YEAR 9 (A- F) – PHYSICS

WEEK 23 (31st January to 4th February)

Work Sent to the students through Google classroom

Topic: Core practical

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

Date	Lesson	Topic	Mode of Teaching	
31st Jan. Sunday **(Girls)** 31st Jan. Sunday **(Boys)**	4 8	**Learning objective:** To recall the properties of waves and wave equation. **Learning outcome:** The students will be able to recall the different methods to find the speed of water waves. Uses the appropriate equation to calculate the speed of waves	**Zoom**	Teacher uses a video and a power point to introduce ripple tank and to explain how it can be used to find the speed of water waves by measuring wavelength and frequency.
2nd Feb. Tuesday **(Girls)** 4th Feb. Thursday **(Boys)**	3 5	**Learning objective:** **Core Practical:** Investigating speed, frequency and wavelength of waves. **Learning outcome:** Students will be able to understand the techniques used • To measure waves in different ways and evaluate the suitability of the equipment. • To measure the speed of sound through a metal rod.	**Zoom**	Teacher presents the video of the practical conducted and explains the various measuring techniques used and the steps taken to ensure accuracy of the measured quantities. Students will be able to identify the measuring technique involved and comment on the accuracy obtained by using these techniques.
2nd Feb. Tuesday **(Girls)** 4th Feb. Thursday **(Boys)**	4 6	**Learning objective:** **Core Practical :** Investigating speed, frequency and wavelength of waves. **Learning outcome:** Students will complete the practical sheet	**GC**	Students will complete the practical sheet assigned for them in GC and turn in after completion

YEAR 10 A-F - Physics

WEEK 23 (31st January to 4th February)

Topic: Newton's laws of motion

Lesson Objective: SP 2a Resultant forces
SP 2b Newton's First law
SP 2d Newton's second 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	
31st Jan Sunday (Boys) **31st Jan** Sunday (girls)	1 2	**L.O:** To define and calculate resultant forces**.** **Learning outcome:** The students will be able to recall the differences between vector and scalar quantities. Be able to use arrows to represent the direction and magnitude of forces. Be able to calculate resultant forces and identify whether the force is balanced or unbalanced.	**Zoom/ GM**	Teacher uses a powerpoint presentation to recall vectors and scalars. Using different examples of free body diagrams teacher explains the length of the arrow represents the magnitude of forces.

2nd Feb Tuesday (Boys)
 	
3rd Feb Wednesday (Girls)
	5
	
	5
		L O. Recall Newton's First Law and use it in the following situations:
		
		   (a) Where the resultant force on a body is zero i.e. the body is moving at a constant velocity or is at rest.
		
		   (b) Where the resultant force is not zero i.e. the speed and/or direction of the body change(s).
		
		Learning outcome:
		Students will be able to recognize that if the forces are balanced, the object will remain stationary or keep moving at constant velocity.
			Zoom/ GM	The teacher uses a powerpoint presentation to calculate the resultant forces acting on the body. States the first law of motion and gives different illustrations for the law.

2nd Feb Tuesday (Boys) **3rd Feb** Wednesday (Girls)	6 6	**L.O:** Solve the worksheet posted GC **Learning outcome:** Students will be able to reinforce the concepts learned in the previous lesson by solving the worksheet	**GC**	Teacher will post the worksheet in the google classroom. Students will solve and turn in the worksheet
4th Feb Thursday (Boys) **4th Feb** Thursday (Girls)	4 1	**L.O:** Recall and use Newton's Second Law as force (newton, N) = mass (kilogram, kg) × acceleration (metre per second squared, m/s^2), $F = m \times a$. .**Learning outcome:** Students will be able to - List the factors that affect the acceleration of an object. - Use the equation relating force, mass and acceleration. - Change the subject of the equation relating force, mass and acceleration. - Explain what inertial mass means.	**Zoom/ GM**	Teacher uses a powerpoint presentation to discuss that Newton's laws of motion

YEAR 11 G/H (IGCSE) – PHYSICS

WEEK 23 (31st January to 4th February)

Work sent to the students through Google classroom

Topic: Unit 7.25 Fission and fusion

Lesson Objective: Explain the terms fission and fusion
Resources: Text book, Worksheet file, interactive power point and online simulations.

Date	Lesson	Learning objective and Success Criteria	Mode of teaching	
1st Feb Monday (boys &girls)	8	**LO**- To explain the term nuclear fission. **Learning outcome** • able to know that nuclear reactions, including fission, fusion and radioactive decay, can be a source of energy . • able to understand how a nucleus of U-235 can be split (the process of fission) by collision with a neutron, and that this process releases energy as kinetic energy of the fission products. • able to describe how a chain reaction can be set up if the neutrons produced by one fission strike other U-235 nuclei.	Zoom	Teacher uses power point presentation to explain the term nuclear fission. .
2nd Feb Tuesday (boys & girls)	7	**LO**-To explain how the chain reaction is controlled in a nuclear reactor including the action of moderators and control rods. **Learning outcome** • Describe the role played by the control rods and moderator in the fission process. • Understand the role of shielding around a nuclear reactor. • Be able to explain the working of nuclear power station.	Zoom	Teacher uses power point presentation to explain how the chain reaction is controlled in a nuclear reactor including the action of moderators and control rods.

2nd Feb Tuesday (boys & girls)	8	**LO**- To explain the term nuclear fusion. **Learning Outcome**- • Describe nuclear fusion as the creation of larger nuclei resulting in a loss of mass from smaller nuclei, accompanied by a release of energy . • Know that fusion is the energy source for stars. • Explain why nuclear fusion does not happen at low temperatures and pressures, due to electrostatic repulsion of protons. • Be able to explain the difference between nuclear fusion and nuclear fission	Zoom	Teacher uses power point presentation to explain the term fusion. .
3rd Feb Wednesday (boys & girls)	8	**LO-** To solve the questions by applying the concepts. **Learning Outcome-** • Recollect the knowledge about the concepts nuclear fission and nuclear fusion. • Use and apply the concepts by solving the questions	GC	Instructions will be given to solve the questions.
4th Feb Thursday (boys& girls)	2	**LO-** To reinforce the concepts of nuclear fission and fusion by discussing the questions. **Learning Outcome-** • Reinforce the concepts nuclear fission and nuclear fusion. • Be able to use and apply the concepts by solving the questions.	Zoom	Teacher uses power point presentation to discuss the question answers.

H.W- Text book page no.254 (Tuesday 2nd February)

    - Text book page no.255, 256 and 257(Thursday 4th February)

YEAR 11 (A- F) – PHYSICS (GCSE)

WEEK 23 (31st January to 4th February)

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.

Date	Lesson	Topic	Mode of Teaching	
31st Jan Sunday **(Girls)** 1st Feb Monday **(boys)**	3 4	**Learning Objective :** Explain how pressure is related to force and area, using appropriate examples Recall and use the equation: pressure (pascal, Pa) = force normal to surface (newtorn, N) area of surface square metre, m^2), P= F/A **Learning outcome** Explain how pressure is related to area and a force normal to the surface Recall the formula relating to force, pressure and area Use the the formula relating force, pressure and area..	**Zoom**	Teacher uses power point presentation that contains interactive questions
1st Feb Monday (Girls) 2nd Feb Tuesday (Boys	1 1	**Learning Objective :** Explain, using springs and other elastic objects, that stretching, bending or compressing an object requires more than one force. Describe the difference between elastic and inelastic distortion. Describe the difference between linear and non-linear relationships between force and extension **Learning outcome :** Explain that more than one force is needed to distort an object. Describe the difference between elastic and inelastic distortion. Describe the relationship between force and extension for a spring and a rubber band Compare the force-extension relationship for different objects	**zoom**	Teacher uses power point presentation that contains interactive questions and online simulation

1st Feb Monday – **(girls)** 2nd Feb Tuesday – **(boys)**	2 2	**Learning objectives** Recall and use the equation for linear elastic distortion including calculating the spring constant. **Learning outcomes** Recall the equation that links force, extension and the spring constant. Use the formula relating force, extension and spring constant	**Zoom**	Teacher uses power point presentation that contains interactive questions to calculate spring constant
3rd Feb Wednesday– **(girls)** 4th Feb. Thursday – **(boys)**	1 7	**Learning Objective :** Use the equation to calculate the work done in stretching a spring **Learning outcome** Recall that work has to be done to stretch a spring Use the formula relating energy transferred to the extension of a spring	**Zoom**	Teacher uses power point presentation that contains interactive questions and online simulation
4th Feb Thursday – **(girls)** 4th Feb Thursday – **(boys)**	3 7	**Learning Objective:** Mixed questions on Hooke's law, spring constant and work done in stretched spring and pressure **Learning outcome :** Recall and use the equation for linear elastic distortion including calculating the spring constant. Recall and use the formula relating energy transferred to the extension of a spring Recall and use the equation P=F/A	**GC**	Instruction will be given in GC to complete the given worksheet

YEAR 12 A/ B –PHYSICS

WEEK 23   (31st January to 4th February)   (3 lessons)

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

Topic: Measuring instruments

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	
31st Jan Sunday **2nd Feb Tuesday**	**12 A**	8 6	**Learning objectives:** Introduce and recognize how to make measurements using different measuring instruments such as ruler ,vernier calipers and screw guage **Learning Outcomes :** Recognize when/how to choose the correct measuring instrument Calculate the least count of each instrument Compare the precision of the instruments	**Zoom**	Teacher uses power point presentation, Phet simulations and breakout sessions for students to collaborate and attain the objectives
1st Feb Monday **4th Feb Thursday**	**12 A** **12B**	1 3	**Learning objectives:** Watch videos to identify the different strategies to make measurements using ruler ,vernier calipers and screw guage **Learning Outcomes :** Identify how a pair of set squares helps to reduce parallax error while measuring round objects. Recognize that error in measurement will be divided by the number of specimens used. This makes the result more accurate. Relate and compute the main Scale Reading and the Vernier scale as well as pitch scale and circular scale in screw guage to make accurate measurements.	**zoom**	Teacher uses power point presentation and breakout sessions for students to collaborate and attain the objectives
1st Feb Monday	**12 A**	2	**Learning objectives:** Students practice problems with ruler, micrometers and vernier calipers. Using Internet websites, worksheets etc students participate measuring with the instruments.	**Zoom**	Worksheet send in GC

Date & Class	Lesson	Lesson objectives & Learning outcomes	Mode of teaching	
4th Feb Thursday	12B	**4**	**Learning Outcomes:** Complete Worksheet file questions Calculate the length/width of various objects using the following equation. **Total reading = M.S.R + (V.S.R) X L.C** **Total reading = P.S.R + (H.S.R) X L.C**		

YEAR 12 A/ B – PHYSICS

WEEK 23 - (31st Jan to 4th Feb) - 3 lessons for both batches

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

Topic: 2.14 Moments

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

Date & Class	Lesson	Lesson objectives & Learning outcomes	Mode of teaching	
31st Jan Sunday - **12 B** 2nd Feb Tuesday - **12 A**	6 4	**L.O –** Define center of gravity of an object **Learning outcomes-** • Understand that the weight of a body may be taken as acting at a single point known as its centre of gravity • Experiment to find the centre of gravity of regular and irregular(oddly) shaped objects	**Zoom**	Teacher use ppt/board works to explain the object will balance when supported at the center of gravity. Students should be aware of where the centre of gravity is for shapes with uniform weight distribution,
31st Jan Sunday - **12 B** 4th Feb Thursday - **12 A**	7 1	**L.O** – Define moment of a force State the principle of moments **Learning outcomes-** • Define moment of force $= Fx$ where x is the perpendicular distance between the line of action of the force and the axis of rotation. • Use the principle of moments to solve numerical problems.	**Zoom**	Discuss that the turning effect depends on both the magnitude of the force applied and the distance of its point of application from the pivot
3rd Jan Wednesday - **12 B**	3	**L.O –** State and apply the principle of moments.	**GC**	Assignment given: Plan an experiment to determine the mass of

4th Feb Thursday - **12 A**	2	**Learning outcomes-** • Discuss experiment to verify the principle of moments using a metre rule pivoted at the centre and various weights suspended from it on either side**.** • Plan an experiment to investigate how the support forces for a metre rule suspended on two newton meters changes as the load changes position between them.		a meter ruler using the principle of moments. *(using graphical method)*

HOMEWORK: Complete worksheet file questions (exam style questions)

YEAR 13 A/ B –PHYSICS

WEEK 23 - (31st Jan to 4th Feb) - 3 lessons for both batches

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

Topic: - 8.2 Particle accelerators

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

Date	Lesson	Lesson objectives & Learning outcome	Mode of teaching	
1st Feb Monday - **13 A** 2nd Feb Tuesday - **13 B**	1 6	**Learning Objective:** Explain the role of electric and magnetic fields in particle accelerators. (Linac and cyclotron) **Learning Outcome:** • Describe the structure of a Linac. • Outline the working of a Linac indicating how ions are accelerated. • Calculate the final energy (J and MeV) and time taken.	**Zoom**	Teacher uses ppt, board works and online simulation to explain the working of LINAC.
1st Feb Monday - **13 A** 4th Feb Thursday - **13 B**	2 3	**L.O –** Describe the design and working of a cyclotron. **Learning outcomes-** • Explain the working of circular accelerators like cyclotron and discuss how ions get accelerated continuously. • Derive and use the equation $r = p/Bq$ for a charged particle in magnetic field. • Derive equation for the frequency of the particle in cyclotron and show that frequency is independent of the radius.	**Zoom**	Teacher uses ppt, board works and online simulation to explain the working of cyclotron. Provide worksheet with exam style questions.

2nd Feb Tuesday - **13 A** 4th Feb Thursday - **13 B**	5 4	**L.O** – Describe relativistic effects at speeds near that of light (use of relativistic equations not required) **Learning outcomes-** • Discuss the modications to single ring accelerators like synchrotron. • Explain why high energies are required to investigate the structure of the nucleus.	**Zoom**	Teacher uses ppt, board works and online simulation to explain the working of synchrotron and discuss relativistic effects at speeds near that of light	

HOMEWORK: Complete the textbook Qs: Page 97 and worksheet file questions

YEAR 13A/ B –PHYSICS

WEEK 23 **(31st January to 4th February)** **(3 lessons)**

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

Topic: 10- Nuclear Radiation

Date	Class	Lesson	Lesson objectives & Learning outcome	Mode of teaching	
1st Feb Monday **2nd Feb Tuesday**	13 B 13A	6 4	**Learning objectives**: Recap the concept of nuclear binding energy, and recognise and use the expression $\Delta E = c^2 \Delta m$ and use the non SI atomic mass unit (u) in calculations of nuclear mass (including mass deficit) and energy **Learning Outcomes** : Realize that mass can be converted into energy in nuclear reactions or vice versa. Calculate the mass defect and convert the mass defect to the binding energy in MeV by use of Einstein's equation $\Delta E = c^2 \Delta m$	**Zoom**	Teacher uses worksheet file questions for students to collaborate and attain the objectives. .

			Learning objectives:		
1st Feb Monday	13 B	7	Explain the mechanism of nuclear fusion and the need for high densities of matter and high temperatures to bring it about and maintain it.	**Zoom**	Teacher uses power point presentation and breakout sessions for students to collaborate and attain the objectives.
4th Feb Thursday	13A	1	**Learning Outcomes** : Discuss &Understand the conditions required for nuclear fusion. Describe magnetic plasma confinement. Calculate energy released in fusion reactions using $E = mc^2$. Writes balanced nuclear equations for fusion, especially stellar fusion. Appreciate the difficulties of achieving fusion on a practical terrestrial scale. Identify the need for alternative energy sources.		
3rd Feb Wednesday	13 B	3	**Learning objectives**: Describe the use of nuclear fission in power generation. **Learning Outcomes** : Explain the energy release in fission as a consequence of binding energy changes.	**Zoom**	. Teacher uses power point presentation and breakout sessions for students to collaborate and attain the objectives.
4th Feb Thursday	13 A	2	Describe a fission reactor in terms of chain reaction, critical size, moderators, control rods, cooling system and reactor shielding. Describes the difference between the reactions in power production and weapons as controlled and uncontrolled reactions. Identify the risks and benefits of nuclear power generation.		