# Suggested Study Plan National 5 Physics Exam Date – Tuesday May 8th at 1pm – 3.30pm

You must always write something down when you are studying. Use sharp pencils, rulers a good calculator and clean paper. **TURN YOUR PHONE OFF**.

Make mind maps, bullet point, make flash cards, do past paper questions and check model answers, write out symbols, units, formula and rearrange.

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| **Week** | **What to study** | **Formula** | **Things you need to get help with** |
| 1 | Units, prefixes, formula sheet, symbols etc.  **Waves**: definitions; formula; v,f,λ; period; diffraction diagrams; long & short λ | v=d/t, v=fλ, f=N/t, T=1/f |  |
| 2 | **EM spectrum**: energy; uses; sources; detectors; v f λ, speed  **Refraction of Light**: change in speed, direction and wavelength; normal, incidence & refraction angles; diagrams. | v=fλ, v=d/t |  |
| 3 | **Electricity**: charge, voltage, current; ac/dc; charged particles in an electric field; Ohm’s law; use of voltmeter and ammeter; potential dividers; components; transistor circuits; series & parallel current, voltage and resistance; power formulas; fuse ratings. | Q=It, V=IR, V2=(R2/R1+R2)Vs, V1/V2=R1/R2­, P=IV, P=I2R, P=V2/R, P=E/t, Rt=R1+R2+…1/Rt=1/R1+1/R2+… |  |
| 4 | **Dynamics**, Vectors & Scalars; resultant at right angles; trig/Pythagoras/scale diagram; d=vt, average/instantaneous speed; v-t graphs; area under graph; acceleration from graph, experiment and calculations | d=vt, displacement=area, a=(v-u)/t, acceleration = gradient |  |
| 5 | **Forces**, Newton’s Laws, balanced/unbalanced forces; resolving forces; friction; weight & mass; terminal velocity | F=ma, W=mg |  |
| 6 | **Energy**: conservation of energy; work done; potential energy; kinetic energy. Projectile motion: horizontal and vertical motions; graphs; satellites and projectiles | Ew=Fd, Ep=mgh, Ek=1/2mv2  v=u+at, |  |
| 7 | **Space**: current understanding; terms; satellites, geostationary, period vs height; challenges, risks & benefits; N3 spaceflight; weight on other planets;  Cosmology: light year; age of universe; big bang; EM spectrum information; spectra | Ek=1/2mv2  Eh=cm∆T, Eh=ml |  |
| 8 | **Thermodynamics**: Heat energy and temperature; specific heat capacity; latent heat, change of state; | Eh=cm∆T, Eh=ml, P=E/t |  |
| 9 | **Gas:** Pressure, kinetic model of gas, 3 Gas laws and experiments, Kelvin scale | p=F/A, p1V1/T1= p2V2/T2, 0K=-273oC |  |
| 10 | **Radiation**, αβγ properties, ionisation and effects on atoms, dangers, activity, background radiation, absorbed dose…equivalent dose…weighting factor etc, safety limits, applications of radiation in medicine and industry, half-life experiments and graphs, nuclear fission & fusion. | A=N/t, D=E/m, H=DWr, H’=H/t |  |