VASISHTHA GENESIS SCHOOL, BABEN, BARDOLI
SUMMER ASSIGNMENT

CLASS : 12 SCIENCE

SUBJECT	CONTENT
ENGLISH	Select a topic from the given subjects and prepare a PPT. There will be a presentation of the PPTs as well after the vacations. The project is to be prepared and sent as a PDF file to **viceprincipal.vgs@gmail.com (12A/B)** with proper **Class-RollNo-Name-Subject as file name. Submit file on / before 12 June 2024.** **PPT Content:** 1. Cover page with title, school details, details of the student 2. Index 3. Introduction to topic 4. Content (Supporting material, transcript, flow charts, diagrams, images) **5-6 Pgs** **Parameters of Assessment:** 1) Quality of content 2) Accuracy of information 3) Adherence to the specified timeline 4) Content in terms of Expression 5) Clarity of thoughts and ideas 6) Creativity 7) Knowledge gained **List of topics/ Themes:** 1) Unrestrained freedom of speech in digital space 2) Fulfillment of a new women is a myth in society 3) Populism is a threat to society 4) Net Neutrality 5) Importance of sports 6) Linguistic Chauvinism 7) Paperless currency - Future of World Economy 8) Team spirit- root of success 9) SDG Goals 10) Impact of social media on mental health 11) Artificial Intelligence 12) Adaptive leadership 13) Balance of Confidence and pride 14) Accessibility of gadgets
MATHEMATICS	Prepare a brief overview of the following chapters: ***Matrices, Determinants, Relations and Functions*** The Overview should include: • Relevant formulas that are essential for understanding and solving problems. • Identify key concepts, definitions or principles related to the topic. • Include examples / diagrams / mind maps to clarify concepts. Present your homework in a clear and organized manner using headings, bullet points and numbered lists to structure your content.
CHEMISTRY	**Prepare a Scientific investigations Report based on laboratory testing and information from various sources. A few suggested Projects are as follows:** 1) Study the quantity of casein present in different samples of milk. 2) Preparation of soybean milk and its comparison with natural milk with respect to curd formation, the effect of temperature, etc. 3) Study of digestion of starch by salivary amylase and effect of pH and temperature on it. 4) Study of common food adulterants in fat, oil, butter, sugar, turmeric power, chilli powder and pepper. 5) Comparative study and qualitative analysis of different brands of cold drinks available in market. 6) Comparative study of the rate of fermentation of the following materials: wheat flour, gram flour, potato juice, carrot juice, etc. 7) To analyse the given samples of commercial antacids. Students please not that your submission must be done on or before **12 June 2024.**

PHYSICS	**1) Activity 1 – Project work** **Based on the ONE topic assigned to you during class by your subject teacher, create a project using the data/instruction(s) given below. The project is to be prepared and sent as a PDF file to hirendrasir@gmail.com** with proper **Class-RollNo-Name-Subject as file name on/before 12 June 2024.** **Contents of the File:** 1. Cover page with title, school details, details of the student 2. Index 3. Statement of purpose (Aim) 4. Acknowledgement 5. Introduction of topic 6. Content (Supporting material, theory, flow charts, diagrams, survey, report) 7. Application 8. Conclusion 9. Bibliography **Take note: When conducting any investigatory project, make sure to follow the scientific method:** formulate a hypothesis, design experiments, collect data, analyze results, and draw conclusions. Additionally, prioritize safety by following proper laboratory procedures and using appropriate safety equipment. **Topics / Instructions:** **1. Electromagnetic Induction:** Investigate factors affecting the induced voltage in a coil. - Instructions: Design experiments to vary factors such as coil turns, magnetic field strength, and coil area to observe their effects on induced voltage. **2. Optics:** Study the phenomenon of total internal reflection and its applications. - Instructions: Construct setups using prisms or optical fibers to demonstrate total internal reflection and explore its applications in devices like fiber optics. **3. Projectile Motion:** Analyze the factors affecting the range of a projectile. - Instructions: Use a projectile launcher to vary factors such as launch angle, initial velocity, and air resistance to determine their impact on projectile range. **4. Thermodynamics:** Investigate the efficiency of different heat engines. - Instructions: Build or simulate various heat engines (e.g., Stirling engine, Carnot engine) and compare their efficiencies under different conditions. **5. Electric Circuits:** Explore the behavior of resistors in series and parallel circuits. - Instructions: Construct circuits with resistors in different configurations and measure parameters like current, voltage, and resistance to analyze their behavior. **6. Fluid Mechanics:** Study the principles of Bernoulli's equation and its applications. - Instructions: Design experiments involving fluid flow through different pipe diameters and heights to verify Bernoulli's equation and explore its applications in areas like airfoil design. **7. Nuclear Physics:** Investigate the properties of radioactive decay. - Instructions: Use a Geiger-Müller counter or similar device to measure the decay rate of different radioactive isotopes and analyze the factors affecting decay. **8. Mechanics:** Analyze the motion of a simple pendulum. - Instructions: Conduct experiments to study how the length, mass, and angle of displacement affect the period and frequency of a simple pendulum's motion. **9. Wave Mechanics:** Explore the phenomenon of interference in waves. - Instructions: Set up experiments with wave sources (e.g., water waves, sound waves) to observe interference patterns and study the principles behind constructive and destructive interference. **10. Modern Physics:** Investigate the photoelectric effect and its implications. - Instructions: Use a photoelectric setup to measure the stopping potential for different wavelengths of light and analyze how it relates to the photoelectric effect

	equation. **2) Activity 2 – Journal completion.** Physics Journal also to be completed as instructed by subject teacher.
BIOLOGY	**1) Project work** **Based on the topic assigned to you during class by your subject teacher, create a project using the data/instruction(s) given below. The project is to be prepared and sent as a PDF file to dhavalkher891@gmail.com** with proper **Class-RollNo-Name-Subject as file name.** **Contents of the Word File:** 1. Cover page with title, school details, details of the student 2. Index 3. Statement of purpose (Aim) 4. Acknowledgement 5. Introduction of topic 6. Content (Supporting material, theory, flow charts, diagrams, survey, report) 7. Application 8. Conclusion 9. Bibliography **Take note: When conducting any investigatory project, make sure to follow the scientific method:** formulate a hypothesis, design experiments, collect data, analyze results, and draw conclusions. **Topics:** ***(Try to choose a topic which has more positive impact on human life.)*** **1. Genetic Engineering:** - CRISPR-Cas9: The Revolutionary Gene Editing Tool - Cloning: From Dolly the Sheep to Present Advances - Synthetic Biology: Engineering Life at the Molecular Level **2. Molecular Biology:** - DNA Replication: The Molecular Machinery of Life - Gene Expression Regulation: Controlling the Flow of Genetic Information - PCR (Polymerase Chain Reaction): Amplifying DNA for Analysis **3. Immunology:** - Vaccines: History, Development, and Impact on Public Health - Autoimmune Diseases: Understanding the Body's Immune Response Gone Awry - Immunotherapy: Harnessing the Immune System to Fight Cancer **4. Environmental Science:** - Climate Change: Causes, Impacts, and Mitigation Strategies - Pollution Control: Strategies to Reduce Air, Water, and Soil Pollution - Renewable Energy Sources: Exploring Sustainable Alternatives to Fossil Fuels **5. Botany:** - Plant Physiology: Understanding How Plants Function and Grow - Ethnobotany: Exploring the Cultural and Medicinal Uses of Plants - Plant Biotechnology: Applications of Genetic Engineering in Plant Improvement **6. Zoology:** - Evolutionary Biology: Tracing the History of Animal Life on Earth - Conservation Biology: Protecting Endangered Species and Habitats - Marine Biology: Exploring Life in the Oceans and Seas
PHYSICAL EDUCATION	Activity – I: Prepare a Record file for the practical work of Physical Education. **Practical 1:** Write about the fitness test. (SAI KHELO INDIA TEST) **Practical 2: Yoga and its importance.** Identify any five diseases for which Yoga/Asanas may play an important role to cure such diseases. Also prepare detail notes on two asanas for each such diseases.

	Activity – II: Prepare a flowchart (A3 size) of micro and macro nutrients. Also enlist all the essential diet components for an elite sports person.
INFORMATICS PRACTICES	**ACTIVITY – 1** **PRACTICAL FILE**: Students are to prepare a Practical File consisting of a **minimum of 15 programs based on Pandas, 4 based on Matplotlib** programs performed during their lab activities in the school computer lab. Students may use samples given in the Google Classroom (Classroom Code: **7dtbc76**) for more support. **ACTIVITY – 2** **PROJECT WORK:** 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 the 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. 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. Any resources (data, image etc.) used in the project must be suitably referenced. Students may use Google Classroom (Classroom Code: **7dtbc76**) for more support. The project can be done individually or in groups of 2 to 3 students.

Please Note:

1) Submission of all Assignments/journal/projects will be from 13-06-2024 to 15-06-2024.

2) Internal Marks will be given based up on the completion and timely submission of all assignments/ journal/projects.