

Physics Practical syllabus

2020-2021

Class: XII SC

SECTION–A Experiments

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

SECTION-B Experiments

1. To find the focal length of a convex lens by plotting graphs between u and v .
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 draw the I-V characteristic curve for a p-n junction diode in forward bias and reverse.

SECTION- A Activities

1. To assemble the components of a given electrical circuit.
2. To study the variation in potential drop with length of a wire for a steady current.
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 Activities

1. To identify a diode, an LED, a resistor and a capacitor from a mixed collection of Such itself.
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, (ii) concave Mirror, on a screen by using a candle and a screen (for different distances of the Candle from the lens/mirror).

Chemistry Practical syllabus

2020-2021

Class: XII SC

Evaluation Scheme for Examination	Marks
Volumetric Analysis	08
Salt Analysis	08
Content Based Experiment	06
Project Work	04
Class record and viva	04
Total	30

PRACTICAL SYLLABUS

Total Periods:44

Micro-chemical methods are available for several of the practical experiments, wherever possible such techniques should be used.

A. Basic Laboratory Techniques

1. Cutting glass tube and glassrod
2. Bending a glasstube
3. Drawing out a glassjet
4. Boring a cork

B. Characterization and Purification of ChemicalSubstances

1. Determination of melting point of an organiccompound.
2. Determination of boiling point of an organiccompound.
3. Crystallization of impure sample of any one of the following: Alum, Copper Sulphate, BenzoicAcid.

C. QuantitativeEstimation

- i. Using a mechanical balance/electronicbalance.
- ii. Preparation of standard solution of Oxalicacid.
- iii. Determination of strength of a given solution of Sodium hydroxide by titrating it against standard solution of Oxalicacid.
- iv. Preparation of standard solution of Sodiumcarbonate.
- v. Determination of strength of a given solution of hydrochloric acid by titrating it against standard Sodium Carbonatesolution.

D. Qualitative Analysis

a) Determination of one anion and one cation in a given salt

Cations- Pb^{2+} , Cu^{2+} , As^{3+} , Al^{3+} , Fe^{3+} , Mn^{2+} , Ni^{2+} , Zn^{2+} , Co^{2+} , Ca^{2+} , Sr^{2+} , Ba^{2+} , Mg^{2+} , NH_4^+

Anions – $(\text{CO}_3)^{2-}$, S^{2-} , NO_2^- , SO_3^{2-} , SO_4^{2-} , NO_3^- , Cl^- , Br^- , I^- , PO_4^{3-} , $\text{C}_2\text{O}_4^{2-}$, CH_3COO^-

(Note: Insoluble salts excluded)

b) Detection of -Nitrogen, Sulphur, Chlorine in organic compounds.

c) PROJECTS

Scientific investigations involving laboratory testing and collecting information from other sources.

A few suggested Projects

- Checking the bacterial contamination in drinking water by testing sulphide ion
- Study of the methods of purification of water
- Testing the hardness, presence of Iron, Fluoride, Chloride, etc., depending upon the regional variation in drinking water and study of causes of presence of these ions above permissible limit (if any).
- Investigation of the foaming capacity of different washing soaps and the effect of addition of Sodium carbonate on it
- Study the acidity of different samples of tea leaves.
- Determination of the rate of evaporation of different liquids
- Study the effect of acids and bases on the tensile strength of fibers.
- Study of acidity of fruit and vegetable juices.

Note: Any other investigatory project, which involves about 10 periods of work, can be chosen with the approval of the teacher.

Bio Practical syllabus

2020-2021

Class: XII SC

PRACTICALS

3. Meiosis in onion bud cell or grasshopper testis through permanent slides.
4. T.S. of blastula through permanent slides (Mammalian).
5. 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.
6. Common disease causing organisms like Ascaris, Entamoeba, Plasmodium, any fungus causing ringworm through permanent slides, models or virtual images. Comment on symptoms of diseases that they cause.
7. Two plants and two animals (models/virtual images) found in xeric conditions. Comment upon their morphological adaptations.
8. Two plants and two animals (models/virtual images) found in aquatic conditions. Comment upon their morphological adaptations.

A. LIST OF EXPERIMENTS

1. Prepare a temporary mount to observe pollen germination.
2. Collect and study soil from at least two different sites and study them for texture, moisture content, pH and water holding capacity. Correlate with the kinds of plants found in them.
3. Collect water from two different water bodies around you and study them for pH, clarity and presence of any living organism.
4. Prepare a temporary mount of onion root tip to study mitosis.
5. Study the effect of different temperatures or three different pH on the activity of salivary amylase on starch.
6. Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc.

B. STUDY/OBSERVATION OF THE FOLLOWING (SPOTTING)

1. Flowers adapted to pollination by different agencies (wind, insects, birds).
2. Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice).

Home Science Practical syllabus

2020-2021

Class: XII SC

Practicals

1. Modification of normal diet to a soft diet for elderly person.
2. Planning a menu for school canteen and preparing any one nutritious dish.
3. Identification of Adulterants present in Turmeric powder, milk, whole Black pepper, and tea leaves and pure ghee.
4. Preparation of Supplementary food.
5. Preparation of a sample using applied Textile Design Technique for Tie and Dye or Batik or Block Printing.
6. Preparation of any one Processed Food.
7. Removal of stain from a white cloth
 - A. Ball pen
 - B. Curry stain
 - C. Grease stain
 - D. Ink
 - E. Lipstick
 - F. Tea/Coffee stain
8. Preparation of a leaflet or a pamphlet for Consumer Education and Protection.
9. Making a puzzle toy or a soft toy.
10. Preparation of an advertisement for a vacancy of a post for clinical nutritionist in a well known nursing home.

Computer Science Practical syllabus
2020-2021
Class: XII SC

4. Practical

S. No.	Area	Marks (Total=30)
1	Lab Test: 1. Python program (60% logic + 20% documentation + 20% code quality) 2. Small Python program that sends a SQL query to a database and displays the result. A stub program can be provided.	7 5
2	Report file: Minimum 20 Python programs. Out of this at least 4 programs should send SQL commands to a database and retrieve the result	7
3	Project (that uses the concepts that have been learnt in Class 11 and 12)	8
4	Viva voce	3

Python Programming

15 python programming.

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 the MySQL module.

5. Project

The aim of the class project is to create something that is tangible and useful using Python / Python and SQL connectivity. This should be done in groups of two to three students and should be started by students at least 6 months before the submission deadline. The aim here is to find a real world problem that is worthwhile to solve.

Students are encouraged to visit local businesses and ask them about the problems that they are facing. For example, if a business is finding it hard to create invoices for filing GST claims, then students can do a project that takes the raw data (list of transactions), groups the transactions by category, accounts for the GST tax rates, and creates invoices in the appropriate format. Students can be extremely creative here. They can use a wide variety of Python libraries to create user friendly applications such as games, software for their school, software for their disabled fellow students, and mobile applications, Of course to do some of these projects, some additional learning is required; this should be encouraged. Students should know how to teach themselves.

The students should be sensitized to avoid plagiarism and violations of copyright issues while working on projects. Teachers should take necessary measures for this.

Informatics Practices Practical syllabus

2020-2021

Class: XICom

Practical Marks Distribution

S.No.	Unit Name	Marks
1	Programs using Pandas and Matplotlib	8
2	SQL Queries	7
3	Practical file (minimum of 15 programs based on Pandas, 4 based on Matplotlib and 15 SQL queries must be included)	5
4	Project Work (using concepts learned in class XI and XII)	5
5	Viva-Voce	5

	TOTAL	30
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Data Base Management

1. Create a student table with the student id, name, and marks as attributes where the student id is the primary key.
2. Insert the details of a new student in the above table.
3. Delete the details of a student in the above table.
4. Use the select command to get the details of the students with marks more than 80.
5. Find the min, max, sum, and average of the marks in a student marks table.
6. Find the total number of customers from each country in the table (customer ID, customer Name, country) using group by.
7. Write a SQL query to order the (student ID, marks) table in descending order of the marks.

Project Work

The aim of the class project is to create tangible and useful IT application. The learner may identify a real-world problem by exploring the environment. e.g. Students can visit shops/business places, communities or other organizations in their localities and enquire about functioning of the organization, and how data are generated, stored, and managed.

The learner can take data stored in csv or database file and analyze using Python libraries and generate appropriate charts to visualize.

If an organization is maintaining data offline, then the learner should create a database using MySQL and store the data in tables. Data can be imported in Pandas for analysis and visualization.

Learners can use Python libraries of their choice to develop software for their school or any other social good.

Learners should be sensitized to avoid plagiarism and violation of copyright issues while working on projects. Teachers should take necessary measures for this. Any resources (data, image etc.) used in the project must be suitably referenced.

The project can be done individually or in groups of 2 to 3 students. The project should be started by students at least 6 months before the submission deadline.