

## YEAR 9 (A- F) – PHYSICS

**WEEK 25 (14<sup>th</sup> Feb to 18<sup>th</sup> Feb)**

**Work Sent to the students through Google classroom**

**Topic: SP4 f Ultrasound**

**Resources:** Student text book, Worksheet, GCSE science free lesson video, power point.

Date	Lesson	Topic	Mode of Teaching	
14 <sup>th</sup> Feb. Sunday <b>(Girls)</b>	4	<p><b>Learning objective:</b></p> <p>Recap and revise how to calculate depth or distance from time and wave velocity.</p> <p>Understand sound with frequencies greater than 20 000 hertz, is known as ultrasound.</p>	<b>Zoom</b>	Teacher uses power point presentation that contains interactive questions.
14 <sup>th</sup> Feb. Sunday <b>(Boys)</b>	8	<p>Explain how ultrasound is used in sonar.</p> <p><b>Learning outcome:</b></p> <p>Explain how ultrasound is used in sonar and describe the principle of sonar using reflection.</p> <p>Use <math>v=2d/t</math> in numerical calculations to determine distance.</p>		
16 <sup>th</sup> Feb. Tuesday <b>(Girls)</b>	3	<p><b>Learning Objective :</b></p> <p>Explain the uses of ultrasound in fetal scanning.</p>	<b>Zoom</b>	Teacher uses power point presentation that contains interactive questions.
18 <sup>th</sup> Feb. Thursday <b>(Boys)</b>	5	<p><b>Learning outcome :</b></p> <p>Describe the principle of fetal scanning using partial reflection and refraction.</p> <p>Identify the advantages and disadvantages of using ultrasound in medical imaging.</p>		
16 <sup>th</sup> Feb. Tuesday <b>(Girls)</b>	4	<p><b>Learning Objective :</b></p> <p>Complete the worksheet posted in GC</p>	<b>GC</b>	Instruction will be given in GC to complete the worksheet.
18 <sup>th</sup> Feb. Thursday <b>(Boys)</b>	6	<p><b>Learning outcome:</b></p> <p>Students will be able to reinforce the concepts learned in the previous lesson by completing the worksheet.</p>		

## YEAR 10 A-F - Physics

**WEEK 25 (14<sup>th</sup> Feb to 18<sup>th</sup> Feb)**

**Topic:** Velocity time graphs and Newtons third law

**Lesson Objective:** SP 1d Velocity/time graphs  
 SP 2c Forces on falling objects  
 SP 2e Newtons third law

**Resources:** Student text book, worksheet file, interactive power point from Board works and Online animations

Worksheets and Zoom link will be posted in google classroom

Date	Lesson	Lesson objectives & Learning outcome	Mode of Teaching	
14 <sup>th</sup> Feb Sunday (Boys)	1	<b>L.O:</b> Analyse velocity/time graphs to: (a) compare acceleration from gradients qualitatively (b) calculate the acceleration from the gradient (for uniform acceleration only) (c) determine the distance travelled using the area between the graph line and the time axis (for uniform acceleration only).  <b>Learning outcome:</b> The students will be able to <ul style="list-style-type: none"> <li>• Represent journeys on velocity/time graphs.</li> <li>• Interpret velocity/time graphs qualitatively.</li> <li>• Calculate uniform accelerations from the gradients of velocity/time graphs.</li> <li>• Determine the distance travelled from the area under a velocity/time graph.</li> </ul>	<b>Zoom/ GM</b>	Teacher uses a powerpoint presentation to recall velocity and acceleration. The teacher discusses the velocity time graph and its properties. Works out few examples to calculate acceleration from gradient and distance travelled from the area under the graph.
14 <sup>th</sup> Feb Sunday (girls)	2			
16 <sup>th</sup> Feb Tuesday (Boys)	5	<b>L O.</b> Describe freefall motion  <b>Learning outcome:</b> Students will be able to <ul style="list-style-type: none"> <li>• define free fall motion.</li> <li>• To understand that the acceleration of gravity is independent of the mass of the free-falling object.</li> <li>•</li> </ul>	<b>Zoom/ GM</b>	The teacher uses a powerpoint presentation to define freefall and the conditions under which it occurs. Teacher relates the motion of a skydiver to the graphical descriptions of its
17 <sup>th</sup> Feb Wednesday (girls)	5			

		<ul style="list-style-type: none"> <li>Analyse the velocity time graph of a skydiver</li> </ul>		<p>motion and represents each stage of his motion using a free body diagram</p>
<p><b>16<sup>th</sup> Feb</b> Tuesday (Boys)</p>	6	<p><b>L.O:</b> Solve the worksheet posted GC</p> <p><b>Learning outcome:</b> Students will be able to reinforce the concepts learned in the previous lesson by solving the worksheet</p>	GC	<p>Teacher will post the worksheet in the google classroom. Students will solve and turn in the worksheet</p>
<p><b>17<sup>th</sup> Feb</b> Wednesday (girls)</p>	6			
<p><b>18<sup>th</sup> Feb</b> Thursday (Boys)</p>	4	<p><b>L.O :</b> Recall and apply Newton's Third Law to equilibrium situations.</p> <p>Recall and apply Newton's Third Law both to equilibrium situations and to collision interactions.</p>	Zoom/ GM	<p>Teacher states third law of motion and differentiates balanced forces and action reaction pairs. Using a ppt shows images of equilibrium situations and asks students to identify action-reaction pairs and balanced forces.</p>
<p><b>18<sup>th</sup> Feb</b> Thursday (Girls)</p>	1	<p><b>.Learning outcome:</b> Students will be able to</p> <ul style="list-style-type: none"> <li>Describe what Newton's Third Law says.</li> <li>Identify action–reaction pairs in familiar situations.</li> <li>Distinguish between action–reaction pairs and balanced forces.</li> <li>Describe how objects affect each other when they collide.</li> </ul>		

## YEAR 11 (A- F) – PHYSICS (GCSE)

**WEEK 25 (14<sup>th</sup> Feb to 18<sup>th</sup> Feb)**

**Work Sent to the students through Google classroom**

**Topic:– SP 15 Forces and matter**

**Resources:** Text book, Worksheets, GCSE science free lesson video& power points.

<b>Date</b>	<b>Lesson</b>	<b>Topic</b>	<b>Mode of Teaching</b>	
14 <sup>th</sup> Feb Sunday <b>(Girls)</b>	3	<b>Learning Objective :</b> Describe and explain how pressure in fluids increases with depth and density.	<b>Zoom</b>	Teacher uses worksheet that contains productive questions
15 <sup>th</sup> Feb Monday <b>(boys)</b>	4	Use the equation relating pressure in a fluid to height, density and gravitational field strength.  Describe the pressure in a fluid as being due to the fluid and atmospheric pressure <b>Learning outcome:</b> Explain why the pressure in a liquid depends on density and depth Use the equation to calculate the magnitude of the pressure in liquids and calculate the differences in pressure at different depths in a liquid		
15 <sup>th</sup> Feb Monday <b>(Girls)</b>	1	<b>Learning Objective :</b> Explain how hydraulic system is useful in certain applications.	<b>zoom</b>	Teacher uses power point presentation that contains interactive questions
16 <sup>th</sup> Feb Tuesday <b>(Boys)</b>	1	<b>Learning outcome:</b> Recall that force applied at one point is transmitted to another point using incompressible fluid State an equation and relate it to hydraulic to a force multiplier system Apply this equation and elicit the idea that doubling the cross-sectional area doubles the force but halves the distance moved, and relate this to work done and conservation of energy.		
15 <sup>th</sup> Feb Monday – <b>(girls)</b>	2	<b>Learning Objective :</b> Explain how hydraulic system is useful in certain applications	<b>GC</b>	Teacher uses worksheet that contains productive questions
16 <sup>th</sup> Feb Tuesday – <b>(boys)</b>	2	<b>Learning outcome :</b> Apply equation to calculate force or work done by slave piston		

<p>17<sup>th</sup> Feb Wednesda y– (girls)</p> <p>18<sup>th</sup> Feb. Wednesda y – (boys)</p>	<p>1</p> <p>7</p>	<p><b>Learning Objective :</b> Explain why an object in a fluid is subject to an upwards force (upthrust) and relate this to examples including objects that are fully immersed in a fluid (liquid or gas) or partially immersed in a liquid.</p> <p>Recall that the upthrust is equal to the weight of fluid displaced.</p> <p>Explain how the factors (upthrust, weight, density of fluid) influence whether an object will float or sink.</p> <p><b>Learning outcome :</b></p> <p>Explain how upthrust occurs. Relate the upthrust to the floating or sinking of objects immersed or partially immersed in fluids. Recall that the upthrust is equal to the weight of fluid displaced. Explain the factors that determine whether or not an object will float or sink</p>	<p><b>Zoom</b></p>	<p>Teacher uses power point presentation that contains interactive questions and online simulation</p>
<p>18<sup>th</sup> Feb Thursday – (girls)</p> <p>18<sup>th</sup> Feb Thursday – (boys)</p>	<p>3</p> <p>7</p>	<p><b>Learning Objective:</b> Recall that the upthrust is equal to the weight of fluid displaced.</p> <p>Explain how the factors (upthrust, weight, density of fluid) influence whether an object will float or sink.</p> <p><b>Learning outcome :</b></p> <p>Relate the upthrust to the floating or sinking of objects immersed or partially immersed in fluids. Recall that the upthrust is equal to the weight of fluid displaced. Explain the factors that determine whether or not an object will float or sink</p>	<p><b>Zoom</b></p>	<p>Teacher uses worksheet that contains productive questions</p>

## YEAR 11 G/H – PHYSICS (IGCSE)

**WEEK 25 (14<sup>th</sup> Feb to 18<sup>th</sup> Feb)**

**Work sent to the students through Google classroom**

**Topic: Unit 8.28 cosmology**

**Lesson Objective:** Describe the term Doppler effect.

Describe the past evolution of the universe and the main arguments in favour of the Big Bang.

**Resources:** Text book, Worksheet file, interactive power point and online simulations.

<b>Date</b>	<b>Lesson</b>	<b>Learning objective and Success Criteria</b>	<b>Mode of teaching</b>	
15 <sup>th</sup> Feb Monday  (boys & girls)	8	<b>LO-</b> To describe the terms Doppler effect and red- shift in light. <b>Learning outcome</b> <ul style="list-style-type: none"> <li>• Describe that if a wave source is moving relative to an observer there will be a change in the observed frequency and wavelength.</li> <li>• Describe the red-shift in light received from galaxies at different distances away from the Earth</li> </ul>	Zoom/GM	Teacher uses power point presentation to explain the terms Doppler effect and red-shift.
16 <sup>th</sup> Feb Tuesday (boys & girls)	7	<b>LO-</b> To describe the past evolution of the universe and the main arguments in favour of the Big Bang. <b>Learning outcome</b> <ul style="list-style-type: none"> <li>• Describe Big Bang theory.</li> <li>• Describe evidence that supports the Big Bang theory (red-shift and cosmic microwave background (CMB) radiation)</li> <li>• Use the equation relating change in wavelength, wavelength, velocity of a galaxy and the speed of light.</li> </ul>	Zoom/GM	Teacher uses power point presentation to describe the Big Bang theory and the evidence that supports Big Bang theory.
16 <sup>th</sup> Feb Tuesday  (boys &	8	<b>LO-</b> To reinforce the concepts Doppler effect and the evidence that supports Big Bang theory <b>Learning Outcome-</b>	GC	Instructions will be given to solve the questions.

girls)		<ul style="list-style-type: none"> <li>• Recollect the knowledge about the concepts Doppler effect and the evidence that supports Big Bang theory.</li> <li>• Reinforce the concepts by solving the questions.</li> </ul>		
17 <sup>th</sup> Feb Wednesday (boys & girls)	8	<b>LO-</b> To discuss the worksheet file and text book question - answers. <b>Learning Outcome-</b> <ul style="list-style-type: none"> <li>• Reinforce the concepts Doppler effect and the evidence that supports Big Bang theory.</li> </ul>	Zoom/GM	Teacher uses power point presentation to discuss the question - answers.
18 <sup>th</sup> Feb Thursday (boys & girls)	2	<b>LO-</b> To draw the main components of the Hertzsprung–Russell diagram (HR diagram) <b>Learning Outcome-</b> <ul style="list-style-type: none"> <li>• Describe HR diagram.</li> <li>• Draw the main components of the Hertzsprung–Russell diagram (HR diagram)</li> </ul>	Zoom/GM	Teacher uses power point presentation to describe the HR diagram.

**H.W- Text book page no.274 (Tuesday 16<sup>th</sup> February).**

**- Unit questions- text book page no.275 ( Thursday, 18<sup>th</sup> February)**

## YEAR 12 A/ B –PHYSICS

**WEEK 25 (14<sup>th</sup> Feb to 18<sup>th</sup> Feb) (3 lessons)**

**Work sent to the students through:** Google classroom / Zoom Learning Platform

**Topic:** Electrical circuit rules

**Resources:** Student text book, worksheet file, interactive power point from Board works and Online PHET simulations

Date	Class	Lesson	Lesson objectives & Learning outcomes	Mode of teaching	
Feb 14 <sup>th</sup> Sunday	12 A	8	<p><b>Learning objectives:</b> Define e.m.f, terminal p.d and internal resistance of a cell</p>	<b>Zoom</b>	Teacher uses power point presentation and breakout sessions for students to collaborate and attain the objectives
Feb 16 <sup>th</sup> Tuesday	12 B	6	<p><b>Learning Outcomes :</b> Recognize the energy loss within a cell due to its internal resistance.</p> <p><b>Derive the expression <math>V = \varepsilon - Ir</math> using the conservation of energy in circuits.</b></p> <p>Do numerical problems involving the equation <math>V = \varepsilon - Ir</math></p>		
Feb 15 <sup>th</sup> Monday	12 A	1	<p><b>Learning objectives:</b> Design an experiment to determine the internal resistance of a cell</p>	<b>Zoom</b>	Teacher uses power point presentation and breakout sessions for students to collaborate and attain the objectives
Feb 18 <sup>th</sup> Thursday	12B	3	<p><b>Learning Outcomes :</b> Choose the apparatus required in an experiment to determine the internal resistance and e.m.f of a cell</p> <p>Collect sufficient data to draw a VI graph with different loads.</p> <p><b>Determine the internal resistance and emf of a cell from its VI graph with different loads.</b></p>		
Feb 15 <sup>th</sup> Monday	12 A	2	<p><b>Learning objectives:</b> Describe maximum power transfer theorem qualitatively.</p>	<b>Zoom</b>	Teacher uses power point presentation and breakout

<b>Feb 18<sup>th</sup> Thursday</b>	<b>12B</b>	<b>4</b>	<p><b>Learning Outcomes:</b></p> <p>Realise that power transferred from a cell is not constant.</p> <p>Recognize that maximum power is transferred when the external load resistance is equal to internal resistance.</p> <p>Recognize that efficiency of a cell is maximum when <math>R \gg r</math>.</p> <p>Compare the internal resistances of car battery, dry cell and E.H.T supply.</p> <p><b>Predict the effect of using two or more cells in series and parallel in a circuit.</b></p> <p><b>Explore the effect of internal resistance on efficiency and safety.</b></p>	sessions for students to collaborate and attain the objectives
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## YEAR 12 A/ B – PHYSICS

**WEEK 25 - (14<sup>th</sup> Feb to 18<sup>th</sup> Feb) - 3 lessons for both batches**

**Work sent to the students through:** Whatsapp group / Google classroom / Zoom Learning Platform

**Topic: 2.3 Momentum**

**Resources:** Student text book, worksheet file, interactive power point from Board works and Online animations

<b>Date &amp; Class</b>	<b>Lesson</b>	<b>Lesson objectives &amp; Learning outcomes</b>	<b>Mode of teaching</b>	
14 <sup>th</sup> Feb Sunday - <b>12 B</b>	6	<p><b>L.O</b> – Define and use linear momentum as the product of mass and velocity</p> <p>Define and use force as rate of change of momentum</p>	<b>Zoom</b>	Teacher uses ppt, board works and online simulation to explain the concept of momentum. Discussion to include direction change to reinforce and explain how to subtract vectors to find the change in momentum.
16 <sup>th</sup> Feb Tuesday - <b>12 A</b>	4	<p><b>Learning outcomes-</b></p> <ul style="list-style-type: none"> <li>• Define momentum of an object as the product of mass and velocity <math>p = mv</math>.</li> <li>• Explain how momentum is gained or lost</li> <li>• Develop the relationship <i>Force = change of momentum / time taken</i> from <math>F = ma</math>. (<i>Newton's second law</i>)</li> </ul>		

14 <sup>th</sup> Jan Sunday - 12 B	7	<b>L.O</b> – Investigate and apply the principle of conservation of linear momentum to problems in one dimension. <b>Learning outcomes-</b> <ul style="list-style-type: none"> <li>• Explain the principle of conservation of linear momentum.</li> <li>• Plan an experiment to investigate conservation of linear momentum using a linear air track with timers and light gates, colliding trolleys and motion sensors.</li> </ul>	<b>Zoom</b>	Teacher uses ppt, board works and online simulation to explain conservation of linear momentum. Discuss some real examples, snooker ball collisions, Newton’s cradle, car crashes, crumble zone.
18 <sup>th</sup> Feb Thursday - 12 A	1			
17 <sup>th</sup> Feb Wednesday - 12 B	3	<b>Learning Objective:</b> To answer the questions, on momentum and principle of conservation of momentum, in the worksheet given.  <b>Learning outcome:</b> Apply the principle of conservation of momentum to solve problems when bodies interact in one dimension. Students will be able to reinforce the concepts learned in the previous lessons by answering the questions in the worksheet.	<b>GC</b>	Worksheet assigned in GC. Instructions will be given to solve the exam style questions in the worksheet.
18 <sup>th</sup> Feb Thursday - 12 A	2			

**HOMEWORK:** Complete TB ques: Pg 55,59 & worksheet file questions (exam style questions)

## YEAR 13 A/ B –PHYSICS

**WEEK 25 - (14<sup>th</sup> Feb to 18<sup>th</sup> Feb) - 3 lessons for both batches**

**Work sent to the students through:** Whatsapp group / Google classroom / Zoom Learning Platform

**Topic: - 8.3 The particle zoo**

**Resources:** Student text book, interactive power point, Board works, worksheet file and online videos/animations

Date	Lesson	Lesson objectives & Learning outcome	Mode of teaching	
15 <sup>th</sup> Feb Monday - 13 A	1	<b>Learning Objective:</b> Describe the standard quark-lepton model particles as the theory of all fundamental particles and how they interact. Describe the symmetry of the model predicted the top and bottom quark  <b>Learning Outcome:</b> <ul style="list-style-type: none"> <li>• Understand that leptons (e.g. electrons and neutrinos) are fundamental particles.</li> <li>• Explain the two groups of particles – hadrons and leptons giving examples of each.</li> </ul>	<b>Zoom</b>	Teacher uses ppt, board works and online simulation to explain the Standard model with leptons and hadrons.
16 <sup>th</sup> Feb Tuesday - 13 B	6			

		<ul style="list-style-type: none"> <li>• Describe 6 types or flavours of quarks with their charge values.</li> <li>• Understand that every particle has a corresponding antiparticle and be able to use the properties of a particle to deduce the properties of its antiparticle and vice versa</li> </ul>		
15 <sup>th</sup> Feb Monday - <b>13 A</b>	2	<p><b>L.O</b> – Describe a simple quark model of hadrons in terms of up, down and strange quarks and their respective antiquarks.</p> <p><b>Learning outcomes-</b></p> <ul style="list-style-type: none"> <li>• Define baryon and meson.</li> </ul>	<b>Zoom</b>	Teacher uses ppt, board works to explain hadrons and mesons. Provide worksheet with exam style questions.
18 <sup>th</sup> Feb Thursday - <b>13 B</b>	3	<ul style="list-style-type: none"> <li>• Recall proton has uud and neutron has udd and workout their overall charge.</li> <li>• Appreciate that there is a weak interaction between quarks.</li> <li>• Explain why high energies are required to investigate fundamental particles.</li> </ul>		
16 <sup>th</sup> Feb Tuesday - <b>13 A</b>	5	<p><b>L.O</b> – Use laws of conservation of charge, baryon number and lepton number to determine whether a particle interaction is possible.</p>	<b>Zoom</b>	Teacher uses ppt and board works to explain how to use the conservation laws in an equation and to predict whether it is an allowed or forbidden reaction.
18 <sup>th</sup> Feb Thursday - <b>13 B</b>	4	<p><b>Learning outcomes-</b></p> <ul style="list-style-type: none"> <li>• Write equations with correct particle symbols.</li> <li>• Use the conservation laws in an equation to predict whether it is an allowed or forbidden reaction.</li> <li>• Interpret particle equations with the correct particle symbols.</li> <li>• Deduce the charge and nature of unfamiliar particles using their quark composition</li> </ul>		

**HOMEWORK:** Complete the textbook Qs: Page 119, 123 and worksheet file questions

## YEAR 13 A/ B – PHYSICS

**WEEK 25 (14<sup>th</sup> Feb to 18<sup>th</sup> Feb) (3 lessons)**

**Work sent to the students through:** Google classroom / Zoom Learning Platform

**Topic: - Oscillations**

Date	Class	Lesson	Lesson objectives & Learning outcome	Mode of teaching	
Feb 15 <sup>th</sup> Monday	13 B	6	<b>Learning objectives:</b> Draw and interpret displacement – time graph, velocity – time graph and acceleration- time graph for an oscillating object	<b>Zoom</b>	Teacher uses power point presentation and breakout sessions for students to collaborate and attain the objectives.
Feb 16 <sup>th</sup> Tuesday	13A	4	<b>Learning Outcomes :</b> Obtain a displacement – time graph for an oscillating object and recognise that the gradient at a point gives the velocity at that point  and determine from such graphs the amplitude, period, and frequency of the motion.		
Feb 15 <sup>th</sup> Monday	13 B	7	<b>Learning objectives:</b> Draw and interpret displacement – time graph, velocity – time graph and acceleration- time graph for an oscillating object (contd)	<b>zoom</b>	Teacher uses power point presentation and breakout sessions for students to collaborate and attain the objectives.
Feb 18 <sup>th</sup> Thursday	13A	1	<b>Learning Outcomes :</b> Recognise that the gradient of d-t graph at a point gives the velocity at that point Identify points in the motion where the velocity is zero or achieves its maximum positive or negative value Identify the gradient of a-x graph as $\omega^2$		
Feb 17 <sup>th</sup> Wednesday	13 B	3	<b>Learning objectives:</b> Solve worksheet file questions	<b>zoom</b>	.Teacher uses GC and breakout sessions for students to collaborate and attain the objectives.
Feb 18 <sup>th</sup> Thursday	13 A	2	<b>Learning Outcomes :</b> Reinforce the equations of shm  Be able to construct v-t and a-t graphs from a given d-t graph And vice-versa		

