ACADEMIC WORLD SCHOOL™
BEMETARA

SESSION: 2026-27

SUMMER VACATION ASSIGNMENT

GRADE : XII

(SCIENCE)

Name _____Class_____Section_____

ACADEMIC WORLD SCHOOL™
BEMETARA

SESSION: 2026-27

SUMMER VACATION ASSIGNMENT

GRADE: XII

General Instructions:

1. Write in a clear and legible handwriting.
2. Complete all the homework in a separate subject Summer Vacation Homework Notebook.
3. **DO NOT COPY AND PASTE FROM THE INTERNET**. (Assignment will be rejected)
4. In case of reference from the internet, you may:
   A. Read the content from the internet, if you wish and paraphrase (Rewrite in your own words)
   B. Mention the source of your information by providing the link from the internet for the verification by the teachers.
5. Marks awarded will be counted in the final scores at the end of the session.
6. The Summer Vacation HW will be submitted immediately upon arrival to school after Summer Vacation.
7. For any assignment related query do post your question on E-Mail Id of respective subject teacher. List of Subject Teacher's E-Mail ID attached.

Note for the Parents:

Parents are requested to guide his/her wards to complete their assignments honestly and submit by the due date.

SUBJECT: ENGLISH (301)
GRADE : XII

1. Write a poem in English of your own, using your creativity and imagination. Make sure to apply at least five different poetic devices in the poem correctly.
   Note – The poem should be your original creation; avoid plagiarism.
2. Imagine you are hosting a podcast and have invited your favourite celebrity or any person you admire the most, as a guest on your show. Prepare an interesting questionnaire, with a minimum ten-fifteen questions that you will ask your guest on the show.

Note – Frame questions about his/her childhood, family schooling, friends, young age, career, achievements, hobbies etc.

3. Write down ten idioms/proverbs in English; explain their meanings and use each idiom/proverb in a meaningful sentence.
4. **Travelogue Writing Assignment**

   You recently had an opportunity to visit a place that left a deep impression on you—this could be a hill station, historical city, cultural heritage site, wildlife sanctuary, coastal region, or even a journey through a different state or country.

   Write a detailed travelogue (500-800 words) describing your experience.

   Your travelogue must include the following elements:

   - A **captivating title** that reflects the essence of your journey
   - A brief introduction to the **destination and purpose of travel**
   - A vivid description of the **journey experience** (mode of transport, scenery, incidents, companions, etc.)
   - Detailed observations of the **place visited** (landscape, culture, people, food, climate, architect ure, or unique features)
   - At least one **memorable incident or personal experience** during the trip
   - Your **feelings, reflections, and learnings** from the journey
   - A suitable **conclusion highlighting how the journey impacted your perspective**
   - Use of **descriptive and sensory language** (sight, sound, smell, touch, taste)
   - A **first-person narrative style**
   - **Chronological flow with coherence and creativity**

5. **Read the chapter *"Deep Water"* by William Douglas carefully. Based on your understanding of the text, frame two long-answer questions that would test a student's comprehension and analytical thinking skills. The questions should encourage critical reflection on the themes, experiences, and message of the chapter.**

****

SUBJECT: PHYSICS (042)
GRADE : XII

I. Complete the following experiments & activities (written part only) in your practical manual.

1. To determine resistivity of two / three wires by plotting a graph for potential difference versus current.

EXPERIMENTS
SECTION–A

1. To determine resistivity of two / three wires by plotting a graph for potential difference versus current.
2. To find resistance of a given wire / standard resistor using metre bridge.
3. To verify the laws of combination (series) of resistances using a metre bridge.
4. To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.

SECTION-B

5. To find the value of *v* for different values of *u* in case of a concave mirror and to find the focal length.
6. To find the focal length of a convex lens by plotting graphs between *u* and *v* or between *1/u* and *1/v*.
7. To determine angle of minimum deviation for a given prism by plotting a graph between angle of incidence and angle of deviation.
8. To draw the I-V characteristic curve for a p-n junction diode in forward and reverse bias.

ACTIVITIES

1. To assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse and a power source.
2. To assemble the components of a given electrical circuit.
3. To draw the diagram of a given open circuit comprising at least a battery, resistor/rheostat, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also the circuit diagram.
4. To identify a diode, an LED, a resistor and a capacitor from a mixed collection of such items.
5. Use of multimeter to see the unidirectional flow of current in case of a diode and an LED and check whether a given electronic component (e.g., diode) is in working order.
6. To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab

II. Make an investigatory project file based any one of the topics listed below:-

INVESTIGATORY PROJECT TOPICS

1. To investigate the dependence of angle of deviation on angle of incidence using hollow prism field one by one with different transparent fluid.
2. To find the Refractive index of
   a) water b) oil (transparent)
   Using a plane mirror, an equiconvex lens (made from a glass of known RI) and an adjustable object needle.

3. Study of various factors on which the internal resistance ,EMF of a cell depends.
4. To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed transformer.
5. To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.
6. To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.
7. To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.

****

SUBJECT: CHEMISTRY (043)
GRADE : XII

Summer Assignment –

A. Make a investigatory project on any one of the following topics:

1) Green chemistry- Bio-diesel and bio-petrol
2) Sterilization of water using bleaching powder
3) Analysis of fertilizers
4) Measuring the amount of Acetic acid in vinegar
5) Determination of contents of cold drinks
6) Study the quantity of casein in milk
7) Presence of insecticides and pesticides in fruits and vegetables
8) Preparation of soyabean milk
9) Study of rate of fermentation of juices
10) Determination of caffeine in tea samples
11) Determination of content of toothpaste
12) Dyeing of wool, silk and cotton in malachite green
13) Effect of Potassium bisulphite as a food preservatives
14) Study the rates of fermentation of fruit or vegetable juices
15) Study and analyze the Foaming Capacity of the Soap
16) Determine which Antacid could neutralize the most Stomach Acid
17) Study the Various Effects of Dye on Different Types of Fabric
18) Study the Power of Enzymes and Biotechnological Applications
19) Does Water Temperature Cause Metal to Expand and Contract
20) Investigate the Methods of Preparation of Toilet Soaps

Things should be mentioned:

a) Aim
b) Apparatus required
c) Chemicals used
d) Principle
e) Procedure
f) Observation table
g) Result
h) Precautions
i) Bibliography

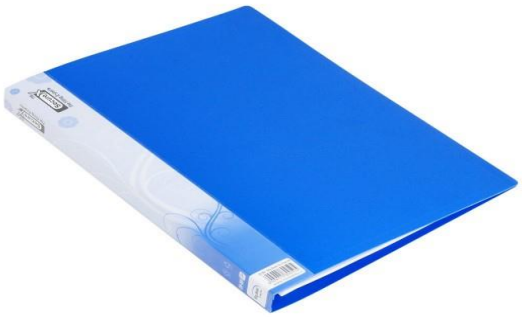
Instructions:

i) Complete the investigatory project allotted to you and submit it after summer vacation in a proper file.
ii) Project file should contain-

- Front page including school name, logo, topic name & student name and teacher name.
- Second page as certificate.
- Third page as acknowledgement.
- Fourth page showing index.

All these 4 pages should be in printed form.
1st page -color print while rest can be black and white.
iii) Except these 4 pages, write the project in your own handwriting neatly.

NOTE- ONLY REPORT FILE IS ALLOWED NO STICK FILE



B. Write the following practicals in the given sequence only-

1. Prepare 0.05 M solution of Mohr's salt. Using this solution find out the molarity and strength of the given $KMnO_4$ solution.
2. Prepare M/40 solution of oxalic acid to determine molarity and strength of the given solution of $KMnO_4$.
3. To separate the colored component present in the mixture of red and blue inks by ascending paper chromatography and find Rf value.
4. Salt analysis 1 – To analyze the given salt for acidic and basic radicals.
5. Salt analysis 2 – To analyze the given salt for acidic and basic radicals.
6. Salt analysis 3 – To analyze the given salt for acidic and basic radicals.
7. Salt analysis 4 – To analyze the given salt for acidic and basic radicals.
8. Salt analysis 5 – To analyze the given salt for acidic and basic radicals.
9. To identify the nature and detect the alcoholic functional group in the given organic compound.
10. To identify the given organic compound possessing aldehyde functional group.
11. To identify the given organic compound possessing ketone functional group.
12. To identify the given organic compound possessing carboxylic functional group.

Things should be mentioned:

a) Aim
b) Apparatus required
c) Chemicals required
d) Theory/ Principle
e) Procedure
f) Observation table
g) Calculation
h) Result
i) Precaution (if any)

Instructions -

1. Index should be filled properly – Mention all the details in each column carefully.
2. Observation table and diagrams (if any) must be done on blank side of the practical notebook.
3. Chromatogram should be attached properly in notebook on blank side.
4. Salt analysis table should be drawn properly using ruler/scale.
5. At the end of each practical, result must be mentioned.

****

SUBJECT: BIOLOGY (044)
GRADE : XII

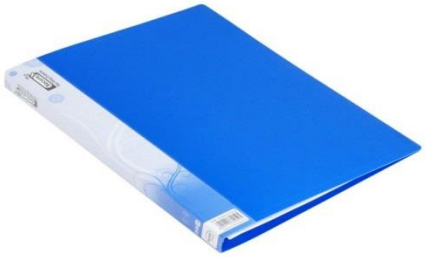
SECTION- A (Investigatory Project)

1. Make an investigatory project based on any one topic of your choice .
2. The following points are to be taken care while preparing project-
   i. Relevant topic must be chosen from the text book
   ii. Project must be handwritten.
   iii. Proper evidences (Data, pictures etc.) are to be produced in favour.
   iv. Project should not be copied from any source rather put your own effort.
   v. Use internet for more information.
3. You may choose other relevant topics of your choice other than suggested from **NCERT** only.

Suggested topics:

1. Any human disease can be taken as a topic and collect the complete information with statistical data and a support of statistical analysis about the same questioners.
2. Study about sleep walking and sleep paralysis.
3. Cancer.
4. Genetic and chromosomal disorders.
5. Study of locomotion in fishes, importance of different fins in balancing and steering the body. (M.R.- a fish tank, live fishes, scissors, petridishes, cotton).
6. Effects on plant movement (effects of light and effects of gravity). (M.R.- a potted plant, maize grains / bean / green gram seeds, petridishes, cotton).
7. Medicinal plants and their benefits.
8. Environmental Pollution
9. Infertility and steps that can be taken to overcome infertility problems.
10. To study the variation in the rate of mitotic cell division in the root tips of onion.
11. Effect of Plant growth regulators in development of plants
12. Effect of salinity of water on the growth of one type of plant.
13. Conduct a survey of pesticides at your local nursery, garden supplies shop or supermarket. Construct a table in which to record:
    a. the names of commercial brands of insecticides
    b. the target organisms
    c. the active chemical ingredients
    d. information given about safety precautions.
14. Stages of fetal development.
15. Find out how ants follow a trail, and how and why birds migrate.
16. Find out some of the innate behaviors of babies. Why might they be useful to a baby?
17. Investigate the statement “Too much adrenaline can cause stress-related diseases”.
18. Design an experiment to compare the pH of various brands of toothpaste. What does the pH of toothpaste suggest about tooth decay?
19. What causes pimples? Why are they so difficult to prevent or cure?
20. Tobacco and its side effect.
21. STDs(symptoms, prevention & cure)

NOTE- ONLY REPORT FILE IS ALLOWED NO STICK FILE



SECTION – B (PRACTICALS)

NOTE:-

A. List of Experiments

1. Prepare a temporary mount to observe pollen germination.
2. Study the plant population density by quadrat method.
3. Study the plant population frequency by quadrat method.
4. Prepare a temporary mount of onion root tip to study mitosis.
5. Isolate DNA from available plant material such as spinach, green pea seeds, papaya, banana etc.

B. Study and observe the following (Spotting):

1. Flowers adapted to pollination by different agencies (wind, insects, birds).
2. Pollen germination on stigma through a permanent slide or scanning electron micrograph.
3. Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice).
4. Meiosis in onion bud cell or grasshopper testis through permanent slides.
5. T.S. of blastula through permanent slides (Mammalian).
6. Mendelian inheritance using seeds of different colour/sizes of any plant.
7. Prepared pedigree charts of any one of the genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colour blindness.
8. Controlled pollination - emasculation, tagging and bagging.
9. 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.
10. Models specimens showing symbiotic association in lichens, root nodules of leguminous plants, and parasitic mode of nutrition shown by Cuscuta on host.
11. Flash cards / models showing examples of homologous and analogous organs.

****

SUBJECT: MATHEMATICS (041)
GRADE : XII

1. **Project File**

   Draw all the graphs of Inverse Trigonometric Functions (one graph in one A4 size paper) and also write its domain and range.

2. **To be done in lab**

   1. **ACTIVITY 1:** To verify that the relation R in the set L of all lines in a plane, defined by R = $\{(l, m) : l \perp m\}$ is symmetric but neither reflexive nor transitive.
   2. **ACTIVITY 2:** To verify that the relation R in the set L of all lines in a plane, defined by R = $\{(l, m) : l \parallel m\}$ is an equivalence relation.
   3. **ACTIVITY 3:** To demonstrate a function which is not one-one but is onto.
   4. **ACTIVITY 4:** To demonstrate a function which is one-one but not onto.
   5. **ACTIVITY 5:** To find analytically the limit of a function f (x) at x = c and also to check the continuity of the function at that point

3. **Assignment for Self-Practice**

   Solve the attached worksheet.

****

Sl.No.	Department	Teacher's Name	E-mail ID
1	MATHEMATICS	SHIVKUMAR TIWARI (VP)	viceprincipal@academicworld.co.in
2		SHAILESH SHARMA	shailesh.sharma@academicworld.co.in
3		SHIVAM MISHRA	shivam.mishra@academicworld.co.in
4		SHUBHAM TIWARI	shubham.tiwari@academicworld.co.in
5		SONU PANDIT	sonu.pandit@academicworld.co.in
1	SCIENCE	NEETA RAICHA (ACO)	academiccoordinator@academicworld.co.in
2		AMIT KUMAR TIWARI	amit.tiwari@academicworld.co.in
3		DURGA TIWARI	durga.tiwari@academicworld.co.in
4		NEHA SARAF	neha.saraf@academicworld.co.in
5		PINKI DASRORA	pinki.dasrora@academicworld.co.in
6		RITU SHARMA	ritu.sharma@academicworld.co.in
7		SANJAY SONI	sanjay.soni@academicworld.co.in
8		SHABANA BANO	shabana.bano@academicworld.co.in
9		SHAIK HUSSAIN BASHA	shaik.basha@academicworld.co.in
10		SHWETA K. SINGH	shweta.singh@academicworld.co.in
11		SURAJ KUMAR	suraj.rout@academicworld.co.in
1	SPORTS	ALPHONSE LEPCHA	alphonse.lepcha@academicworld.co.in
2		ANIRUDH YADAV	anirudh.yadav@academicworld.co.in
3		KAJAL TANISHA	kajal.tanisha@academicworld.co.in
4		SHIVA GAUTAM	shiva.gautam@academicworld.co.in
5		VIDUSHI CHOUHAN	vidushi.chauhan@academicworld.co.in
1	COMMERCE	AMAN THAKKAR	aman.thakkar@academicworld.co.in
2		ATUL KUMAR RAI	atul.rai@academicworld.co.in
3		CHANDAN BOSE	chandan.bose@academicworld.co.in
4		DHEERAJ CHOUDHARY	dheeraj.chaudhary@academicworld.co.in
5		PRAGATI UPADHYAY	pragati.upadhyay@academicworld.co.in
6		PREETI SAINI	preeti.saini@academicworld.co.in
7		SAROJA BALA	saroja.bala@academicworld.co.in
8		VIBHOR PANDAY	vibhor.panday@academicworld.co.in
1	HINDI	ANAND KUMAR SHANDILYA	anand.shandilya@academicworld.co.in
2		ARVIND DUBEY	arvind.dubey@academicworld.co.in
3		GANESH CHANDRAVANSHI	ganesh.ramchandravanshi@academicworld.co.in
4		MEDURAM GURJAR	meduram.gurjar@academicworld.co.in
5		RAJLAXMI KASHYAP	rajlaxmi.kashyap@academicworld.co.in
1	HUMANITIES	AYON SEN	ayon.sen@academicworld.co.in
2		GUNADHAR SINHA	gunadhar.sinha@academicworld.co.in
3		MANISHA DAS	manisha.das@academicworld.co.in
4		NAWAB HUSSAIN	nawab.hussain@academicworld.co.in
5		NRUPA NAG	nrupa.nag@academicworld.co.in
6		SUBORNO ROY	suborno.roy@academicworld.co.in
7		SURENDRA GINGH GURJAR	surendra.gurjar@academicworld.co.in
1	ENGLISH	ARINDAM SANTRA	arindam.santra@academicworld.co.in
2		BHALCHANDRA TIMANDE	balachandra.timande@academicworld.co.in
3		INDRANI SIL	indrani.sil@academicworld.co.in
4		JEETENDRA SONPAT	jeetendra.sonpat@academicworld.co.in
5		KUMARJEET SARKAR	kumarjeet.sarkar@academicworld.co.in
6		SACHIN KUMAR	sachin.kumar@academicworld.co.in
7		SUNITA GUPTA	sunita.gupta@academicworld.co.in
1	COMPUTER	BRIJESH KUMAR SONI	brijesh.soni@academicworld.co.in
2		JOY PRAKASH SHARMA	joy.sharma@academicworld.co.in
3		LIPI BASU	lipi.basu@academicworld.co.in
4		SOUMYA RANJAN NANAK	soumya.nayak@academicworld.co.in