)
```

Q7. True or False:

- Variable used inside a function become its global variable.
- In Python, functions are always called by passing reference.
- Parameter names are used in function definition are called actual parameters.
- Comments are the python statements which are ignored by the interpreter.

Q8. Differentiate the following:

- String Split method and Partition method
- Readline and Readlines
- Random module Shuffle method and Choice method

Q9. **Considering the content stored in file "WORLD CUP.TXT", write the output**

*India won the Cricket world cup of 1983*

```
f = open("WORLD CUP.TXT")
print(f.read(2))
print(f.read(2))
print(f.read(4))
```

Q10. Write a python function that accepts a string and calculates the number of uppercase letters and lowercase letters.

Q11. Write a function with string as a parameter which replaces all vowels with "\*" .

### **ART INTEGRATED PROJECT**

Q12. Create the following dictionary based on Andaman Nicobar Islands data:

Total Population	4,34,192
Total Area	8,249
Total Islands	936
Inhabited Islands	31
Districts	3
Tehsil	9

Write the python statements for the following:

- Display only keys
- Display only values

Prepare this in the form of PowerPoint Presentation.