YEAR 13A/ B –PHYSICS

WEEK 13 (22nd November to 26th November) (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	
23rd Nov Monday **24th Nov Tuesday**	**13 B** **13A**	**6** **4**	**Learning objectives**: Recap half life, activity and uses the exponential decay equation to derive the relation between the two. **Learning Outcomes** : Simulate radioactive decay using, for example, dice Determine the half lives of radioactive isotopes graphically Recognise and use the expressions for radioactive decay: **$\lambda = \ln 2 / t_{½}$**	**Zoom**	Teacher uses power point presentation and breakout sessions for students to collaborate and attain the objectives. https://www.random.org/dice/ for virtual dice rolling and collecting data.
23rd Nov Monday **26th Nov** Thursday	**13 B** **13A**	**7** **1**	**Learning objectives**: Explain 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. Define annihilation. Define mass defect, binding energy and binding energy per nucleon. 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 power point presentation and breakout sessions for students to collaborate and attain the objectives.

25th Nov Wednesday **26th Nov** Thursday	**13 B** **13 A**	**3** **2**	**Learning objectives**: Describe the principles of fission and fusion with reference to the binding energy per nucleon curve. Explain in terms of stability with reference to the curve why fission and fusion occur. **Learning Outcomes** : Discuss general shape of the binding energy per nucleon curve Describe nuclear stability in terms of binding energy per nucleon. Compare the stability of different nuclei by using binding energy per nucleon. Use binding energy to predict if reactions will happen spontaneously	**zoom**	.

YEAR 13 A/ B –PHYSICS

WEEK 13 - (22nd Nov to 26th Nov) - 3 lessons for both batches

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

Topic: - 7.34 – Generating electricity

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

Date	Lesson	Lesson objectives & Learning outcome	Mode of teaching	
23rd Nov Monday **- 13 A** 24th Nov Tuesday **- 13 B**	1 6	*Carried forward from last week* **Learning Objective:** Understand how to use Faraday's law to determine the magnitude of induced emf and use the equation that combines Faraday's law and Lenz's law. **Learning Outcome:**	**Zoom**	Teacher uses ppt, board works and online simulation to explain Faraday's law and Lenz's law. Emphasise throughout the

		• Realise that induced e.m.f is proportional to rate of change of flux and acts opposite to the change. • Use the expression $\varepsilon = - d\Phi/dt$ and explain how it is a consequence of Faraday's and Lenz's laws. • Derive $\varepsilon = B(dA/dt) = BLv$ for a wire moving across a field.		discussions that the induced e.m.f. only exists while the flux linkage is changing.
23rd Nov Monday **- 13 A** 26th Nov Thursday **- 13 B**	2 3	**L.O –** Explain simple applications of electromagnetic induction **Learning outcomes-** • Discuss some applications of electromagnetic induction, e.g. ○ dropping a magnet through a copper tube, ○ braking a flywheel, ○ magnet on a spring or pendulum type oscillation, • Explore various real life examples eg ○ e.m.f. induced in an aircraft wing in flight o e.m.f. induced in a coil by changing flux o opening or closing a metal window o electromagnetic braking o induction torch.	**Zoom**	Teacher ask students to explain what is happening in the various applications of electromagnetic induction. Provide worksheet with problems to solve using both laws.
24th Nov Tuesday **- 13 A** 26th Nov Thursday **- 13 B**	5 4	**L.O –** Describe the principle of ac generator on the basis of electromagnetic induction with movement. Describe the principle of a transformer on the basis of mutual induction. **Learning outcomes-** • Discuss the principle and working of ac generator on the basis of electromagnetic induction.. • Lists the factors affecting the induced current in a coil rotating in a field and predict how the ac waveform changes when each of these factors is changed. • Describes the working of a transformer, indicating the changes in voltages, current and power and energy losses. • Deduce an expression for the efficiency of a transformer • Derive the equations $V_s/V_p = N_s/N_p$ and $V_s I_s = V_p I_p$ for 100% efficiency.	**Zoom**	Teacher uses ppt, board works and online simulation to explain the shape of the variation of the alternating current and p.d. due to the movement of coil in the magnetic field. Discuss the sources of energy loss in a practical transformer

HOMEWORK: Complete the textbook Qs: Page 72 and worksheet file questions