Syllabus for First Year of CHSE, 2023 - 2024

Alternative English

A01PRO Prose

A01 ATAL The Adventure of Learning — Aspire Science Higher Secondary School

The Adventure of Learning

A02 AMAW Men and women — Aspire Science Higher Secondary School

Men and women

A03 AMLX Modern Living — Aspire Science Higher Secondary School

Modern Living

A04 AFFT Food for Thought — Aspire Science Higher Secondary School

Food for Thought

A02POE Poetry

A05 AECO Ecology — Aspire Science Higher Secondary School

Ecology

A06 ADDX Dog's Death — Aspire Science Higher Secondary School

Dog's Death

A07 AFOG The Fog — Aspire Science Higher Secondary School

The Fog

A08 AGLT Girl Lithe and Tawny — Aspire Science Higher Secondary School

Girl Lithe and Tawny

A09 ABLX Ballad of the Landlord — Aspire Science Higher Secondary School

Ballad of the Landlord

A03SHST Short Stories

A10 ARBX The Rainbow-Bird — Aspire Science Higher Secondary School

The Rainbow-Bird

A11 AEHX The Eyes Have it — Aspire Science Higher Secondary School

The Eyes Have it

A12 ALWX The little Wife — Aspire Science Higher Secondary School

The little Wife

A04OAP One Act Plays

A13 AMDX Mother's Day — Aspire Science Higher Secondary School

Mother's Day

A14 ATUN The Unexpected — Aspire Science Higher Secondary School

The Unexpected

A05GRA Grammar and Usage

A15 ATAX Tense and Aspect — Aspire Science Higher Secondary School

Tense and Aspect

A16 **AMOX** Modals — Aspire Science Higher Secondary School

Modals

A17 **ANFV** Non-finite verb forms — Aspire Science Higher Secondary School

Non-finite verb forms

A18 **ATPX** The passive — Aspire Science Higher Secondary School

The passive

A19 **APPV** Prepositions and Phrasal Verbs — Aspire Science Higher Secondary School

Prepositions and Phrasal Verbs

A06Exam Examination

A38 **AUSP** Unseen Passage — Aspire Science Higher Secondary School

Unseen Passage

A39 **ANMX** Note Making — Aspire Science Higher Secondary School

Guided and Unguided Note Making

A40 **ASUM** Summary Writing — Aspire Science Higher Secondary School

Summary Writing

A41 **ARAS** Recunstruct a Story — Aspire Science Higher Secondary School

Recunstruct a Story

A42 **AESS** Essay Writing — Aspire Science Higher Secondary School

Essay Writing

A43 **AGIC** Grammar and Usage — Aspire Science Higher Secondary School

Grammar and Usage

Biology:Botany

B01DLW Diversity in Living World

B09 BCPK Classification of Plant Kingdom — Aspire Science Higher Secondary School

A. Salient features and classificatin of plants into major groups (three to five salient and distinguishing features and at least two examples of each category)(LQ)
1.Alagae
2. Bryophytes
3. Pteridophytes
4. Gymnosperms
B. Classification of Angiosperms up to class (characteristic features and examples)

B58 BMFV Classification of Monera, Fungi, Lichen, Virus and Viroids — Aspire Science Higher Secondary School

A. Salient features and classification of following kingdoms into major groups
1. Monera
2. Fungi
B. Lichens
C. Viruses and Viroids.

B02SOAP Structural Organisation in Animals and Plants

B11 BPHX Plant Histology — Aspire Science Higher Secondary School

Anatomy of Flowering plants
1. Tissues (LQ)
2. Tissue system
3. Anatomy of dicotyledonous and monocotyledonous plant
   a. Root
   b. Stem
   c. Leaf
4. Secondary Growth

B12 BMFP Morphology of Flowering plant — Aspire Science Higher Secondary School

1. Morphology of Flowering Plant
   a. Root
   b. Stem
   c. Leaf
   d. Inflorescence
   e. Flower
   e. Fruit
   f. Seed

B03CB Cell Biology

B16 BCBL Cellular basis of life — Aspire Science Higher Secondary School

1. Discovery of cell, cell theory and exceptions to cell theory
2. Cell as the basic unit of life
3. Structure of prokaryotic and eukaryotic cell
4. Plant cell and animal cell (LQ)

B17 BPMX Plasma membrane — Aspire Science Higher Secondary School

1. Cell Wall
2. Plasma membrane: structural models and function

B18 BCOX Cell Organelles — Aspire Science Higher Secondary School

Cell organelles: Structure and function of
1. Endomembrane system- Endoplasmic reticulum, Golgi bodies, Lysosomes and Vacuoles
2. Mitochondria
3. Ribosomes
4. Plastids
5. Microbodies
6. Cytoskeleton - Cilia, flagella and centrioles (ultra structure and function)
7. Nucleus - nuclear membrane, chromatin and necleolus

B19 BMOC Molecular organisation of cell — Aspire Science Higher Secondary School

Chemical constituents of living cells: Biomolecules - structure and function of
1. Proteins
2. Carbohydrates
3. Lipid
4. Nucleic acids

B20 BENZ Enzymes — Aspire Science Higher Secondary School

Enzymes (LQ)
1. Types of enzymes
2. Properties of enzymes
3. Enzyme action

B21 BCRX Cellular Reproduction — Aspire Science Higher Secondary School

Cell division
1. Cell cycle
2. Mitosis and its significance (LQ)
3. Meiosis and its significance (LQ)

B04PP Plant physiology

B22 BTPX Transport in Plants — Aspire Science Higher Secondary School

Movement of water, gases and nutrients
1. Cell to cell transport- Diffusion, facilitated diffusion, active transport
2. Plant-water relations - Imbibition, water potential, osmosis, plasmolysis
3. Long distance transport of water- Absorption, apoplast, symplast, transpiration pull, root pressure and guttation
4. Transpiration - Opening and closing of Stomata
5. Uptake and translocation of mineral nutrients
6. Transport of food - Phloem transport, Mass flow hypothesis
7. Diffusion of gases (brief mention).

B23 BMNX Mineral nutrition — Aspire Science Higher Secondary School

1. Essential minerals, macro- and micro-nutrients and their role
2. Deficiency symptoms
3. Mineral toxicity
4. Elementary idea of hydroponics as a method to study mineral nutrition
5. Nitrogen metabolism, nitrogen cycle and biological nitrogen fixation

B24 BPHS Photosynthesis — Aspire Science Higher Secondary School

1. Photosynthesis as a mean of autotrophic nutrition
2. Site of photosynthesis, pigments involved in photosynthesis (elementary idea)
3. Photochemical and biosynthetic phases of photosynthesis
4. Cyclic and non-cyclic photophosphorylation
5. Chemiosmotic hypothesis
6. Photorespiration
7. C3 and C4 pathways
8. Factors affecting photosynthesis

B25 BRPX Respiration in Plants — Aspire Science Higher Secondary School

1. Exchange of gases
2. Cellular respiration
 a. Glycolysis (LQ)
 b. Fermentation(anaerobic)
 c. TCA cycle (LQ)
 d.Electron transport system (aerobic)
3. Energy relation - Number of ATP molecules generated
4. Amphibolic pathways
5. Respiratory quotient.

B26 BPGD Plant Growth and Development — Aspire Science Higher Secondary School

1. Seed germination
2. Phases of plant growth and plant growth rate
3. Conditions of growth
4. Differentiation, defifferentiation and redifferentiation;
5. Sequence of developmental process in plant cell
6. Growth regulators-auxin, gibberellin (LQ), cytokinin, ethylene, Abscilic acid (ABA)
7. Seed dormancy
8. Vernalisation
9. Photoperiodism

B20PRA Practicals

B65 BMIC Study of Microscopes — Aspire Science Higher Secondary School

Study of different parts of dissecting and compound microscope.

B66 BSAP Study of Angiospermic plant — Aspire Science Higher Secondary School

1. Study of a typical Angiospermic plant.
2. Study and describe at least one common flowering plant from each of the following families (Malvacae, Solanaceae, Fabaceae and Liliacease) including dissection and display of floral whorls, anther and ovary to show number of chambers.
3. Study of Modification of root, stem and leaf.
4. Study of flower and its parts.
5. Types of inflorescence.

B67 BSCD Study of cell and cell division — Aspire Science Higher Secondary School

1. Study of cells (Onion scale leaf, Rhoeo leaves)
2. Study of starch grains and raphides.
3. Study of mitotis in onion root tips.

B68 BPST Preparation and study of plant tissues — Aspire Science Higher Secondary School

1. Preparation and study of T.S. of dicot and monocot roots, and stem and leaf (Primary).
2. Study of tissues and diversity in shapes and sizes in plants (simple tissue, complex tissue) through temporary/permanent slides.

B70 BSMS Study of specimen and permanent slides — Aspire Science Higher Secondary School

1. Study of the specimens and identification with reasons
   Bacteria, Oscillatoria, Spirogyra, Rhizopus, Mushroom, Yeast, Liverwort, Moss, Fern, Cycas, one moncotyledonous plant, one dicotyledonous plan and one lichen.

B75 BCPT Study of the presence of carbohydrates, proteins and fats — Aspire Science Higher Secondary School

Test for presence of starch, proteins and fats.

B92 BTCA Test for Catalase activity — Aspire Science Higher Secondary School

Qualitative test for catalase activity by leaf disc method

Biology:Zoology

B01DLW Diversity in Living World

B03 BBCX Biological classification — Aspire Science Higher Secondary School

A. Life and its diversity
1. What is living?
2. Biodiversity (Diversity in the living world)
B. Theory of classification
1. Need for classification
2. Taxonomy and Systematics
3. Concept of species
4. Taxonomical hierarchy
5. Binomial nomenclature
6. Tools for study of Taxonomy- Museum, Zoos, herbaria, Botanical gardens.
7. Keys
C. System of classification
1. History of classification: (Develop time sense in the evolution of art of classification over the years. Acknowledge by describing the contributions of various taxonomists and explain their systems of classification. - instruction to handle this topic)
2. Five kingdom classification(LQ)
3. Three domains of life

B10 BCAK Classification of Animal Kingdom — Aspire Science Higher Secondary School

1. Classification of Animal like Protista
2. Salient Features of Non-chordate phyla with examples.
3. General characters of Chordates and classification upto class level
(Three to five salient features and at least two examples)

B02SOAP Structural Organisation in Animals and Plants

B14 BAHX Animal Histology — Aspire Science Higher Secondary School

Animal tissues
1. Epithelial tissue
2. Connective tissue
3. Muscular tissue
4. Nervous tissue

B15 BAMX Animal Morphology — Aspire Science Higher Secondary School

Morphology, anatomy and functions of different systems of cockroach (Brief account only)
1. Digestive
2. Circulatory
3. Respiratory
4. Nervous
5. Reproductive

B05HOSP Human Organ System and Physiology

B28 BDSM Nutrition in man — Aspire Science Higher Secondary School

Digestion and Absorption:
1. Alimentary canal and digestive glands
2. Role of digestive enzymes and gastrointestinal hormones
3. Peristalsis
4. Digestion, absorption and assimilation (LQ) of
a. Proteins
b. Carbohydrates
c. Fats
5. Calorific value of proteins, carbohydrates and fats (brief account)
6. Egestion
7. Nutritional and digestive disorders - PEM, indigestion, constipation, vomiting, jaundice, diarrhea.

B29 BRSM Respiration in man — Aspire Science Higher Secondary School

Breathing and Respiration:
1. Respiratory organs in animals (tracheal, brancheal, cutaneous, pulmonary)
2. Respiratory system in humans
3. Mechanism of respiration (breathing) and its regulation in humans (LQ)
 a. Exchange of gases (LQ)
 b. Transport of gases (LQ)
 c. Respiratory volumes
4. Disorders related to respiration- Asthma, Emphysema, Occupational respiratory disorders.

B30 BCSM Body fluids and human circulatory system — Aspire Science Higher Secondary School

Body fluids and Circulation:
1. Compositon of blood (LQ), blood groups, coagulation of blood
2. Composition of lymph and its function
3. Human circulatory system-
 a. Structure and working of human heart (LQ)
 b. Blood vessels
 c. Cardiac cycle
 d. Cardiac output
 e. ECG
4. Double circulation;
5. Regulation of cardiac activity
6. Disorders of circulatory system- Hypertension, Coronary artery diesease, Angina pectoris, Heart failure.

B31 BESM Excretory products and human excretory system — Aspire Science Higher Secondary School

Excretory products and their elimination:
1. Modes of excretion- Ammonotelism, ureotelism and uriocotelism
2. Human excretory system- structure and function (LQ)
3. Mechanism of Urine formation (LQ)
4. Osmoregulation: Regulation of kidney function- Reninangiotensin, Artial Natriuretic Factor, ADH and Diabetes insipidus
5. Role of other organs in excretion
6. Disorders- Uraemia, Renal failure, Renal calculi, Nephritis
7. Dialysis and artificial kidney.

B32 BLOC Animal locomotion — Aspire Science Higher Secondary School

Locomotion and Movement:
1 Types of movement - ciliary, flagellar, muscular
2. Skeletal muscle - contractile proteins and muscle contraction (LQ);
3. Skeletal system and its functions (To be dealt with the relevant practical of Practical Syllabus); Joints
4. Disorders of muscular and skeletal system- Myasthenia gravis, Tetany, Muscular dystrophy, Arthritis, Osteoporosis, Gout.

B33 BNSM Nervous system of man — Aspire Science Higher Secondary School

Neural control and Coordination:
1. Neuron and nerves
2. Nervous system in humans
 a. central nervous system (brain (LQ), spinal cord)
 b. Peripheral nervous system
 c. Visceral nervous system
3. Generation and conduction of nerve impulse (LQ)
4. Reflex action
5. Sensory perception
6. Sense organs
7. Elementary structure and function of
 a. Eye
 b. Ear

B34 BEGH Endocrine system of man — Aspire Science Higher Secondary School

Chemical coordination and Regulation:
Endocrine glands and hormones
Human endocrine system
a. Hypothalamus
b. Pituitary (LQ)
c. Pineal
d. Thyroid
e. Parathyroid
f. Adrenal
g. Pancreas
h. Gonads
Mechanism of hormone action (Elementary Idea)
Role of hormones as messengers and regulatror
Hypo- and hyperactivity and related disorders (Common disorders e.g. Dwarfism, acromegaly, cretinism, goiter, exophthalmic goiter, diabetes, Addison's disease)

B11EXAM Examination

B56 BDIA Diagrams — Aspire Science Higher Secondary School

Diagrams

B57 BMIX Mixed type of TopicID. — Aspire Science Higher Secondary School

Mixed type of TopicID. Meant for a long question which has short question as bits and Column Matching Type questions.

B21PRA Practicals

B81 BQTX Qualitative test for carbohydrate, protein and fat — Aspire Science Higher Secondary School

1. To test the presence of carbohydrate, protein and fat in suitable animal materials (qualitative only).

B82 BMUS Study of Museum specimens — Aspire Science Higher Secondary School

1. Study of specimens and identification with reasons- Amoeba, Hydra, Sycon, Liver fluke, Earthworm, Leech, Cockroach, Prawn, silkworm, Honeybee, Snail and Starfish.
2. Study and comment on the morphological adaptations of two animals (Tree frog, Bat) found in terrestrial conditions and two animals (Flying fish, Turtle) found in aquatic conditions.

B83 BSTX Studfy of Tissues — Aspire Science Higher Secondary School

1. Study of squamous epithelium, muscle fibres and mammalian blood film
2. Stages of mitosis and meiosis (temporary/ permanent slides).

B85 BAUX Analysis of Urine — Aspire Science Higher Secondary School

1. To test the presence of urea in urine/ given sample solution.
2. To test the presence of albumin in urine/ given samplesolution.
3. To test the presence of bile salts in urine/ given sample solution.

Chemistry

C01BC Basic Concepts

C01 CBCC Basic concepts of Chemistry — Aspire Science Higher Secondary School

1. Importance and scope of chemistry
2. Nature of matter, laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules
3. Atomic mass and molecular masses
4. Equivalent mass of elements, acid, base, salt, oxidants, reductants
5. Mole concept and molar mass
6. Percentage composition, empirical and molecular formula
7. Chemical reactions - Stoichiometry and calculations based on stoichiometry

C02SM Different States of Matter

C02 CGAS Gaseous State — Aspire Science Higher Secondary School

1. Three states of matter
2. Intermolecular interactions, types of bonding, melting and boiling points
3. Role of gas laws in elucidating the concept of the molecule - Boyle's law, Charles law, Gay Lussac's law, Avogadro's law
4. Ideal behaviour, empirical derivation of gas equation, Avogadro's number, ideal gas equation.
5. Deviation from ideal behaviour
6. Liquefaction of gases, critical temperature, kinetic energy and molecular speeds (Elementary idea)

C04 CLIQ Liquid State and Solution — Aspire Science Higher Secondary School

First Year Portion
1. Liquid State, vapour pressure, viscosity and surface tension (qualitative idea only, no mathematical derivations).
Second Year Portion
1. Types of solutions: Expression of concentration of solutions of solids in liquids, solubility of gases in liquids and solid solutions
2. Colligative properties: relative lowering of vapour pressure, Raoult's law, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, van't Hoff factor

C03AMS Structure of Atoms and Molecules

C06 CASX Atomic Structure — Aspire Science Higher Secondary School

1. Discovery of Electron, Proton and Neutron
2. Atomic number, isotopes and isobars.
3. Thomson's model and its limitations.
4. Rutherford's model and its limitations
5. Bohr's model and its limitations, concept of shells and subshells.
6. Dual nature of matter and light, de Broglie's relationship
7. Heisenberg uncertainty principle, concept of orbitals, quantum numbers, shapes of s, p and d orbitals
8. Rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule
9. Electronic cinfiguration of atoms, stability of half filled and completely filled orbitals

C07 CPCX Periodic Classificaiton — Aspire Science Higher Secondary School

1. Significance of classification, brief history of the development of periodic table
2. Modern periodic law and the present form of periodic table
3. Periodic trends in properties of elements - atomic radii, ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valency and oxidation state.
4. Nomenclature of elements with atomic number greater than 100.

C08 CCBX Chemical Bond — Aspire Science Higher Secondary School

1. Valence electrons, ionic bond, covalent bond; bond parameters, Lewis structure
2. Polar character of covalent bond, covalent character of ionic bond
3. Valence bond theory, resonance, geometry of covalent molecules,
VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some molecules
4. Molecular orbital theory of homonuclear diatomic molecules (qualitative idea only)
5. Hydrogen bond

C04CR Chemical Reaction

C09 CCRX Chemical Reactions — Aspire Science Higher Secondary School

1. Concept of oxidation and reduction, redox reactions, oxidation number.
2. Balancing redox reactions, in terms of loss and gain of electrons and change in oxidation number, applications of redox reactions.

C10 CENR Energetics — Aspire Science Higher Secondary School

1. Concepts of System and surroundings and types of system, surroundings, work, heat, energy, extensive and intensive properties, state functions.
2. First law of thermodynamics - internal energy and enthalpy, heat capacity and specific heat, measurement of delta U and delta H
3. Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution
4. Second law of Thermodynamics (brief introduction).
5. Introduction of entropy as a state function, Gibb's energy change for spontaneous and non-spontaneous processes, criteria for equilibrium.
6. Third law of thermodynamics (brief introduction).

C11 CEQL Equilibria — Aspire Science Higher Secondary School

1. Equlibrium in physical and chemical processes.
2. Dynamic nature of equlibrium
3. Law of mass action, equilibrium constant (Kc, Kp and Kx) and their relationship.
4. Factors affecting equilibrium
5. Le Chatelier's principle
6. Ionic equlibrium-ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of poly basic acid strength
7. Concept of pH, Henderson Equation, hydrolysis of salts (elementary idea), buffer solution
8. Solubility product
9. Common ion effect (with illustrative examples)
10. Numerical problems.

C06FAM Families

C14 CHYD Hydrogen Family — Aspire Science Higher Secondary School

1. Position of hydrogen in periodic table
2. Occurrence, isotopes, preparation, properties and uses of hydrogen
3. Hydrides-ionic, covalent and interstitial
4. Physical and chemical properties of water
5. Preparation, properties and uses of Heavy water
6. Preparation, reactions, structure and uses of Hydrogen peroxide
7. Hydrogen as a fuel.

C15 CALK Alkali and Alkaline Earth Metals — Aspire Science Higher Secondary School

A. Group 1 and group 2 elements
1. General introduction, electronic configuration, occurrence, anomalous properties of the first element of each group.
2. Diagonal relationship, trends in the variation of properties (such as ionization enthalpy, atomic and ionic radii), trends in chemical reactivity with oxygen and halogens, uses.
B. Preparation and Properties of Some Important Compounds :
1. Sodium Carbonate, Sodium Chloride, Sodium Hydroxide and Sodium Hydrogencarbonate
2. Biological importance of Sodium and Potassium.
3. Calcium Oxide and Calcium Carbonate and their industrial uses,
4. Biological importance of Magnesium and Calcium.

C16 CBOR Boron Family — Aspire Science Higher Secondary School

A. General Introduction to p- Block Elements
B. Group 13 Elements :
1. General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous properties of first element of the group
2. Boron - physical and chemical properties, some important compounds, Borax, Boric acid, Boron Hydrides
3. Alumunium: Reactions with acids and alkalies, uses.

C17 CCAR Carbon Family — Aspire Science Higher Secondary School

A. Group 14 Elements :
1. General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous behaviour of first elements.
2. Carbon-catenation, allotropic forms, physical and chemical properties; uses of some important compounds: oxides.
3. Important compounds of Silicon and a few use: Silicon Tetrachloride, Silicones, Silicates and Zeolites, their uses.

C08BOC Basics of Organic Chemistry

C26 CPOC Purification and Characterization of Organic Compounds — Aspire Science Higher Secondary School

General introduction, methods of purification, qualitative and quantitative analysis of organic compounds

C27 CIOC Introduction to Organic Chemistry and Nomenclature — Aspire Science Higher Secondary School

Classification and IUPAC nomenclature of organic compounds.

C29 CRMX Reaction Mechanisms — Aspire Science Higher Secondary School

1. Electronic displacements in a covalent bond: inductive effect, electromeric effect, resonance and hyperconjugation.
2. Homolytic and heterolytic fission of a covalent bond.
3. Free radicals, carbocations, carbanions, electrophiles and nucleophiles
4. Types of organic reactions.

C09HC Hydrocarbons

C30 CANE Saturated Hydrocarbons — Aspire Science Higher Secondary School

1. Classification of Hydrocarbons
2. Alkanes:
 a. Nomenclature, isomerism, conformation (ethane only) and physical properties
 b. Methods of preparation
 c. Chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis.

C31 CENE Alkenes — Aspire Science Higher Secondary School

Alkenes:
1. Nomenclature, structure of double bond (ethene), geometrical isomerism and physical properties
2. Methods of preparation
3. Chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markownikoff's addition and peroxide effect), ozonolysis, oxidation
4. Mechanism of electrophilic addition.

C32 CYNE Alkynes — Aspire Science Higher Secondary School

Alkynes:
1. Nomenclature, structure of triple bond (ethyne) and physical properties
2. Methods of preparation
3. Chemical reactions : acidic character of alkynes, addition reaction of - hydrogen, halogens, hydrogen, halides and water.

C11AC Aromatic Compounds

C41 CARC Aromatic Compounds — Aspire Science Higher Secondary School

Aromatic Hydrocarbons:
1. Introduction and IUPAC nomenclature
2. Benzene : resonance and aromaticity
3. Chemical properties: mechanism of electrophilic substitution, nitration, sulphonation, halogenation, Friedel Craft's alkylation and acylation, directive influence of functional group in monosubstituted benzene.
4. Carcinogenicity and toxicity.

C13CSH Chemistry in Service of Humanity

C44 CECX Environmental Chemistry — Aspire Science Higher Secondary School

1. Environmental pollution: air, water and soil pollution
2. Chemical reactions in atmosphere, smog, major atmospheric pollutants, acid rain, ozone and its reactions, effects of depletion of ozone layer, greenhouse effect and global warming-pollution due to industrial wastes
3. Green chemistry as an alternative tool for reducing pollution
4. Strategies for control of environmental pollution.

C15PRA Practicals

C65 CBBX Bunsen Burner — Aspire Science Higher Secondary School

Study of different parts of Bunsen burnner

C66 CCBW Chemical Balance — Aspire Science Higher Secondary School

Chemical balance - weighing with chemical balance by equal oscillation method.

C67 CBDT Bending the Delivery tubes — Aspire Science Higher Secondary School

Cutting and bending of glass tube, drawing jet and boring a cork.

C68 CCRY Crystallization — Aspire Science Higher Secondary School

Preparation of copper sulphate crystal from copper carbonate

C69 CVST Volumetric Analysis by single Titration — Aspire Science Higher Secondary School

Single titration of acids and bases (three experiments to be done; one on direct determination of normality of one of the solutions from that of the other and the other two, involving numerical calculations)

C70 CTOS Test of Solubility — Aspire Science Higher Secondary School

Solubility of Potassium Sulphate at room temperature

C71 CIAR Salt Test Acid Radicals — Aspire Science Higher Secondary School

Identification of Acid radicals: CO_3^{2-}, SO_3^{2-}, S^{2-}, NO_2^-, Cl^-, Br^-, I^-, NO_3^-, SO_4^{2-}, & PO_4^{3-}

C72 CIBE Salt Test Basic Radical — Aspire Science Higher Secondary School

Identification of Basic Radicals (Dry test - Only): Ag^+, Pb^{2+}, Hg_2^{2+}, Cu^{2+}, Hg^{2+}, Bi^{3+}, As^{3+}, Sb^{3+}, Sn^{2+}, Al^{3+}, Fe^{3+}, Co^{2+}, Cr^{3+}, Ni^{2+}.
Zn^{2+}, Mn^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, NH_4^+, Mg^{2+}, K^+ and Na^+

C77 CEMM Gravimetric Analysis: Equivalent Mass of Mg — Aspire Science Higher Secondary School

Equivalent mass of Mg by hydrogen displacement method

English

N01PRO Prose

N62	**NSUY**	Standing Up for Yourself	Aspire Science Higher Secondary School
Standing Up for Yourself			
N63	**NLBL**	The Legend behind a Legend	Aspire Science Higher Secondary School
The Legend behind a Legend			
N64	**NTGT**	The Golden Touch	Aspire Science Higher Secondary School
The Golden Touch			
N65	**NLMF**	In London in minus fours	Aspire Science Higher Secondary School
In London in minus fours			
N66	**NTCF**	The Cancer Fight, from Hirosima to Houston	Aspire Science Higher Secondary School
The Cancer Fight, from Hirosima to Houston			

N02POE Poetry

N72	**NSWS**	Stopping by woods in a snowy evening	Aspire Science Higher Secondary School
Stopping by woods in a snowy evening			
N73	**NOSN**	Oft, in the Stilly Night	Aspire Science Higher Secondary School
Oft, in the Stilly Night			
N74	**NTIR**	The Inchcape Rock	Aspire Science Higher Secondary School
The Inchcape Rock			
N75	**NMTF**	To my True Friend	Aspire Science Higher Secondary School
To my True Friend			
N76	**NFIS**	Fishing	Aspire Science Higher Secondary School
Fishing			

N03NDS Non-detailed Study

N82	**NTQX**	Three Questions	Aspire Science Higher Secondary School
Three Questions			
N83	**NATY**	After Twenty Years	Aspire Science Higher Secondary School
After Twenty Years			
N84	**NTOW**	The Open Window	Aspire Science Higher Secondary School
The Open Window			
N85	**NOOH**	The One and only Houdini	Aspire Science Higher Secondary School
The One and only Houdini			
N86	**NCHI**	Childhood	Aspire Science Higher Secondary School
Childhood			
N87	**NMAR**	Marriage	Aspire Science Higher Secondary School
Marriage			

N04SW Steps to Writing

N31	**NWPX**	Writing Paragraphs	Aspire Science Higher Secondary School

Writing Paragraphs

N32	**NDIP**	Developing Ideas into Paragraphs	Aspire Science Higher Secondary School

Developing Ideas into Paragraphs

N33	**NWPL**	Writing Personal Letters and Notes	Aspire Science Higher Secondary School

Writing Personal Letters and Notes

N34	**NAOB**	Writing Applications, Official Letters and Buisiness Letters	Aspire Science Higher Secondary School

Writing Applications, Official Letters and Buisiness Letters

N35	**NTEP**	Writing Telegrams, E-mails, Personal Advertisements and Short Notices	Aspire Science Higher Secondary School

Writing Telegrams, E-mails, Personal Advertisements and Short Notices

N36	**NUGX**	Using Graphics	Aspire Science Higher Secondary School

Using Graphics

N05GCT Grammar in Context and Translation

N42	**NCUN**	Countable and Uncountable Nouns	Aspire Science Higher Secondary School

Countable and Uncountable Nouns

N43	**NTPX**	Tense Patterns	Aspire Science Higher Secondary School

Tense Patterns

N44	**NMVX**	Modal Verbs	Aspire Science Higher Secondary School

Modal Verbs

N45	**NPRE**	Prepositions	Aspire Science Higher Secondary School

Prepositions

N46	**NIMP**	The Imperatives	Aspire Science Higher Secondary School

The Imperatives

N06EXAM Examination

N48	**NTRA**	Translation	Aspire Science Higher Secondary School

Translation

N55	**NVOC**	Vocabulary Skills	Aspire Science Higher Secondary School

Vocabulary Skills

N56	**NRSS**	Reordering or Sequencing of sentences	Aspire Science Higher Secondary School

Reordering or Sequencing of sentences

N57	**NDIC**	Dictionary/Reference Skills	Aspire Science Higher Secondary School

Dictionary/Reference Skills

N58	**NCOD**	Cohesive Devices	Aspire Science Higher Secondary School

Cohesive Devices

N59	**NGIC**	Grammar in Context	Aspire Science Higher Secondary School

Grammar in Context

Information Technology

I01IT IT and its application

I35 IEGX E Governance — Aspire Science Higher Secondary School

Definition, Benefit to citizens, its web sites & its social impact, e-governance challenges

I36 IELX E Learning — Aspire Science Higher Secondary School

Defination, Benefit to students (learners), Benefit to teachers (Training Management), e-Learning websides & its social impact.

I02HW Hardware

I02 IAOC The Computer System and CPU — Aspire Science Higher Secondary School

1. CPU
2. Memory - RAM and ROM
3. I /O devices
4. Communication bus
5. Ports - serial and parallel

I03 IIOD Input and Output — Aspire Science Higher Secondary School

1. Input devices: Keyboard, Mouse, Light pen, touch screen, graphic tablets, joystick, microphone, OCR, OMR, scanner, smart card reader, BCR, MICR, BIOMETRIC sensors, web camera.
2. Output devices: Monitor/VDU, LED/LCD screen, television, printers (DMP, deskjet / inkjet/bubble jet printer, laser printer), plotter, speaker.

I37 IMEM Memory Units — Aspire Science Higher Secondary School

Memory: Types of memory, RAM(SDAM, DRAM), ROM(PROM, EPROM, EEPROM)

I03SW General aspects of Software

I05 ISWX Software — Aspire Science Higher Secondary School

A. System software:
 1. Operating systems: need for operating system, major functions of operating system
 2. OS for Main frame, PC/server, mobile services, language processors (assembler, interpreter & compiler)
B. Utility software:
 1. Compression tools
 2. Disk defragmenter
 3. Anti virus
C. Application software:
 1. General purpose applicaton - word processor, spreadshet packages, presentation software, DBMS and IDE software
 2. Specific purpose application software - Inventory Management Software, Human Resource Management System (HRMS), Payroll systems, Financial Management System and, Reservation System.

I30 IOSC Open Source Concepts — Aspire Science Higher Secondary School

Open source concepts:
1. Open source software, common foss/floss - GNU/LINUX, Firefox, Openoffice, java, NETBEANS and MYSQL
2. Common open standards - www, html, xml and dhtml
3. Indian language computing:
 a. Character coding and unicode
 b. Different types of fonts - open type versus true type and static vs dynamic
 c. Entering language text - phonetic and key map based

I07DB Databases

I11 IDBS Relational database management system — Aspire Science Higher Secondary School

1. Introduction to data base concepts: Database, Relational database, Relation/Table, Attribute/Field and Tuple/Row
2. Data types: text (char, varchar), number (decimal, int/integer), date & time.
3. Keys: candidate key, primary key, Alternate key, Foreign key
4. Examples of common databases: management tools for mobile devices.

I34 ISQL Introduction to MySQL — Aspire Science Higher Secondary School

A. First Year Portion
ANSI SQL 99 standard commands
1. Classification of SQL commands:
 a. DML (Select, Insert, Update, Delete)
 b. DDL(Create, Drop, Alter)
2. Creating & using a database (SQL Create command to create a database, Use command to select a database)
3. Creating a Table: CREATE command to create a table, DESC command to display a table structure, INSERT command for inserting new rows
4. Displaying table data: SELECT command to select all the columns, selecting specific columns using arithmetic operators (operator precedence)
5. Defining & using column alias, eliminating duplicate values from display using Distinct keyword
6. Limiting rows during selection using WHERE clause
 a. Using comparison operator (=, <, >, <=, >=, <>, BETWEEN, IN, LIKE (%,-))
 b. Using Logical operators (AND, OR, NOT & corresponding operator precedence)
B. Second Year Portion
1. Working with NULL value
2. ORDER BY CLAUSE: Sorting in ascending / descending order, sorting by column alias name, sorting on multiple column
3. Manipulating data of a table / relation: Update command to change existing data of a table, delete command for removing rows from a table
4. Restructuring a table: ALTER TABLE for adding new columns and deleting columns
5. String function: ASCII(), CHAR(), CONCAT(), INSTR(), LCASE(), UCASE (), LENGTH (), LTRIM(), MID(), RIGHT(), RTRIM(), TRIM(), SUBSTR()
6. Mathematical functions: POWER(), ROUND(), TRUNCATE()
7. Date & Time functions: CURDATE(), DATE(), MONTH(), DAYOFMONTH(), DAYOFWEEK(), DAYOFYEAR(), NOW(), SYSDATE()

I10IP Introduction to Programming

I31 IIDE Getting started with programming with IDE — Aspire Science Higher Secondary School

Getting started with programming with IDE:
1. Introduction - rapid application development with ide
2. Basic interface components - label, text field, text area, button, checkbox and radio button
3. Devloping general application:
 a. Getting familiar with java swing user interface components - frame, dialog, option pane, panal, scroll pane, label, text field, password field, text area, button, check box, radio button, combo box, list
 b. Basic components handling methods and properties - Set text (), gettext (), Is Selected (), Set Selected ()

I32 IPFX Programming Fundamentals — Aspire Science Higher Secondary School

A. First Year Portion
1. Data types: Concept of data types; Built in data types - byte, short, int, long, float, double, char, string and boolean
2. Variables, declaring variables, naming a variable, assigning value to variables
3. integer object method (parse int); double object method (parse double, parse float); Control structure
4. Decision structure (if, if….else, switch)
5. Looping structure (while, Do-While, for)
B. Second Year Portion
1. Basic concept of access specifier for class member [data member and methods] and inheritance
2. Commonly used libraries
 a. String class and methods: toString(), concat(), length(), toLowerCase(), toUpperCase(), trim(), substring ()
 b. Math class and methods: pow(), round()
3. Accessing MySQL database using ODBC, JDBC to connect with database.

I33 IPGX Programming Guidelines — Aspire Science Higher Secondary School

Programming guidelines:
1. General concepts and Modular approach
2. Running and debuging programs - syntax errors, runtime error and logical errors
3. Problem solving procedures - understanding the problem, identifying minimum number of inputs required for output and breaking down problem into simple logical steps

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I20PRA Practicals

I73 IPSJ Problem solving using JAVA — Aspire Science Higher Secondary School

A. First Year Portion
10 problems with solution to be conducted and attached to the practical record
B. Second Year Portion
At least 12 solution of simple problem using IDE based java.

I75 IPSS SQL queris Aspire Science Higher Secondary School

A. First Year Portion
15 SQL queries to be made and result may be added to the practical record
B. Second Year Portion
At least 24 SQL queries on one and / or two tables.

I76 IPSF IT application Aspire Science Higher Secondary School

A. First Year Portion
IT application: 3 problem solving frame work; to be attached to practical record.
B. Second Year Portion
Solution of at least 2 simple problem incorporating java application & database connectivity.

Mathematics

M01LS Logic and Set

M01 MLOG Symbolic Logic — Aspire Science Higher Secondary School

Mathematical Reasoning:
1. Mathematically acceptable statements.
2. Connecting words/phrases-consolidating the understanding of “if and only if (necessary and sufficient) condition,” “implies”, “and/ or”, “implied by”, “and”, “or”, “there exists” and their use through variety of examples related to real life and Mathematics.
3. Validating the statements involving the connecting words, difference between contradiction, converse and contrapositive

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M02 MSET Set — Aspire Science Higher Secondary School

1. Sets and their representations. Empty set, Finite and Infinite sets, Equal sets, Subsets, Subsets of a set of real numbers especially intervals (with notations), Power set and Universal set
2. Venn diagrams
3. Union and Intersection of sets, Difference of sets, Complement of a set, Properties of Complement of Sets
4. Practical Problems based on sets.

M32 MPMI Principle of Mathematical Induction — Aspire Science Higher Secondary School

Principle of Mathematical Induction:
1. Process of the proof by induction, motivation the application of the method by looking at natural numbers as the least inductive subset of real numbers.
2. The principle of mathematical induction and simple applications.

M02NS Number System

M08 MCNX Complex Number and Quadratic Equations — Aspire Science Higher Secondary School

1. Need for complex numbers, especially square root of -1, to be motivated by inability to solve some of the quardratic equations
2. Algebraic properties of complex numbers
3. Argand plane and polar representation of complex numbers
4. Statement of Fundamental Theorem of Algebra, solution of quadratic equations in the complex system.
5. Square root of a complex number
6. Cube roots of unity and its properties

M27 MSEQ Sequence and Series — Aspire Science Higher Secondary School

1. Arithmetic Progression (A.P.) and Arithmetic Mean (A.M.)
2. Geometric Progression (G.P.):
 a. General term of a G.P
 b. Sum of n terms of a G.P.
 c. Infinite G.P. and its sum
 d. Geometric mean (G.M.)
3. Arithmetic and Geometric series
4. Harmonic mean
5. Relation between A.M., GM. and H.M.
6. Formula for the following special sum: Arithmetico-Geometric Series, Exponential Series, Logarithmic Series, Binomial Series.

M30 MLIX Linear inequalities — Aspire Science Higher Secondary School

Linear inequalities.
1. Algebraic solutions of linear inequalities in one variable and their representation on the number line.
2. Graphical solution of linear inequalities in two variables.
3. Graphical solution of system of linear inequalities in two variables.

M03RF Relation and Function

M03 MREL Relation — Aspire Science Higher Secondary School

A. First Year Portion:
1. Ordered pairs, Cartesian product of sets. Number of elements in the Cartesian product of two finite sets. Cartesian product of the sets of real (upto R × R).
2. Definition of relation and Pictorial diagrams
3. Domain, co-domain and range of a relation.
B. Second Year Portion:
1. Types of relations: Reflexive, symmetric, transitive and equivalence relations.

M04 MFUN Function Aspire Science Higher Secondary School

A. First Year Portion:
1. Function as a special kind of relation from one set to another.
2. Pictorial representation of a function, domain, co-domain and range of a function.
3. Real valued functions
4. Domain and range of these functions: Constant, identity, polynomial, rational, modulus, signum, exponential, logarithmic and greatest integer function, with their graphs.
5. Sum, difference, product and quotients of functions.
B. Second Year Portion
1. One to one and onto functions, composite functions, inverse of function.
2. Binary operations.

M04Trig Trigonometry

M05 MTRI Trigonometry Aspire Science Higher Secondary School

A. First Year Portion: Trigonometric Functions
1. Positive and negative angles.
2. Measuring angles in radians and in degrees and conversion of one into other.
3. Definition of trigonometric functions with the help of unit circle.
4. Truth of $\sin 2x + \cos 2x = 1$, for all x.
5. Signs of trigonometric functions.
6. Domain and range of trigonometric functions and their graphs.
7. Expressing $\sin(x \pm y)$ and $\cos(X \pm y)$ in terms of sinx, siny, cosx & cosy and their simple application.
8. Deducing identities like the following : [Check original courses of studies]
9. Identities related to sin 2x, cos 2x, tan 2x, sin 3x, cos 3x and tan 3x.
10. Trigonometric equations; Principal solution
11. General solution of trigonometric equations of the type $\sin x = \sin y$, $\cos x = \cos y$ and $\tan x = \tan y$.
12. Proof and Simple applications of sine and cosine formula.
B. Second Year Portion: Inverse Trigonometric Functions
1. Definition, range, domain, principle value branch.
2. Graphs of inverse trigonometric functions.
3. Elementary properties of inverse trigonometric functions.

M05CG2D 2D Co-ordinate Geometry

M12 MLIN Straight Line & Pairs of Lines Aspire Science Higher Secondary School

1. Brief recall of two dimensional geometry from earlier classes.
2. Slope of a line and angle between two lines.
3. Various forms of equations of a line: parallel to axis, point-slope form, slope-intercept form, two-point form, intercept form and normal form.
4. General equation of a line.
5. Equation of family of lines passing through the point of intersection of two lines.
6. Distance of a point from a line
7. Shifting of Origin.

M14 MCOG Conic Sections Aspire Science Higher Secondary School

1. Sections of a cone : Circles, ellipse, parabola, hyperbola
2. A point, a straight line and a pair of intersecting lines as a degenerated case of a conic section
3. Standard equations and simple properties of Circle, parabola, ellipse and hyperbola.

M06DCAL Differential Calculus

M15 MLCX Limit and Continuity Aspire Science Higher Secondary School

1. Intuitive idea of limit.
2. Limits of polynomials and rational functions, trigonometric, exponential and logarithmic functions.

M16 MDIF Derivatives — Aspire Science Higher Secondary School

A. First year Portion
1. Derivative introduced as rate of change both as that of distance function and geometrically.
2. Definition of derivative, relate it to slope of tangent of a curve
3. Derivative of sum, difference, product and quotient of functions
4. The derivative of polynomial and trigonometric functions
B. Second year Portion
1. Continuity and differentiability
2. Derivative of composite functions, chain rule
3. Derivatives of inverse trigonometric functions
4. Derivative of implicit functions
5. Concept of exponential and logarithmic functions.
6. Derivatives of logarithmic and exponential functions
7. Logarithmic differentiation
8. Derivative of functions expressed in parametric forms.
9. Second order derivatives.
10. Rolle's and Lagrange's Mean Value Theorems (without proof) and their geometric interpretation.

M08CGV 3D Co - ordinate Geometry and Vector

M21 MTSL 3D Straight Line — Aspire Science Higher Secondary School

A. First Year Portion
1. Coordinate axes and coordinate planes in three dimensions.
2. Coordinates of a point in three dimensions.
3. Distance between two points and section formula.
B. Second Year Portion
1. Direction cosines and direction ratios of a line joining two points.
2. Cartesian equation and vector equation of a line
3. Coplanar and skew lines
4. Shortest distance between two lines.
5. Cartesian and vector equation of a plane.
6. Angle between (i) two lines, (ii) two planes, (iii) a line and a plane.
7. Distance of a point from a plane.

M10PC Permutation and Combination

M09 MPCX Permutation, Combination and Binomial Theorem — Aspire Science Higher Secondary School

1. Fundamental principle of counting
2. Factorial n. (n!)
3. Permutations and combinations
4. Derivation of formulae and their connections, simple applications.
5. Binomial Theorem: History, statement and proof of the binomial theorem for positive integral indices.
6. Pascal's triangle, General and middle term in binomial expansion, simple applications.

M11PS Probability and Statistics

M24 MPRO Probability — Aspire Science Higher Secondary School

A. First Year Portion
1. Random experiments; outcomes, sample spaces (set representation)
2. Events: occurrence of events, 'not', 'and' and 'or' events, exhaustive events, mutually exclusive events, Axiomatic (set theoretic) probability, connections with the theories of earlier classes
3. Probability of an event
4. Probability of 'not', 'and' 'or' events
B. Second Year Portion
Conditional probability, multiplication theorem on probability. Independent events, total probability, Baye's theorem, Random variable and its probability distribution, mean and variance of random variable. Independent (Bernoulli) trials and Binomial distribution

M25 MSTA Statistics — Aspire Science Higher Secondary School

1. Measures of dispersion
2. Range, mean deviation, variance and standard deviation of ungrouped/grouped data.
3. Analysis of frequency distributions with equal means but different variances.

Odia

O01Pro Odia Prose

O01 OSPX ଶରଶୁ ପଦର — Aspire Science Higher Secondary School

ଶରଶୁ ପଦର

O02 OJNS ଝେଲମ ନଦୀରେ ସନ୍ଧ୍ୟା — Aspire Science Higher Secondary School

ଝେଲମ ନଦୀରେ ସନ୍ଧ୍ୟା

O03 OMAD ମଧୁବାବୁ — Aspire Science Higher Secondary School

ମଧୁବାବୁ

O04 OGMX ଗାଁ ମଜଲିସ — Aspire Science Higher Secondary School

ଗାଁ ମଜଲିସ

O02Poe Odia Poetry

O05 OSBX ସାହାଡା ବୃକ୍ଷ — Aspire Science Higher Secondary School

ସାହାଡା ବୃକ୍ଷ

O06 OSMX ଶାପ ମୋଚନ — Aspire Science Higher Secondary School

ଶାପ ମୋଚନ

O07 OHIM ହିମକାଳ — Aspire Science Higher Secondary School

ହିମକାଳ

O08 OMIT ମିତ୍ରତା — Aspire Science Higher Secondary School

ମିତ୍ରତା

O09 OPPS ପୟରେ ପଶୁଛି ଶରଣ — Aspire Science Higher Secondary School

ପୟରେ ପଶୁଛି ଶରଣ

O03Oap Odia One act play

O10 OATY ଅତ୍ୟାଚାରିତ — Aspire Science Higher Secondary School

ଅତ୍ୟାଚାରିତ

O11 OBUX ଭାଲୁ ଉପଦ୍ରବ — Aspire Science Higher Secondary School

ଭାଲୁ ଉପଦ୍ରବ

O12 OSSX ସୀମିତ ସମ୍ପର୍କ — Aspire Science Higher Secondary School

ସୀମିତ ସମ୍ପର୍କ

O04Gra Odia Grammar and Essay

O15 OPRX ପ୍ରବନ୍ଧ ରଚନା — Aspire Science Higher Secondary School

ପ୍ରବନ୍ଧ ରଚନା
ପ୍ରବନ୍ଧରୁ ତିନୋଟି ପ୍ରଶ୍ନ ପଡିବ। ସେଥିରୁ ଯେ କୌଣସି ଗୋଟିଏ ପ୍ରଶ୍ନର ଉତ୍ତର 150 ରୁ 200 ଶବ୍ଦ ମଧ୍ୟରେ ଦେବାକୁ ପଡିବ।

O16 ODPL ଦରଖାସ୍ତ ଓ ପତ୍ର ଲିଖନ — Aspire Science Higher Secondary School

ପ୍ରଥମ ବର୍ଷ
ସାଧାରଣ ପତ୍ରଲିଖନ
ଦ୍ୱିତୀୟ ବର୍ଷ
ଦରଖାସ୍ତ ଲିଖନ: ବ୍ୟବସାୟିକ, ବ୍ୟକ୍ତିଗତ, ବୃତ୍ତି ନିମିତ୍ତ, ସରକାରୀ କାର୍ଯ୍ୟାଳୟ ସମ୍ବନ୍ଧୀୟ ଓ ସାମୟିକ ଛୁଟି ପାଇଁ
ପତ୍ରଲିଖନ: ସମ୍ପାଦକଙ୍କୁ ପତ୍ର

O17 OPNX ପଦ ପ୍ରକରଣ — Aspire Science Higher Secondary School

ପଦ ପ୍ରକରଣ:
ବିଶେଷ୍ଯ, ବିଶେଷଣ, ସର୍ବନାମ, ଅବ୍ୟୟ, କ୍ରିୟା

O05Com Odia comprehension

O13 OUSP ଅବବୋଧ ପରୀକ୍ଷଣ Aspire Science Higher Secondary School

ଅବବୋଧ ପରୀକ୍ଷଣ
କ. ଗଦ୍ୟାଂଶ - ଏକ ଗଦ୍ୟ ଅନୁଚ୍ଛେଦ ଦିଆଯିବ । ଏଥିରୁ 4 ଟି ୧ ନମ୍ବର ବିଶିଷ୍ଟ ଏବଂ ୩ ଟି ୨ ନମ୍ବର ବିଶିଷ୍ଟ ପ୍ରଶ୍ନ ପଡିବ।
ଖ. ପଦ୍ୟାଂଶ - ଗୋଟିଏ ଅଜ୍ଞାତ କବିତା ଦିଆଯିବ । ସେଥିରୁ ୫ ଟି ୧ ନମ୍ବର ବିଶିଷ୍ଟ ପ୍ରଶ୍ନ ପଡିବ ।

O14 OSLX ସମ୍ବାଦ ଲିଖନ Aspire Science Higher Secondary School

ସମ୍ବାଦ ଲିଖନ - ସାମ୍ପ୍ରତିକ ଘଟଣାକ୍ରମକୁ ଆଧାର କରି ସମ୍ବାଦ ପ୍ରସ୍ତୁତ କରାଯିବ।

Physics

P01PWM Physical World and Measurement

P01 PUDX Unit and Dimension

Aspire Science Higher Secondary School

1. Physics and its scope; Physics, Technology and Society.
2. Measurement: need for measurement, units of measurement
3. Fundamental and derived units
4. SI units
5. Accuracy and precision of measuring instruments
6. Errors in measurement: absolute, relative error, percentage of error, Combination of errors
7. Significant figures
8. Dimensions of physical quantities
9. Dimensional analysis and its applications.

P02 PSVX Scalars and vectors

Aspire Science Higher Secondary School

1. Scalars and vectors
2. General vectors and their notations
3. Position and displacement vectors
4. Equality of vectors
5. Unit vectors
6. Multiplication of vectors by a real number
7. Addition and subtraction of vectors
8. Relative velocity
9. Resolution of a vector in a plane, rectangular components
10. Dot and Cross products of two vectors

P02LM Linear Motion

P03 PKIN Kinematics

Aspire Science Higher Secondary School

A. Motion in a straight line :
1. Rest and motion
2. Frame of reference
3. Motion in a Straight line
4. Position-time graph
5. Speed and velocity
6. Concepts of differentiation and integration for describing motion (elementary idea)
7. Uniform and non-uniform motion
8. Average speed and instantaneous velocity
9. Uniformly accelerated motion: Velocity-time and position-time graph, Relation for uniformly accelerated motion (graphical treatment)

P04 PPMX Projectile Motion

Aspire Science Higher Secondary School

Motion in a plane:
1. Projectile motion-cases of uniform velocity and uniform acceleration
2. Equation of trajectory, range, time of flight, maximum height

P05 PLOM Laws of Motion

Aspire Science Higher Secondary School

1. Concept of force
2. Newton's 1st law and Inertia
3. Momentum and Newton's 2nd law
4. Impulse. Impulse momentum theorem
5. Newton's 3rd law. Statement of law of conservation of linear momentum and its applications
6. Equilibrium of concurrent of forces.

P06 PFRI Friction

Aspire Science Higher Secondary School

1.Static and kinetic friction
2.Rolling friction
3.Laws of friction
4.Lubrication

P07 PWPE Work, Power & Energy — Aspire Science Higher Secondary School

1. Work done by a constant force and variable force
2. Conservative and nonconservative forces
3. Kinetic energy
4. Work energy theorem
5. Power
6. Notion of Potenetial energy
7. Potential energy of a spring
8. Conservation of mechanical energy (KE and PE)

P08 PCOL Collision — Aspire Science Higher Secondary School

1. Elastic collisions in one and two dimensions
2. In-elastic collisions in one and two dimensions

P03RMG Rotaional Motion and Gravitation

P09 PCMX Circular Motion — Aspire Science Higher Secondary School

Uniform Circular motion:
1. Dynamics of uniform circular motion
2. Centripetal force
3. Motion of a vehicle on a level circular road
4. Motion of a vehicle on a banked road
5. Motion in a vertical circle

P10 PRMI Rotational Motion and MI — Aspire Science Higher Secondary School

System of Particles and Rotational Motion:
1. Centre of mass of a two-particle system
2. Momentum conservation and centre of mass motion
3. Centre of mass of rigid bodies
4. Centre of Mass of a uniform rod.
5. Moment of a force
6. Torque
7. Angular momentum
8. Law of Conservation of angular momentum with its applications.
9. Equilibrium of rigid bodies
10. Equations of rotational motion
11. Comparison of linear and rotational motions
12. Moment of inertia
13. Radius of gyration
14. Moment of inertia of simple geometrical objects (no derivation)
15. Parallel and perpendicular axes theorem and their applications

P11 PGRV Gravitation — Aspire Science Higher Secondary School

1. Newton's law of gravitation
2. Kepler's laws of planetary motion (only statements)
3. Gravitational field and Potential
4. Gravitational potential energy
5. Acceleration due to gravity and its variation with altitude and depth
6. Escape velocity
7. Orbital velocity of a satellite
8. Geostationary satellites

P04WM Wave Motion

P12 PSHM Simple Harmonic Motion — Aspire Science Higher Secondary School

1. Periodic motion: Period, Frequency, displacement as a function of time, periodic function.
2. Simple harmonic motion and its equation
3. Phase
4. Oscillation of a spring
5. Restoring force and force constant
6. Kinetic and potential energy in SHM
7. Simple pendulum and derivation of expression for its time period
8. Free, damped and forced oscillation (qualitative idea only)
9. Resonance

P13 PWAV Waves — Aspire Science Higher Secondary School

1. Wave motion
2. Transverse and longitudinal waves
3. Speed of wave motion
4. Displacement relation for a progressive wave
5. Speed of longitudinal wave in an elastic medium and speed of transverse wave in a stretched string (qualitative idea only)
6. Principle of superposition of waves
7. Reflection of waves

P14 PSWX Sound waves — Aspire Science Higher Secondary School

1. Standing waves in strings and organ pipes
2. Fundamental mode and harmonics
3. Beats,
4. Doppler's effect

P05POM Properties of Matter

P15 PEPM Elastic properties of matter — Aspire Science Higher Secondary School

Mechanical properties of Solids:
1. Elastic Behaviours
2. Stress-Strain relationship and Stress-Strain diagram
3. Hookes' Law
4. Young's modulus
5. Bulk modulus
6. Shear modulus of rigidity
7. Poisson's ratio
8. Elastic energy

P16 PHST Hydrostatic and surface tension — Aspire Science Higher Secondary School

1. Pressure due to a fluid column
2. Pascal's law and its applications (hydraulic lift and hydraulic brakes)
3. Effect of gravity on fluid pressure
4. Surface energy and surface tension
5. Angle of contact
6. Excess pressure across a curved surface
7. Application of surface tension ideas to drops, bubbles and capillary rise

P17 PFDX Fluid in Motion — Aspire Science Higher Secondary School

1. Streamlined and turbulent flow.
2. Bernoulli's theorem and its applications.
3. Viscosity
4. Critical velocity
5. Stoke's law
6. Terminal velocity.

P06HT Heat and Thermodynamics

P18 PHPX Heat Phenomena — Aspire Science Higher Secondary School

1. Concepts of heat and temperature
2. Thermal expansion of solids, liquids and gases
3. Anomalous expansion of water
4. Specific heat capacity
5. Cp, Cv and Calorimetry
6. Change of state and latent heat capacity

P19 PTDX Thermodynamics — Aspire Science Higher Secondary School

1. Thermal equilibrium and definition of temperature (Zeroth law of thermodynamics)
2. Heat, work and internal energy
3. First law of thermodynamics
4. Isothermal and adiabatic processes
5. Second law of thermodynamics
6. Reversible and irreversible processes
7. Carnot's engine and refrigerator
8. Efficiency of Carnot's engine (no derivation)

P20 PHTX Heat transfer — Aspire Science Higher Secondary School

Heat transfer:
1. Conduction, Convection and radiation
2. Thermal conductivity
3. Qualitative ideas of block body radiation
4. Wien's displacement law
5. Stefan's law
6. Greenhouse effect

P21 PMPM Molecular properties of matter — Aspire Science Higher Secondary School

Kinetic theory of gases:
1. Equation of state of a perfect gas
2. Work done in compressing a gas
3. Kinetic theory of gases- Postulates and concept of pressure
4. Kinetic interpretation of temperature
5. Mean and RMS speed of gas molecules
6. Degrees of freedom
7. Law of equipartition of energy (statement only) and its applications to specific heat capacities of gases
8. Concept of mean freepath
9. Avogadro's number

P20PPRA Practicals

P65 PMLX Measurement of length — Aspire Science Higher Secondary School

1. To measure diameter of a small spherical/cylindrical body using Vernier calipers
2. To measure internal diameter and depth of a given beaker/calorimeter using Vernier calipers and hence find its volume.
3. To measure diameter of a given wire using screw gauge
4. To measure thickness of a given sheet using screw gauge
5. To measure volume of an irregular lamina using screw gauge
6. To determine radius of curvature of a given spherical surface by a spherometer

P66 PMMX Measurment of mass — Aspire Science Higher Secondary School

1. To determine the mass of two different objects using a beam balance
2. To find the weight of a given body using parallelogram law of vectors

P67 PSRE PSHM related experiments — Aspire Science Higher Secondary School

1. Using a simple pendulum, plot L-T2 graph and hence find the effective length of a second's pendulum.
2. To study variation of time period of a simple pendulum of a given length by taking bobs of same size but different masses and interpret the result.

P68 PFRE PFRI related experiments — Aspire Science Higher Secondary School

1. To study the relationship between force of limiting friction and normal reaction and to find the coefficient of friction between a block and a horizontal surface.
2. To find the downward force, along an inclined plane, acting on a roller due to gravitational pull of the earth and study its relationship with the angle of inclination phi by plotting graph between force and sin phi

P69 PERE PEPM related experiments — Aspire Science Higher Secondary School

1. To determine young's modulus of elasticity of the material of a given wire.
2. To find the force constant of helical spring by plotting a graph between load and extension.

P70 PHRE Heat (P06Heat) Related Experiment — Aspire Science Higher Secondary School

1. To study the variation in volume with pressure for a sample of air at constant temperature by plotting graphs between P and V, and between P and 1/V.
2. To study the relationship between the temperature of a hot body and time by plotting a cooling curve.
3. To determine specific heat capacity of a given solid by method of mixtures.

P71 PPRE Properties of Matter (P05POM) Related Experiments — Aspire Science Higher Secondary School

1. To determine the surface tension of water by capillary rise method.
2. To determine the coefficient of viscosity of a given viscous liquid by measuring the terminal velocity of a given spherical body.

P72 PWRE PWAV Related Experiments — Aspire Science Higher Secondary School

1. To study the relation between frequency and length of a given wire under constant tension using sonometer.
2. To study the relation between the length of a given wire and tension for constant frequency using sonometer.
3. To find the speed of sound in air at room temperature using a resonance tube by two resonance positions.