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| **Topic heading** | **Syllabus Ref** | **Idea cluster** | **Question 1** | **Question 2** | **Question 3** | **Question 4** |
| KS4 PA | Com - 6.3.1  Phy 4.3.1 | Changes of state and particle model | What is the equation for density?  A density = mass x volume  B density = volume/mass  C density = mass/volume  D density = volume x mass | Solids and liquids are described as incompressible because …..  A the particles are too hard  B they particles are too big  C the particles cannot be squashed  D they are moving to much | what does sublimate mean?  A process of turning from a solid to a gas  B process of turning from a liquid to a gas  C process of turning from a gas to a liquid  D process of turning from a gas to a solid | what is the correct order of processes from solid to liquid to gas and back again?  A freezing - melting - evaporating - condensing  B freezing - evaporating - condensing - melting  C condensing - evaporating - melting - freezing  D melting - evaporating - condensing - freezing |
|  |  |  | C | C | A | D |
| KS4 PA | Com - 6.3.2  Phy | Internal energy and energy transfers | Internal energy is defined as …  A the temperature stored inside a system by the particles  B the energy stored in the system by the particles that make up a system  C the energy released when matter cools down  D the energy created in a system | The formula for specific heat capacity is …  A = mass / change in energy x temperature change  B = temperature change / change in energy x mass  C = change in thermal energy/mass x temperature change  D = mass x temperature change x change in energy | What is specific latent heat?  A the energy needed to change the state of 1Kg of the substance with no change in temperature  B the amount of energy required to change the temperature of 1Kg of a substance by 1degree  C the amount of energy required to change the state of 1Kg of a substance with only 1 degree increase in temperature  D the amount of energy required to change the state of 1Kg of a substance with a 1 degree decrease in temperature | At what point on the graph is the substance changing from solid to a liquid    A  B  C  D |
|  |  |  | B | C | A | B |
| KS4 PA | Com 6.3.3  Phy 4.3.3 | Particle model and pressure | How do gases exert pressure?  A The walls of the container absorb the particles  B Because Helium is less dense than air  C the gas particles collide with the walls of the container, exerting a force  D because the particles get bigger | Why does increasing the temperature affect the pressure of a gas in a fixed volume?  A because the particles get bigger  B because the number of particles increase  C because the particles get smaller  D because the particles move faster | PHYSICS ONLY  Using pV = constant  If a gas has a pressure of 2Pa and the constant is 20. What is the volume?  A 10m3  B 5m3  C 40m3  D 0.1m3 | PHYSICS ONLY  Why does the temperature of the tyre heat up when you are pumping it up?  A because a force is being applied  B because particles are moving randomly  C because work is being done  D the sun is heating it up |
|  |  |  | C | A | A | C |
| KS4 AS | Com 6.4.1  Phy 4.4.1 | Atoms and Isotopes | What is the basic structure of an atom?  A a nucleus containing protons, neutrons and electrons  B a nucleus of electrons and neutrons with photons orbiting in shells  C a nucleus of protons and electrons with neutrons orbiting in shells  D a nucleus containing protons and neutrons with electrons orbiting in shells | Sodium has a mass number of 23 and an atomic number of 11. How many neutrons does it have?  A 12  B 23  C 34  D 11 | What is the definition of an isotope?  A a charged atom  B an atom with more electrons than protons  C an atom with a different number of neutrons in the nucleus  D an atom with a different number of protons in the nucleus | Why do scientists share their findings?  A to become famous  B to check the accuracy of results  C to prove each other wrong  D to earn lots of money |
|  |  |  | D | A | C | B |
|  | Com 6.4.2  Phy 4.4.2 | Atoms and Nuclear Radiation | Which is the most penetrating type of radioactivity?  A alpha  B beta  C Gamma  D Neutron | What is the relative mass of Polonium when Radon 219 experiences alpha decay?  A 219  B 215  C 223  D 221 | Half life is defined as …  A the time taken for the number of atoms to reduce by half  B how long it takes for half the atoms to undergo alpha decay  C the time taken for half of the protons to be lost from the nucleus through beta decay  D the time taken for the number of nuclei of the isotope in a sample to halve | Why does a radioagrapher stand behind a screen when taking x-rays  A so they aren’t exposed to any radiation  B to reduce their exposure to radiation  C to give the patient some privacy  D to not be in the X-ray |
|  |  |  | C | B | D | B |
| GCSE P Wa (1-2) | Com 6.6.1  Phy 4.6.1 | Waves in air, fluids and solids | Sounds waves are …  A transverse  B transect  C longitudinal  D loud | Time period = 1/frequency  The time is 2s. What is the frequency  A 0.5Hz  B 0.05Hz  C 5Hz  D 2Hz | Which is the wave equation?  A wave speed = wavelength x frequency  B wavelength = wave speed x frequency  C wavelength = frequency/wave speed  D frequency = wavelength/wave speed | What is the amplitude of this wave?  A  B  C  D |
|  |  |  | C | A | A | B |
| GCSE P Wa (3-6) | Com 6.6.2  Phy 4.6.2 | Electromagnetic waves | What is the correct order of the EM Spectrum from High frequency to low frequency?  A Ultra violet, X-rays, Infra-red, Micro  B Gamma, X-rays, Radio, Micro  C Visible, Infra-red, Micro, Radio  D Micro, Infra-Red, Visible, Ultra-violet | What causes refraction?  A Waves speed up as they enter more dense materials  B Waves slow down as they enter more dense materials  C the waves reflect  off the surface of a more dense material  D the waves pass straight through with no effect | X-rays, Ultraviolet waves AND Gamma rays are hazardous to the human body because …  A you get sunburn  B even a low dose effects tissues  C it depends on the type and size of the dose  D because your bones absorb it | What are microwaves used for?  A terrestrial TV and radio  B fibre optic communication  C heating your home  D satellite communications |
|  |  |  | C | B | C | D |
|  | Phy 4.6.1.3  Phy 4.6.1.4  Phy 4.6.1.5 | Reflection, detection and Exploration | PHYSICS ONLY | PHYSICS ONLY | PHYSICS ONLY | PHYSICS ONLY |
|  | Phy 4.6.2.5  Phy 4.6.2.6 | Lenses and visible light | PHYSICS ONLY | PHYSICS ONLY | PHYSICS ONLY | PHYSICS ONLY |
|  | Phy 4.6.3 | Black body radiation | PHYSICS ONLY | PHYSICS ONLY | PHYSICS ONLY | PHYSICS ONLY |