




**BIRLA SCHOOL, PILANI**

**Summer Vacation Home assignment session 2026-27 for class XII (Science)**

ENGLISH	<p>Students are required to prepare a <b>short research project</b> based on any one of the following topics:</p> <ol style="list-style-type: none"><li>1. Do teens prefer books or web series, and why?</li><li>2. How do social media influencers affect teenagers?</li><li>3. What does success mean to today's youth?</li><li>4. What are the main causes of stress in student life?</li><li>5. How is teen life shown in literature and films?</li></ol> <p><b>Guidelines:</b></p> <ol style="list-style-type: none"><li>1. Select any one topic from the list.</li><li>2. Conduct research by:<ul style="list-style-type: none"><li>○ Taking interviews</li><li>○ Listening to podcasts/interviews</li><li>○ Watching relevant radio or TV documentaries</li></ul></li><li>3. Frame a set of questions based on the chosen topic.</li><li>4. Analyse the responses and prepare a report either supporting or opposing the views gathered.</li><li>5. Write a <b>report of 800–1000 words</b></li><li>6. Submit the project on shivani030246@birlaschoolpilani.edu.in</li></ol> <p><b>Project Portfolio Must Include:</b></p> <ul style="list-style-type: none"><li>• <b>Cover Page</b> (Title, student details, school details)</li><li>• <b>Statement of Purpose / Objectives</b></li><li>• <b>Certificate of Completion</b> (under teacher's guidance)</li><li>• <b>Action Plan</b> for completing the project</li><li>• <b>Supporting Materials</b>, such as:<ul style="list-style-type: none"><li>○ Questionnaires</li><li>○ Interview transcripts</li><li>○ Survey reports / written responses</li><li>○ Scripts (if any role play is included)</li></ul></li><li>• <b>Main Report (800–1000 words)</b></li><li>• <b>Student/Group Reflection</b></li><li>• <b>Photographs</b> (if available, showing project work)</li><li>• <b>Bibliography / List of Resources</b></li></ul> <p><b>Assessment Rubrics:</b></p> <p>The project will be evaluated on the basis of:</p> <ul style="list-style-type: none"><li>• Quality and relevance of content</li><li>• Accuracy of information</li><li>• Adherence to the timeline</li><li>• Language accuracy (grammar, spelling, punctuation)</li><li>• Clarity of ideas and expression</li><li>• Creativity and presentation</li><li>• Contribution of each group member</li><li>• Learning outcomes and understanding gain</li></ul>
PHYSICS	<p><b>Project Work</b></p> <p>Prepare one working model/project on any one topic:</p> <ol style="list-style-type: none"><li>1. <b>1. Half Wave &amp; Full Wave Rectifier</b></li><li>2. <b>2. Transformer</b></li><li>3. <b>3. Mutual Induction</b></li><li>4. <b>4. Diffraction of Light</b></li><li>5. <b>5. Electric Motor</b></li></ol>

	<p>Project file must include aim, theory, diagram, working, applications, and conclusion. Working model is compulsory.</p> <p><b>Written Work</b> Solve all NCERT back exercise questions of Physics Book-I chapters:</p> <ol style="list-style-type: none"> <li>6. 1. <b>Electric Charges and Fields</b></li> <li>7. 2. <b>Electrostatic Potential and Capacitance</b></li> <li>8. 3. <b>Current Electricity</b></li> <li>9. 4. <b>Moving Charges and Magnetism</b></li> <li>10. 5. <b>Magnetism and Matter</b></li> <li>11. 6. <b>Electromagnetic Induction</b></li> <li>12. 7. <b>Alternating Current</b></li> </ol>
CHEMISTRY	<ol style="list-style-type: none"> <li>1. Revise Unit-1 and 2 from notes and NCERT book thoroughly.</li> <li>2. Solve the work sheet given in the Chemistry notebook.</li> <li>3. Solve MCQ and assertion reason questions of Unit-1 and 2 from NCERT Exemplar.</li> </ol> <p> <a href="#">Electrochemistry Exemplar.pdf</a></p> <p> <a href="#">Solution Exemplar.pdf</a></p> <p> <a href="#">Chemistry worksheet solutions and electrochemistry 2026.pdf</a></p>
MATHEMATICS	Solve Previous Year Board Questions from 2022-2026 from chapter 1, 2,3,4. Solve 20 MCQs each from these chapters and Design two case studies each from these chapters.
BIOLOGY	<ol style="list-style-type: none"> <li>1. <b>Investigatory Project (Biology + Research + Innovation)</b> Choose one CBSE-based project. Include: Title, Problem Statement, Hypothesis, Materials, Method, Data, Conclusion, and Bibliography.</li> <li>2. <b>Biology Lab Manual Completion (Biology + Skills + Observation)</b> Complete all practical done so far. Include Aim, Procedure, Observations, Results, and labeled Diagrams. Left Side (Blank Page) with Pencil- Aim, Observation Table, labeled Diagrams, Result. Right Side (Lines Page) with Pen- Aim, Materials Required, Principle, Procedure, Precautions, and Result.</li> </ol>
BIOTECHNOLOGY	Prepare an annual project on biotechnology from the given topics. Submit printed copy after summer vacation
C.S.	<p><b>Project assignment:</b></p> <ol style="list-style-type: none"> <li>1. <b>Design a table (RDBMS) of 10 columns with all integrity constraints with their data types.</b></li> <li>2. <b>Insert data in the table by using DML command.</b></li> <li>3. <b>Apply DML commands to alter, update, delete and drop using conditions (where).</b></li> </ol> <p><b>Python:</b></p> <ol style="list-style-type: none"> <li>1. <b>Lists &amp; Tuples</b> Create a Python program to store and process the following information: · A list of marks scored in 5 subjects</li> </ol>

	<ul style="list-style-type: none"> <li>· A tuple containing the names of the subjects</li> </ul> <p><b>Task:</b></p> <ul style="list-style-type: none"> <li>· Display total and average marks using the list</li> <li>· Explain why a tuple is more suitable for storing subject names than a list</li> </ul> <p><b>2. My Personal Database Plan</b></p> <p>Imagine you are creating a database for your small business (bookstore, tuition center, or food delivery).</p> <p><b>Task:</b></p> <ul style="list-style-type: none"> <li>· Define 2 tables with at least 3 fields each (e.g., Customers and Orders)</li> <li>· Identify Primary Key and Foreign Key</li> </ul> <p><b>3. Python vs DBMS (Logical Thinking + CS)</b></p> <p>Write 3–4 lines to explain:</p> <ul style="list-style-type: none"> <li>· One key difference between Python data structures (like lists/tuples) and DBMS tables</li> <li>· Why a DBMS is preferred when managing large data instead of using only Python</li> </ul>
I.P.	<p><b>Project Assignment</b></p> <p>Introduction to Pandas – Series in Python</p> <p><b>Summer Vacation Project</b></p> <p><b>Objective:</b></p> <p>To understand the concept of Pandas Series and connect Python programming with real-life applications.</p> <p><b>Project Title: Exploring Pandas Series</b></p> <p><b>Task 1: My First Series (Python + Real Life + Mathematics)</b></p> <p>Create a Pandas Series using any real-life data such as:</p> <ul style="list-style-type: none"> <li>➤ Prices of grocery items</li> <li>➤ Temperatures of 7 days</li> <li>➤ Your own creative example</li> </ul> <p>Your Work Should Include</p> <ul style="list-style-type: none"> <li>• Creating the Series</li> <li>• Displaying the complete Series</li> <li>• Showing the first 3 elements using head()</li> <li>• Showing the last 2 elements using tail()</li> </ul> <p>Write 2–3 lines explaining where this type of data is used in daily life.</p> <p><b>Task 2: Sort It Out (Information Technology + Business Studies)</b></p> <p>Imagine you own a small store.</p> <p>Create a Series with:</p> <ul style="list-style-type: none"> <li>• Product names as index</li> <li>• Product prices as values</li> <li>• Your Work Should Include</li> <li>• Sorting products by price using sort_values()</li> <li>• Sorting products alphabetically using sort_index()</li> </ul> <p>Explain how sorting helps shopkeepers in managing products and prices.</p> <p><b>Task 3: Series Attributes Explorer (Python + Observation Skills)</b></p>

	<p>Choose any Series from the above tasks. Write the meaning of:</p> <ul style="list-style-type: none"> <li>• .size</li> <li>• .index</li> <li>• .values</li> <li>• .dtype</li> </ul> <p><b>Project Guidelines</b></p> <ul style="list-style-type: none"> <li>• Use neat handwriting or proper formatting</li> <li>• Use your own examples</li> <li>• Add headings and explanations</li> <li>• Connect your answers with real-life situations</li> <li>• Submit in a project file or notebook</li> </ul>
MUSIC	<p>Prepare a detailed project on the following Hindustani Classical Singers:</p> <ol style="list-style-type: none"> <li>1. Pandit Krishnarao Shankar Pandit</li> <li>2. Kaushiki Chakraborty</li> <li>3. Bade Ghulam Ali Khan</li> <li>4. Ustad Faiyaz Khan</li> <li>5. Kishori Amonkar</li> </ol> <p><b>Objectives of the Project</b></p> <ul style="list-style-type: none"> <li>• To understand the contribution of great Hindustani classical singers.</li> <li>• To learn about different gharanas and styles of Indian classical music.</li> <li>• To develop research and presentation skills.</li> <li>• To appreciate India's rich musical heritage.</li> </ul>
AI	<p><b>Class 12 – Capstone Project (Artificial Intelligence)</b> <b>Project Title:</b> <i>AI Capstone Project – Real World Problem Solving</i></p> <p>Students of Class 12 will work in teams to design and develop a complete AI-based solution for a real-world problem. The project should demonstrate creativity, teamwork, research skills, and practical implementation of Artificial Intelligence concepts learned during the academic session.</p> <p>Each team may consist of <b>5–7 members</b>. Every team must appoint a <b>Team Leader</b> who will be responsible for:</p> <ul style="list-style-type: none"> <li>• Regular communication with the teacher mentor</li> <li>• Submission of project updates and reports</li> <li>• Coordinating team meetings and task distribution</li> <li>• Presenting the final project demonstration</li> </ul> <p>Students are encouraged to select projects connected to:</p> <ul style="list-style-type: none"> <li>• Smart Environment</li> <li>• Healthcare</li> <li>• Education</li> <li>• Waste Management</li> <li>• Agriculture</li> <li>• Accessibility</li> <li>• Safety and Security</li> <li>• Sustainable Development Goals (SDGs)</li> </ul> <p><b>Suggested Project Ideas</b></p> <ul style="list-style-type: none"> <li>• AI-based Attendance System</li> <li>• Smart Waste Segregation using Image Classification</li> </ul>

	<ul style="list-style-type: none"> <li>• Fake News Detection</li> <li>• AI Chatbot for School Helpdesk</li> <li>• Emotion Detection System</li> <li>• Road Safety Monitoring using AI</li> <li>• AI Fitness or Diet Recommendation System</li> <li>• Crop Disease Detection Model</li> </ul> <p><b>Project Expectations</b> Each team should complete:</p> <ol style="list-style-type: none"> <li>1. Problem Identification</li> <li>2. Research and Data Collection</li> <li>3. AI Model / Prototype Development</li> <li>4. Testing and Improvements</li> <li>5. Final Documentation</li> <li>6. Presentation and Viva Demonstration</li> </ol> <p><b>Submission Components</b></p> <ul style="list-style-type: none"> <li>• Project Report</li> <li>• Source Code / Model Files</li> <li>• PPT Presentation</li> <li>• Demo Video or Live Demonstration</li> <li>• Team Contribution Details</li> </ul> <p>Students are advised to take guidance and inspiration from the official CBSE AI Project resource: <a href="#">CBSE AI Projects Cookbook (Classes XI &amp; XII)</a></p>
PHYSICAL EDUCATION	Project on volleyball, history, rules, skills, terminologies, diagram and dimensions with sports personalities.