



# Gems Akademia International School

Syllabus Grade IX

Session: 2022-2023

## English Language

### Topics

1. Composition – Descriptive, First Person Narrative, Story Writing, Picture Composition
2. Letter Writing – Formal and Informal
3. Notice and Email Writing
4. Comprehension
5. Functional Grammar - Tenses, Prepositions and Phrasal Verbs, Transformation of Sentences, Synthesis of Sentences
6. Internal Assessment – Aural and Oral

## ENGLISH LITERATURE

### Topics

#### **DRAMA: The Merchant of Venice – William Shakespeare**

- Act I Scenes I, II, III
- Act II Scenes I, II and III

#### **POETRY: Treasure Trove**

- Daffodils
- The Cold Within
- After Blenheim

#### **PROSE: Treasure Trove**

- A Face in the Dark
- Old Man at the Bridge
- Hearts and Hands

## HINDI

1 बात अठनी की

2 काकी

3 महायज्ञ का पुरस्कार

4 साखी

- 5 गिरधर की कुण्डलियाँ
- 6 वह जन्म भूमि मेरी
- 7 पत्र लेखन (ओपचारिक तथा अनौपचारिक)
- 8 निबंध लेखन
- 9 अपठित गद्यांश
- 10 व्यावहारिक व्याकरण
- 11 शब्द भण्डार
- 12 भाव वाचक
- 13 विशेषण
- 14 निर्देशानुसार वाक्य परिवर्तन
- 15 वाक्य परिवर्तन
- 16 वाक्य शोधन
- 17 लिंग /वचन
- 18 काल

## BENGALI

### সংকলিতা

1. গিনি 2. দেবতার জন্ম 3. লালু 4. ক্যানভাসার 5. খো খো 6. বাবু বলেন

### জান্নো: প্রথম দৃশ্য

### ব্যাকরণ

1. বাগধারা 2. এক কথায় প্রকাশ 3. বাক্য পরিবর্তন 4. ছেদ চিহ্ন 5. সাধু ও চলিত ভাষা
6. প্রবন্ধ রচনা 7. বোধ পরীক্ষণ 8. গল্প লিখন 9. পত্র রচনা

## HISTORY and CIVICS

### CIVICS

- 1) Our Constitution
- 2) Fundamental Rights and Fundamental Duties
3. Elections and Election Commission

### HISTORY

- 1) The Harappan Civilization
- 2) The Vedic Civilization
- 3) Jainism & Buddhism

- 4) The Mauryan Empire
- 5) The Sangam Age
- 6) The Delhi Sultanate

## GEOGRAPHY

1. EARTH AS A PLANET.
2. EARTH AS A GLOBE.
3. MOTIONS OF THE EARTH.
4. STRUCTURE OF THE EARTH.
5. LANDFORMS OF THE EARTH.
6. MATERIALS OF THE EARTH'S CRUST.
7. VOLCANOES
8. EARTHQUAKES
9. WEATHERING AND DENUDATION.
10. MOVEMENTS OF THE OCEANS.
11. MAP WORK: WORLD

## PHYSICS

### THEORY SYLLABUS

#### 1. Measurements and Experiments

- (i) International system of units ( the required S.I units with correct symbols), other commonly used Systems of units - F.P.S. and C.G.S.
- (ii) Measurement using common instruments, Vernier Callipers and Micrometre Screw Gauge for Length and Simple Pendulum for Time.

#### 2. Motion in One Dimension

- (i) Scalar and Vector Quantities, distance, speed, velocity, acceleration; distance - time, speed - time Graphs, Equations of uniformly accelerated motion without derivations, simple numerical Problems.

#### 3. Laws of Motion

- (i) Contact and non-contact forces; C.G.S. and S.I units.
- (ii) Newtons First Law of Motion (qualitative discussion), introduction of the idea of inertia, mass and force.
- (iii) Newtons Second Law of Motion (including  $F = ma$ ); mass and weight, simple numerical problems.
- (iv) Newtons Third Law of Motion (qualitative discussion only), simple examples.
- (v) Gravitation.

#### 4. Fluids

- (i) Change of pressure with depth (including the formula  $P = h\rho g$ ); Transmission of pressure in Liquids; Atmosphere Pressure.
- (ii) Bouyancy and Archimedes Principle, floatation, relationship with density, relative density, determination of relative density of a solid using water only.

## 5. Heat and Energy

- (i) Concept of Heat and Temperature
- (ii) Energy flow and its importance
- (iii) Energy sources - Renewable and Non-renewable sources, Energy Degradation
- (iv) Green house effect and Global warming.

## 6. Reflection of Light

- (i) Reflection of Light; images formed by a pair of parallel and perpendicular plane mirrors.
- (ii) Spherical Mirrors; characteristics of image formed by these mirrors (only simple direct ray diagrams are required).

## 7. Sound

- (i) Nature of Sound waves, requirement of a medium for sound waves to travel; propagation and speed in different media; comparison with speed of light.
- (ii) Infrasonic, sonic, ultrasonic frequencies and their applications.

## 8. Electricity and Magnetism

- (i) Simple electric circuits using an electric cell and a bulb to introduce the idea of current (including its relationship to charge); potential difference; insulators and conductors; closed and open circuits; direction of current (electron flow and conventional).
- (ii) Efficient use of Energy.
- (iii) Induced Magnetism; Magnetic Field of Earth, neutral points in Magnetic fields.
- (iv) Introduction of Electromagnets and its uses.

### PRACTICAL SYLLABUS

#### Experiments On

1. Measurement of Length with
  - (a) Vernier Callipers
  - (b) Screw Gauge
2. Measurement of length, breadth and thickness of a glass block, calculating its volume, determining its mass and calculating its density.
3. Measurement of volume of a brass bob by displacement of water and also by measuring its radius with a vernier callipers and calculating its volume, then comparing the results.
4. Calculating the value of acceleration due to gravity using a simple pendulum and plotting  $l$  vs  $T^2$  graph.
5. Using a plane mirror to prove the Laws of Reflection.
6. Determination of focal length of a concave mirror using distant object method.
7. To plot the Magnetic Field lines of the Earth using a Compass Needle.
8. Connecting a d.c. source, one or two bulbs and key and observing with key on for one bulb and two bulbs and coming to a conclusion.  
(Three to five experiments to be done and written in file for assessment)

## CHEMISTRY

### 1. Atomic structure and Chemical Bonding

- a. Structure of Atom
- b. Mass number and Atomic number
- c. Isotopes and Octet rule
- d. Types of bonding; Electrovalent, Covalent
- e. Electrovalent compound; formation of bond
- f. Covalent compound; formation of bond
- g. Co-ordinate bond; formation of Hydronium ion, Ammonium ion
- h. Comparative study of properties of covalent & electrovalent compounds

### 2. Chemical changes and reaction

- a. Types of chemical changes
  - i. Direct Combination
  - ii. Decomposition
  - iii. Displacement
  - iv. Double decomposition
- b. Energy changes in a chemical reaction
  - i. Exothermic
  - ii. Endothermic

### 3. Language of Chemistry

- a. Symbol
- b. Valency
- c. Radicals
- d. Compounds
- e. Chemical equation
- f. Relative Atomic Mass
- g. Relative Molecular Mass (Calculation and Mass percentage composition of a compound)

### 4. Periodic Table

- a. Dobereiner's triad law, Newland's octave law
- b. Mendeleeff's periodic law & its defects
- c. Moseley's classification, modern periodic law, salient features of modern periodic table
- d. Some physical & chemical properties of elements
- e. Periods and trends of some properties along periods
- f. Groups and trends of some properties along periods
- g. Reference of –Alkali metal, Alkaline earth metal, Halogen, Noble gas

#### **Practical/Activity:**

- Heating effect of some carbonate, nitrate compounds
- Effect of dilute acids on some compounds
- Identification of some gases- CO<sub>2</sub>, NH<sub>3</sub>, H<sub>2</sub>S etc
- Identification of some metals (Flame Test)

# BIOLOGY

## Topics

### 1. Cell

- a) Cell theory
- b) Prokaryotic and eukaryotic cell
- c) Plant cell and animal cell: functions of various cell organelles, differences between plant cell and animal cell

### 2. Tissues

- a) Types of plant and animal tissues
- b) Location, structure and functions of plant and animal tissues

### 3. The Flower

- a) Structure of a bisexual flower
- b) General description of the floral parts
- c) Inflorescence and placentation

### 4. Pollination and Fertilization

- a) Pollination-self and cross pollination; agents of pollination; contrivances of pollination
- b) Fertilization-formation of zygote; double fertilization and triple fusion
- c) Fruit and seed- definition and significance

### 5. Seeds

- a) Structure of dicot and monocot seeds
- b) Germination-types and conditions for seed germination

### 6. Respiration in plants

Outline of the process

- b) Aerobic and anaerobic respiration
- c) Experiments on gaseous exchange and on heat production

a)

### 7. Five kingdom classification

- a) A brief outline of the five Kingdom classification
- b) Main characteristics of each kingdom with suitable examples: Monera, Protista, Fungi, Plantae.
- c) Animalia – Non chordates from Porifera to Echinodermata and Chordates- All five classes.

### 8. Economic importance of bacteria and fungi

- a) Useful role of bacteria
- b) Harmful role of bacteria
- c) Useful role of fungi in breweries, bakeries, cheese processing and mushroom cultivation.

### 9. Nutrition

- a) Classes of food, b) Balanced diet, c) Malnutrition and deficiency diseases

### C. Activities/Projects

- Practical work
- Group discussion

## **MATHEMATICS**

### 1. Pure Arithmetic

Rational and Irrational numbers

### 2. Algebra

- Expansion
- Factorization
- Indices
- Logarithms

### 3. Geometry

- Triangles - Congruency
- Mid-point theorem
- Pythagoras theorem
- Circle (Chord and Arc Properties)

### 4. Mensuration

- Triangle (Area and Perimeter including Heron's formula)
- Circle
- Surface area and volume of solids

### 5. Statistics

- Collection of Data
- Graphical representation of data; drawing of frequency polygon
- Measures of central tendency (mean, median of ungrouped data)

TERM-I (Project): Conduct a survey of a group of students and represent graphically, age, height, weight, number of family members, pocket money etc.

## **Environmental Science**

Topics:

1. Understanding Environment
2. Living Things in Ecosystem
3. How Ecosystem Work
4. Kinds of Ecosystem
5. Water
6. Air

## **ECONOMICS**

- Chapters-
1. Meaning and definition of economics.
  2. Branches of economics and types of activities.
  3. An economy: it's sectors, basic concepts and entities.
  4. Types of economies.
  5. Basic problems of an economy.
  6. Indian economy: Primary sector.

Project topic for grade IXB Term I:  
Impact of COVID-19 on the cottage industry in India.

## **COMPUTER APPLICATIONS**

### **Topics**

1. Introduction to Object Oriented Programming Concepts.
2. Elementary Concepts of Objects and Classes.
3. Values and data types
4. Operators in Java.
5. Mathematical Library Methods.
6. Conditional Constructs in Java.
7. Computing and Ethics

### **Activities**

#### **INTERNALASSESSMENT - Programming Assignments**

1. This segment of the syllabus is totally practical oriented. The students should complete a minimum of 20 laboratory assignments during the whole year to reinforce the concepts studied in class.

## **COMMERCIAL APPLICATIONS**

- Introduction to Commercial Organization.
- Sole Proprietorship.
- Joint Hindu Family Business.
- Partnership.
- Joint Stock Company.
- Co-operative Society.
- Public Sector Enterprises
- Natural Resources
- Depletion of Resources
- Practices for Conservation of Resources

## **HOME SCIENCE**

### **CHAPTERS**

1. Concept and scope of home science
2. Food and health
3. Nutrients and their functions
4. Growth and development
5. Play and play school
6. Disease and prevention
7. Colour and its application



## ART

### **Topics**

1. Drawing with basic geometric shapes
2. Understanding of light and shade
3. Objects with values
4. Different techniques of rendering with pencil
5. Different techniques of rendering with pen and ink
6. Different techniques of rendering with colour
7. Phad Painting / Cartoon Drawing / Poster Making
8. Tie and Dye / Block Printing / Paper Collage
9. Drawing and/or Painting from Objects
10. Drawing and/or Painting from Nature

## Physical Education

### **1.The Human Anatomy and Physiology**

- I) Skeletal System:
- II) Functions of the skeletal system.
- III) Classification of different types of joints:  
Practical- Game-1 & Fitness
- IV) Types of joint movements in physical activities
- V) Benefits of exercise on the Skeletal System

### **2. Muscular System**

- I) Types of muscles
- II) Identification of Muscles
- III) Benefits of exercise on the muscular system.

### **3. Basketball**

- I) Knowledge of the game
- II) Rules and Regulations of the Game
- III) Fundamental Skills and Technique
- IV) Terminology
- V) National and International Governing Bodies of Basketball
- VI) National and International tournaments

**Revision & Practical Test** (Game- 1 (any one from four games: Badminton, Basketball, Football, and Cricket).

Physical fitness (Speed, Agility Endurance, Strength & Power)/Project

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