

St. Joseph Sr. Sec. School
Syllabus- (2023-24)
Class – XII
Science Group

Computer Science (083)

Periodic Test – I (17th July to 26th July 2023) (April to 15th July course)

Chapter – 1 Python Revision tour I

Chapter – 2 Python Revision tour II

Periodic Test – II (4th Oct to 18th Oct 2023) (Aug to Sep course)

Chapter – 3 Function

Note:- Exception Handling: Introduction, handling exceptions.

Chapter – 4 File handling

Chapter – 5 Data structure

Remaining Course- (Oct to mid Dec)

Unit II Computer Network

Unit III Database Management

Pre – Board – I (Dec 3rd week) Pre-Board-II (Jan 3rd week)

Practical:

1. Lab Test: (8 + 4 = 12 Marks)
 - i. Python program (60% logic + 20% documentation + 20% code quality)
 - ii. SQL queries (4 queries based on one or two tables)
2. Report file: (7 marks)
 - Minimum 15 Python programs.
 - SQL Queries – Minimum 5 sets using one table / two tables.
 - Minimum 4 programs based on Python – SQL connectivity
3. Project (using concepts learnt in Classes 11 and 12) (8 Marks)
4. Viva voce (3 marks)

Physics (042)

Periodic Test – I (17th July to 26th July 2023) (April to 15th July course)

Chapter – 1 Electric charge and fields

Chapter – 2 Electrostatic potential and capacitance

Chapter – 3 Current Electricity

Periodic Test – II (4th Oct to 18th Oct 2023) (Aug to Sep course)

Chapter – 4 Moving charge and magnetism

- Chapter – 5 Magnetism and Matter
- Chapter – 6 Electromagnetic Induction
- Chapter – 7 Alternating Current

Remaining Course- (Oct to mid Dec)

- Chapter–8 Electromagnetic Waves
- Chapter–9 Ray Optics and Optical Instruments
- Chapter–10 Wave Optics
- Chapter–11 Dual Nature of Matter
- Chapter–12 Atoms
- Chapter–13 Nuclei
- Chapter–14 Semiconductor

Pre – Board – I (Dec 3rd week) Pre-Board-II (Jan 3rd week)

Practical: (17th Feb to 28th Feb 2023)

1. EVALUATION SCHEME

Time 3 hours

Max. Marks: 30

Topic	Marks
Two experiments one from each section	7+7
Practical record (experiment and activities)	5
One activity from any section	3
Investigatory Project	3
Viva on experiments, activities and project	5

SECTION–A

Experiments

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 determine resistance of a galvanometer by half-deflection method and to find its figure of merit.
5. To convert the given galvanometer (of known resistance and figure of merit) into a voltmeter of desired range and to verify the same.

OR

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

6. To find the frequency of AC mains with a sonometer. Activities

1. To measure the resistance and impedance of an inductor with or without iron core.

2. To measure resistance, voltage (AC/DC), current (AC) and check continuity of a given circuit using multimeter.

3. To assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse and a power source.

4. To assemble the components of a given electrical circuit.

5. To study the variation in potential drop with length of a wire for a steady current.

6. 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 value of v for different values of u in case of a concave mirror and to find the focal length.

2. To find the focal length of a convex mirror, using a convex lens.

3. To find the focal length of a convex lens by plotting graphs between u and v or between $1/u$ and $1/v$.

4. To find the focal length of a concave lens, using a convex lens.

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

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

7. To find the refractive index of a liquid using convex lens and plane mirror.

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

9. To draw the I-V characteristic curve for a p-n junction diode in forward and reverse bias.

Activities

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

2. 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.

3. To study effect of intensity of light (by varying distance of the source) on an LDR.

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

5. To observe diffraction of light due to a thin slit.

6. 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).

7. To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses.

Suggested Investigatory Projects

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 a incandescent 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 equiconvex 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 (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.

CHEMISTRY (043)

Periodic Test – I (17th July to 26th July 2023) (April to 15th July course)

Chapter – 1 Solution

Chapter – 2 Electrochemistry

Chapter-3 Chemical kinetics

Periodic Test – II (4th Oct to 18th Oct 2023) (Aug to Sep course)

Chapter – 4 d -and f -Block Elements

Chapter – 5 Coordination compound

Chapter – 6 Haloalkanes and Halaloarenes

Remaining Course- (Oct to mid Dec)

Chapter – 7 Alcobols, pheols and ether

Chapter – 8 Aldenude, ketones and corboxylic acid

Chapter – 9 Amines

Chapter – 10 Biomolecules

Pre – Board – I (Dec 3rd week) Pre-Board-II (Jan 3rd week)

PRACTICALS

3 HOURS/ 30 Marks

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

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

A. Surface Chemistry

(a) Preparation of one lyophilic and one lyophobic sol

Lyophilic sol - starch, egg albumin and gum

Lyophobic sol - aluminium hydroxide, ferric hydroxide, arsenous sulphide.

(b) Dialysis of sol-prepared in (a) above.

(c) Study of the role of emulsifying agents in stabilizing the emulsion of different oils.

B. Chemical Kinetics

(a) Effect of concentration and temperature on the rate of reaction between Sodium Thiosulphate and Hydrochloric acid.

(b) Study of reaction rates of any one of the following:

(i) Reaction of Iodide ion with Hydrogen Peroxide at room temperature using different concentrations of Iodide ions.

(ii) Reaction between Potassium Iodate, (KIO_3) and Sodium Sulphite: (Na_2SO_3) using starch solution as an indicator (clock reaction).

C. Thermochemistry

Any one of the following experiments

(a) Enthalpy of dissolution of Copper Sulphate or Potassium Nitrate.

(b) Enthalpy of neutralization of strong acid (HCl) and strong base (NaOH).

(c) Determination of enthalpy change during interaction (Hydrogen bond formation) between Acetone and Chloroform.

D. Electrochemistry

Variation of cell potential in $Zn/Zn^{2+} || Cu^{2+}/Cu$ with change in concentration of electrolytes ($CuSO_4$ or $ZnSO_4$) at room temperature.

E. Chromatography

(a) Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of R_f values.

(b) Separation of constituents present in an inorganic mixture containing two cations only (constituents having large difference in R_f values to be provided).

F. Preparation of Inorganic Compounds

Preparation of double salt of Ferrous Ammonium Sulphate or Potash Alum. Preparation of Potassium Ferric Oxalate.

G. Preparation of Organic Compounds

Preparation of any one of the following compounds

i) Acetanilide ii) Di-benzalAcetone iii) p-Nitroacetanilide iv) Aniline yellow or 2 - Naphthol Anilinedye.

H. Tests for the functional groups present in organic compounds:

Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (Primary) groups.

I. Characteristic tests of carbohydrates, fats and proteins in pure samples and their detection in given foodstuffs.

J. Determination of concentration/ molarity of $KMnO_4$ solution by titrating it against a standard solution of:

(a) Oxalic acid,

(b) Ferrous Ammonium Sulphate

(Students will be required to prepare standard solutions by weighing themselves).

K. Qualitative analysis

Determination of one anion and one cation in a given salt

Cation:

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

Anions:

$(\text{CO}_3)^{2-}$, S^{2-} , $(\text{SO}_3)^{2-}$, $(\text{NO}_2)^-$, $(\text{SO}_4)^{2-}$, Cl^- , Br^- , I^- , $(\text{PO}_4)^{3-}$, $(\text{C}_2\text{O}_4)^{2-}$, CH_3COO^- , NO_3^-

(Note: Insoluble salts excluded)

INVESTIGATORY PROJECT

Scientific investigations involving laboratory testing and collecting information from other sources A few suggested Projects.

- Study of the presence of oxalate ions in guava fruit at different stages of ripening.
- Study the quantity of casein present in different samples of milk.
- Preparation of soybean milk and its comparison with natural milk with respect to curd formation, the effect of temperature, etc.
- Study of the effect of Potassium Bisulphate as a food preservative under various conditions (temperature, concentration, time, etc.)
- Study of digestion of starch by salivary amylase and effect of pH and temperature on it.
- Comparative study of the rate of fermentation of the following materials: wheat flour, gram flour, potato juice, carrot juice, etc.
- Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).
- Study of common food adulterants in fat, oil, butter, sugar, turmeric powder, chilli powder and pepper.

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

Class – 12th (Biology)

Periodic Test – I (17th July to 26th July 2023) (April to 15th July course)

Unit – 6

Chapters -

2. Sexual Reproduction in flowering plants
3. Human Reproduction
4. Reproductive Health
5. Principles of inheritance & variation

Periodic Test – II (4th Oct to 18th Oct 2023) (Aug to Sep course)

Unit – 7

Chapters -

6. Molecular basis of inheritance
7. Evolution

Unit-8

8. Human Health and diseases
10. Microbe in human welfare

Practical

1. Prepare a temporary mount to observe pollen germination.
2. Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc.
3. Flowers adapted to pollination by different agencies (wind, insects, and birds).
4. Pollen germination on stigma through a permanent slide or scanning electron micrograph.
5. Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice).
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.

Remaining Course- (Oct to mid Dec)

Unit – 9

11. Biotechnology principles and variations
12. Biotechnology and its application

Unit – 10

Chapters-

13. Organisms and populations
14. Ecosystem
15. Biodiversity and its Conservation

Pre – Board – I (Dec 3rd week) Pre-Board-II (Jan 3rd week)

Practical

1. Study the plant population density by quadrant method.
2. Study the plant population frequency by quadrant method.
3. Prepare a temporary mount of onion root tip to study mitosis.
4. Meiosis in onion bud cell or grasshopper testis through permanent slides.
5. T.S. of blastula through permanent slides (Mammalian).
6. 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.
7. Models specimen showing symbiotic association in root modules of leguminous plants, Cuscuta on host, lichens.
8. Flash cards models showing examples of homologous and analogous organs.

Mathematics (041)

Periodic Test – I (17th July to 26th July 2023) (April to 15th July course)

1. Relations and Functions
2. Inverse Trigonometric Functions
3. Matrices
4. Determinants

Lab Activity/ Project – To be given by the teacher.

Periodic Test – II (4th Oct to 18th Oct 2023) (Aug to Sep course)

5. Continuity, differentiability and differentiation
7. Integrals
9. Differential Equations

Lab Activity / Project – To be given by the teacher.

Remaining Course- (Oct to mid Dec)

6. Application of Derivatives
8. Application of Integrals
10. Vector Algebra
11. Three dimensional geometry
12. Linear Programming
13. Probability

Pre – Board – I (Dec 3rd week) Pre-Board-II (Jan 3rd week)

HINDI

क्षितिज भाग-2

Periodic Test – I (17th July to 26th July 2023) (April to 15th July course)

काव्य खण्ड

पाठ-1 (i) आत्मपरिचय (हरिवंश राय बच्चन)

(ii) एक गीत

पाठ-3 (i) कविता के बहाने (कुँवर नारायण)

(ii) बात सीधी थी पर

गद्य खण्ड

पाठ-1 भक्तितन (महादेवी वर्मा)

पाठ-2 बाज़ार दर्शन (जैनेन्द्र कुमार)

वितान भाग-2

पाठ-1 श्याम मनोहर जोशी-सिल्वर बैडिंग

अभिव्यक्ति और माध्यम

पाठ-3 विभिन्न माध्यमों के लिए लेखन

पाठ-4 पत्रकारीय लेखन के विभिन्न रूप और लेखन प्रक्रिया

Periodic Test – II (4th Oct to 18th Oct 2023) (Aug to Sep course)

काव्य खण्ड

पाठ-2 पतंग (आलोक धन्वा)

पाठ-4 कैमरे में बंद अपाहिज (रघुवीर सहाय)

पाठ-6 ऊषा (शमशेर बहादुरसिंह)

गद्य खण्ड

पाठ-13 काले मेघा पानी दे (धर्मवीर भारती)

पाठ-14 पहलवान की ढोलक (फणीश्वर नाथ रेणु)

वितान भाग-2

पाठ-2 जूझ (आनंद यादव)

अभिव्यक्ति और माध्यम

पाठ-5 विशेष लेखन-स्वरूप और प्रकार

पाठ-11 कैसे करें कहानी का नाट्य रूपांतरण

Remaining Course- (Oct to mid Dec)

क्षितिज भाग -2

काव्य खण्ड

पाठ-7 बादल राग (सूर्यकांत त्रिपाठी 'निराला')

पाठ-8 (i) कवितावली (उत्तरकाण्ड से) (तुलसीदास)

(ii) लक्ष्मण-मूर्च्छा और राम का विलाप

पाठ-9 रूबाइयों (फिराक गोरखपुरी)

पाठ-10 (i) छोटा मेरा खेत (उमाशंकर जोशी)

(ii) बगुलों के पंख

गद्य खण्ड

पाठ-17 शिरीष के फूल (हजारी प्रसाद द्विवेदी)

पाठ-18 (i) श्रम विभाजन और जातिन्प्रथा (बाबा साहेब भीम राव अम्बेडकर)

(ii) मेरी कल्पना का आदर्श समाज

वितान भाग-2

पाठ-3 अतीत में दबे पाँव (ओम थानवी)

अभिव्यक्ति और माध्यम

पाठ-12 कैसे बनता है रेडियो नाटक

पाठ-13 नए और अप्रत्याशित विषयों पर लेखन

अपठित गद्यांश और अपठित काव्यांश

Pre – Board – I (Dec 3rd week) Pre-Board-II (Jan 3rd week)

English Core

Periodic Test – I (17th July to 26th July 2023) (April to 15th July course)

Section – A Reading Skills

- Unseen Passage
Section – B writing Skills
- Notice
- Letter to Editor

Section – C (Literature and Supplementary)

Flamingo:-

- The last lesson (prose)
- Lost Spring (prose)
- My Mother at sixty six (poetry)
- Keeping Quiet (poetry)

Vistas:-

- The third level
- The Tiger King

Project:- Punctuality v/s procrastination

Periodic Test – II (4th Oct to 18th Oct 2023) (Aug to Sep course)

Section – A Reading Skills

- Unseen Passage

Section – B Writing Skills

- Formal and informal Invitations
- Article /Report writing
- Application for a Job

Section – C (Literature and Supplementary)

Flamingo-

- Deep Water (Prose)
- Rattrap (Prose)
- Indigo (Prose)
- A thing of Beauty (Poetry)

Vistas:-

- Journey to the end of the earth

- The Enemy

Project: - Ancient Education is modern education

Remaining Course- (Oct to mid Dec)

Section – A Reading Skills

- Unseen Passages

Section – B Writing Skills

Letter to Editor, Application for Job

Section – C [Literature and Supplementary]

Flamingo-

- Poets and Pancakes (prose)
- The interview (prose)
- Going places (prose)
- A Road side stand (poetry)
- Aunt Jennifer's Tigers (poetry)

Vistas:-

- On the face of it
- Memories of Child hood

Pre – Board – I (Dec 3rd week) Pre-Board-II (Jan 3rd week)