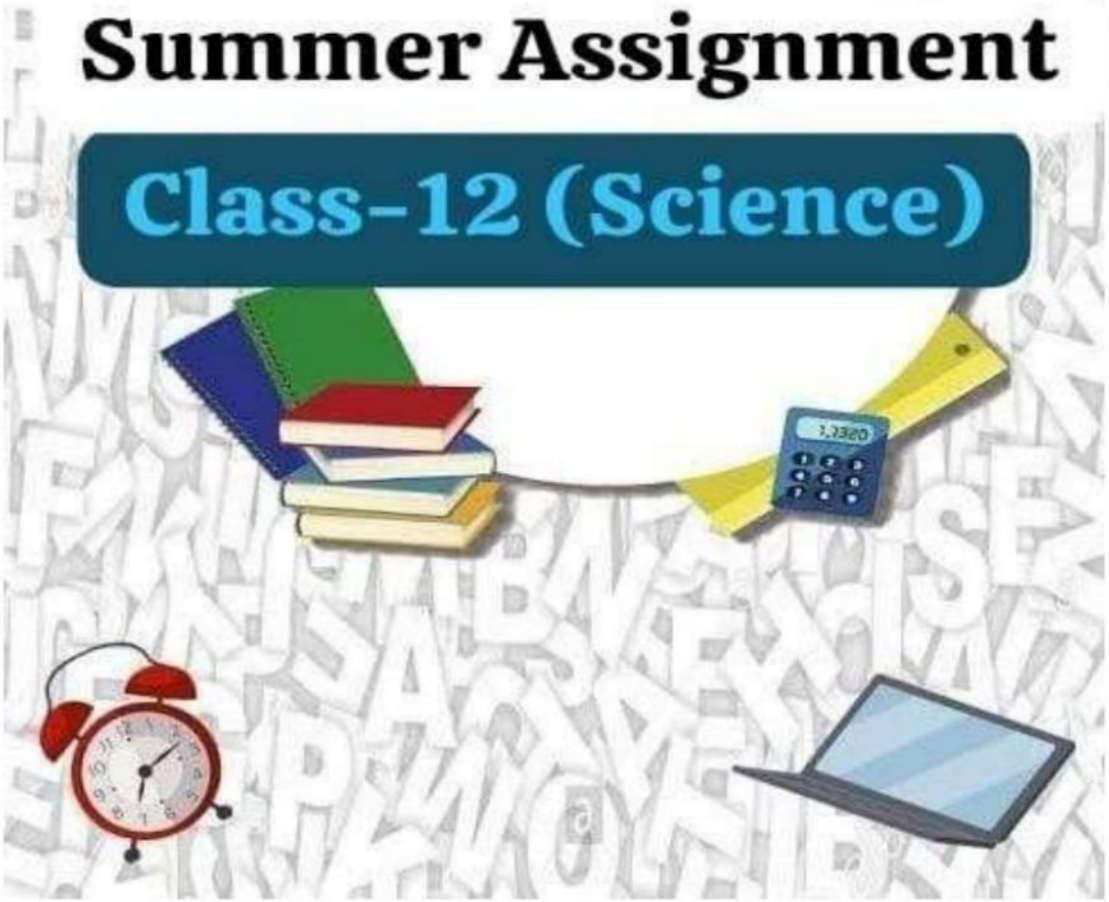
The International School of Bombay

NURTURE • CHALLENGE • SUCCESS

# Summer Assignment

## Class-12 (Science)



# ENGLISH

1 Select any one of the topics for project work

MIGRATION

- Changing Pattern of Migration
- women migration in India is increasing at a faster pace than men Why?
- Plight of Migrants (even talk of the plight of the migrants during the pandemic)
- Take incident from (lost spring) talk of the callousness of society and the political class towards the sufferings of the poor

OR

"When people are enslaved, as long as they hold fast to their language it is as if they had the key to their prison.

Importance of Language

- Meaning of 'Linguistic chauvinism'
- Find examples in history where conquered people had their language taken away from them or had a language imposed on them—What was the result/outcome of it?
- Problems faced by linguistic minority
- How can they keep their language alive?
- Linguistic human rights
- Linguistic Chauvinism examples from English literature

Project-Portfolio/ Project Report:

The Project-Portfolio/Project Report is a compilation of the work that the students produce during the process of working on their ALS Project.

The Project-Portfolio may include the following (sequence):

1. Cover, with the title of the project, school details/details of students.
2. Statement of purpose/ objectives/ goals
3. Certificate of completion under the guidance of the teacher.
4. Action plan for the completion of assigned tasks
5. The 800- 1000 words essay /Script.
6. List of resources/bibliography.

Note:-Prepare the project in a separate file

**Worksheet**

**Answer the following questions as instructed (in fair note book):-**

Q.1 What message does the author convey through the story "The Last Lesson"?

(120-150 words)

Q.2 Draw the character sketch of (in 100 words):-

a) M. Hamel b) Franz

Q.3 Through the thoughts of the poetess, the poem "My Mother at Sixty – Six" comes a full cycle. Explain.(in 100 words)

Q.4 What were KamalaDas' fears as a child as she looked at her mother? (in 40-50 words)

Q.5 Do you think that 'The Third level' was a medium of escape for Charley? Why? (in120-150 words)

Q.6 What does Charley experience on the third level? Do you think what he sees there is possible? Why? (in 120-150 words)

# MATHEMATICS

**Write the following activities in your activity notebook.**

**Activity -1** To verify that the relation in the set L of all lines in a plane, defined by R= { (l, m): l ⊥ m} is symmetric but neither reflexive not transitive.

**Activity -2**To verify that the relation in the set L of all lines in a plane, defined by R= { (l, m): l parallel to m} is an equivalence relation.

**Activity -3** Two demonstrates a function which is not one -one but is onto.

**Activity -4** To draw the graph of $\sin^{-1}x$ using the graph of sinx and demonstrate the concept of mirror reflection (about the line y=x).

**Activity-5** :To analytically the limit of a function f(x) at x=c and also to check the continuity of the function at the point.

**Activity -6** : To verify that angle in a semi-circle is a right angle, using vector method.
Activity -7: To verify that the angle between two planes is the same as the angle between their normals.

**Activity -8:** To explain the computation of conditional probability of a given event A, when event B has already occurred, through an example of throwing a pair of dice.

**Activity -9:** To understand the concept of decreasing and increasing functions

**Activity -10:** To understand the concept of local maxima and minima.

# BIOLOGY

**Q:1 To prepare an investigatory project on any one of the following topics.**

(a)Drug addiction
(b)Cancer
(c)AIDS
(d)Mendalian Inheritance
(e)Alcohol abuse
(f)Biodiversity and it's conservation.
(g)Antibiotics; production and judicious use.
(h)Application of biotechnology in Agriculture

**Format of Investigatory project**

Front-page (With Topic, submitted by, Submitted to)
Certificate
Acknowledgement
Aim/Objective
Project report
Conclusion
Bibliography

**Q:2 Write the following experiments in the biology practical file.**

**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, 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 specimen showing symbolic association in root modules of leguminous plants, Cuscuta on host, lichens
11. Flash cards models showing examples of homologous and analogous organs.

# CHEMISTRY

**Q:1 Write the following experiments in the chemistry practical file. (except the calculations and result part).**

1.) To prepare 250 ml standard solution of N/20 ferrous ammonium sulphate and find out the strength in gm/lit of potassium permanganate solution of unknown concentration by oxidation-reduction single titration.

2.) To prepare a standard solution of N/30 ferrous ammonium sulphate in 250 ml and determine the strength in gm/lit of the given potassium permanganate solution by redox single titration.

3.) To prepare a standard solution of N/20 concentration of oxalic acid in 250 ml and determine the concentration in gm/lit of the given potassium permanganate solution of unknown concentration by redox single titration.

4.) To prepare a standard solution of N/10 concentration of oxalic acid in 250 ml and determine the concentration in gm/lit of the given potassium permanganate solution of unknown concentration by redox single titration.

5.) To determine one acid radical (anion) and one basic radical (cation) in given inorganic powder. (for Cl- and NH4+)

6.) To determine one acid radical (anion) and one basic radical (cation) in given inorganic powder. (for SO4- and Cu2+)

7.) To determine one acid radical (anion) and one basic radical (cation) in given inorganic powder. (for CH3COO- and Ca2+)

8.) To determine one acid radical (anion) and one basic radical (cation) in given inorganic powder. (for NO3- and Cr3+)

9.) To detect the functional group in given organic powder. (for OH- alcoholic group)

10.) To detect the functional group in given organic powder. (for CHO- and CO- group)

11.) To detect the functional group in given organic powder. (for COOH- group)

12.) To detect the functional group in given organic powder. (for NH2- group)

Investigatory projects:

**Q:2 Select any four scientific investigations involving laboratory testing and collecting information from other sources. (prepare a separate project file for these)**

A few suggested Projects-

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

2.Study of quantity of casein present in different samples of milk.

3. Preparation of soybean milk and its comparison with the natural milk with respect to curd formation, effect of temperature, etc.

4. Study of the effect of Potassium Bisulphate as food preservative under various conditions (temperature, concentration, time, etc.)

5. Study of digestion of starch by salivary amylase and effect of pH and temperature on it.

6.Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice, etc.

7.Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).

8.Study of common food adulterants in fat, oil, butter, sugar, turmeric power, chilli powder and pepper.

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# PHYSICS

Write the following experiments in physics practical file and activities in activity file (except calculation and result part).

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.

OR

To verify the laws of combination (parallel) of resistances using a metre bridge.

4.To convert the given galvanometer (of known resistance and figure of merit) into an ammeter of desired range and to verify the same.

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.

SECTION-B

Experiments

1. To find the valu of v for differ

2. To determine angle of minimum deviation for a given prism by plotting a graph between angle of incidence and angle of deviation.

3. To determine refractive index of a glass slab using a travelling microscope.

4. To find the refractive index of a liquid using a concave mirror and a plane mirror.

Activities

1. To identify a diode, an LED, a resistor and a capacitor from a mixed collection of such items.

2. To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab.

3. To study the nature and size of the image formed by a (i) convex lens, or (ii)concave mirror, on a screen by using a candle and a screen (for different distances of the candle from the lens/mirror).

Prepare the Investigatory Projects on any of the following topic

1. To study various factors on which the internal resistance/EMF of a cell depends.
2. To study the variations in current flowing in a circuit containing an LDR because of a variation in
    a. the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance).
    b. the distance of an in candescent lamp (of fixed power) used to 'illuminate' the LDR.
3. To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equi convex lens (made from a glass of known refractive index) and an adjustable object needle.
4. To investigate the relation between the ratio of (i) output and input voltage and
    a. (ii) number of turns in the secondary coil and primary coil of a self-designed transformer.
5. 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.
6. To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.
7. 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.
8. To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.

# COMPUTER SCIENCE

**NOTE: WRITE ALL THE PROGRAMM IN COMPUTER PRACTICAL FILE**

**Practical portfolio**

**Python Programming**

- Read a text file line by line and display each word separated by a #.
- Read a text file and display the number of vowels/consonants/uppercase/lowercase characters in the file.
- Remove all the lines that contain the character 'a' in a file and write it to another file.
- Create a binary file with name and roll number. Search for a given roll number and display the name, if not found display appropriate message.
- Create a binary file with roll number, name and marks. Input a roll number and update the marks.
- Write a random number generator that generates random numbers between 1 and 6 (simulates a dice).
- Write a Python program to implement a stack using list.
- Create a CSV file by entering user-id and password, read and search the password for given user-id.

**Database Management**

- Create a student table and insert data. Implement the following SQL commands on the student table:
  - ALTER table to add new attributes / modify data type / drop attribute
  - UPDATE table to modify data
  - ORDER By to display data in ascending / descending order
  - DELETE to remove tuple(s)
  - GROUP BY and find the min, max, sum, count and average
- Similar exercise may be framed for other cases.
- Integrate SQL with Python by importing suitable module.

# ENTERPRENEURSHIP

**Prepare a project on the following topics given below:**

1. Business Plan
2. Market Survey

**Expected Check list for the Project Work:**

- Introduction of topic/title
- Identifying the product/service
- Various stake holders and effect on each of them
- Use of different tools for market assessment and it's analysis
- Implication of 4P'sintheprocessofmarketing
- Calculation of various costs involved in the business planning process
- Validity, reliability, appropriateness, and relevance of data used for research work and for presentation in the project file
- Presentation and writing that is succinct and coherent in project file. Citation of the materials referred to, in the file in foot notes, resources section, bibliography.

# PHYSICAL EDUCATION

Prepare a practical file on the following topics given below:

1. Physical Fitness Test SAI Khelo India , Brockport Physical Fitness Test (BPFT)

• Introduction of Topic (SAI Khelo India)
* Benifits of Khelo India
* Events in khelo India (SAI)

Brockport Physical Fitness Test
* Introduction of Brockport test
* Event which is included in BPFI Describe this Event :-
600m running/walk
50m dash
Push up for boys
Modified push up for girls
Curl up
Shuttle run
Standing Broad jump
(Note:- write this events with their Diagrams)

2.Proficiency in game and sports (Skill of any one IOA recognized Sport/Game of Choice)
Write about any one game (which is in your syllabus) •Introduction of game/ sports
* History of that particular sports/game
* write about Governing bodies
* Rules
* Terminology
* Dimensions with Diagram
* Awards
* International and National Tournament
* International and National players Name ( Any 5)

3. Yogic Practice

•History of Yoga
• Benifits of Yoga
• Yoga Asanas With their benifits (their Diagrams)
(Note: Which is in your syllabus)P