AQA GCSE Physics: Higher

Advance Information of Assessed Content 2022

Link to specification: https://filestore.aqa.org.uk/resources/physics/specifications/AQA-8463-SP-2016.PDF

Link to advance information document: https://filestore.aqa.org.uk/content/summer-2022/AQA-8463-AI-22.PDF

Link to revised Physics equation sheet: https://filestore.aqa.org.uk/resources/physics/AQA-8463-ES-INS.PDF

Physics Paper 1 - H

These specification points will be the **major focus** of this paper.

Exam date: 9th June

All other specification points from P1, other than those on the next slide that are explicitly omitted, **may still be assessed** in multiple choice questions/linked to a previous answer, so cannot be completely ignored in your revision

Spec point	Concepts	CGP revision guide pages	Bitesize	YouTube
4.1.1 Energy changes in a system, and the ways energy is stored before and after such changes	-identifying the energy changes in systems -Calculate, using equations, the amount of energy associated with a moving object, a stretched spring and an object raised above ground level. -Calculate, using an equation, the amount of energy stored in or released from a system as its temperature changes -Calculate Power	17, 23	https://www.bbc.co.uk/bitesize/guides/zskp7p3/revision/1 https://www.bbc.co.uk/bitesize/guides/z8pk3k7/revision/1 https://www.bbc.co.uk/bitesize/guides/zy8g3k7/revision/1	https://www.youtube.com/watch?v=JGwcDCeYRYo https://www.youtube.com/watch?v=-zy9eWzmGe4 https://www.youtube.com/watch?v=Qw_9kX9PARc https://www.youtube.com/watch?v=63OTIdNb-TE https://www.youtube.com/watch?v=EDT0DPhaaMY
4.1.2 Conservation and dissipation of energy	-Describe the law of the conservation of energy -Describe, and give examples of how energy is dissipated, or 'wasted' -Explain ways of reducing unwanted energy transfers -Describe thermal conductivity in relation to the rate of energy transfer by conduction, through a material -Calculate the efficiency of a device, process or system	23, 26, 28	https://www.bbc.co.uk/bitesize/guides/z8hsrwx/revision/1 https://www.bbc.co.uk/bitesize/guides/zp8jtv4/revision/1 https://www.bbc.co.uk/bitesize/guides/z2gjtv4/revision/1	https://www.youtube.com/watch?v=H6D_ViW0Ch4 https://www.youtube.com/watch?v=NI5jaeBrIgQ https://www.youtube.com/watch?v=43XCqAN53Sg https://www.youtube.com/watch?v=GTdgI-0KckA

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Required Practical 2: investigate the effectiveness of different materials as thermal insulators and the factors that may affect the thermal insulation properties of a material	-Identify dependent, independent and control variables -How to measure the dependent variable -Analysing results -Plotting graphs -Drawing conclusions from data	27	https://www.bbc.co.uk/bitesize/guides/z2gjtv4/revision/3	https://www.youtube.com/watch?v=lLH45loyPUA&t=2s https://www.youtube.com/watch?v=MUy1o4ogCvw
4.2.4 Energy Transfers	Use the equation that links energy transferred, charge flow and potential difference -Use the equation that links power, current and potential difference -Describe how electricity is transmitted across the National Grid -Explain the role of step-up and step-down transformers -Explain how the efficiency of energy transfer is increased in the National Grid	40, 54-56	https://www.bbc.co.uk/bitesize/guides/z3xv97h/revision/3 https://www.bbc.co.uk/bitesize/guides/z3xv97h/revision/4	https://www.youtube.com/watch?v=WKvQLrXOqik https://www.youtube.com/watch?v=VTAFjhO1HNo https://www.youtube.com/watch?v=iNvGiTn64fQ

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Required Practical 5: determine the densities of regular and irregular solid objects and liquids.	-Method to determine density of regular shaped objects -Method to determine density of irregular shaped objects -Measurements needed to determine mass and volume of objects -Equipment and apparatus	64	https://www.bbc.co.uk/bitesize/guides/zsqngdm/revision/1	https://www.youtube.com/watch?v=ScXOp8Zph28 https://www.youtube.com/watch?v=lvqu6JAbaKc
4.3.1 Changes of state and particle model	-Define and calculate the density of a substance or object -recognise/draw simple diagrams to model the difference between solids, liquids and gases -explain the differences in density between the different states of matter in terms of the arrangement of atoms/molecules. -describe how, when substances change state mass is conserved. -Describe changes of state as physical changes	63-65	https://www.bbc.co.uk/bitesize/guides/zqjy6yc/revision/1 https://www.bbc.co.uk/bitesize/guides/zwwfxfr/revision/1	https://www.youtube.com/watch?v=hkBrw2fG75U https://www.youtube.com/watch?v=-EZmXVOSa20
4.3.2 Internal energy and energy transfers	-Define internal energy, specific heat capacity & specific latent heat -Calculate, using an equation, the amount of energy stored in or released from a system as its temperature changes -interpret heating & cooling graphs -Use an equation that links energy transferred, mass and specific latent heat	65-66	https://www.bbc.co.uk/bitesize/guides/zcncjty/revision/1	https://www.youtube.com/watch?v=4rT7-5yE4pQ https://www.youtube.com/watch?v=5WVT5NR0iLA https://www.youtube.com/watch?v=x7GZ2DXef84

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Spec point	CGP Revision Guide Pages
4.2.1 Current, potential difference and resistance	40-41
4.2.2 Series & parallel circuits	4649
4.2.3 Domestic uses and safety	52
4.3.3 Particle model and pressure	67
4.4.1 Atoms and isotopes	74
4.4.3 Hazards and uses of radioactive emissions and of background radiation	81, 83
4.4.4 Nuclear fission and fusion	84

Physics Paper 2 - H

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Exam date: 23rd June

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Spec point	Concepts	CGP revision guide pages	Bitesize	YouTube
4.5.1 Forces and their interactions	Describe the difference between scalar and vector quantities and give examples -give examples of contact and non-contact forces -Describe the relationship between mass, weight and gravitational field strength -Use an equation to calculate weight -Calculate the resultant of two forces that act in a straight line. -Use vector diagrams to illustrate the resolving of forces e.g. two components acting at right angles to each other -Use free body diagrams to describe qualitatively examples where several forces lead to a resultant force on an object, including balanced forces when the resultant force is zero	87-91	https://www.bbc.co.uk/bitesize/guides/zpqngdm/revision/1 https://www.bbc.co.uk/bitesize/guides/zyxv97h/revision/1 https://www.bbc.co.uk/bitesize/guides/zgncjty/revision/1	https://www.youtube.com/watch?v=P1lSWWUkMdQ https://www.youtube.com/watch?v=xxK8N23nx9M https://www.youtube.com/watch?v=W2aBVbcHr_k https://www.youtube.com/watch?v=PL8ATKipoB4 GCSE Physics - Vector Diagrams and Resultant Forces #43 – YouTube Resolving Forces using Scale Drawings – YouTube
4.5.2 Work done and energy transfer	-Use an equation to calculate the work done to an object -Convert between newton-metres and joules. -Work done against the frictional forces acting on an object causes a rise in the temperature of the object.	18	https://www.bbc.co.uk/bitesize/guides/zgncjty/revision/3	https://www.youtube.com/watch?v=JHEmPZ-YnrU

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Spec point	Concepts	CGP revision guide pages	Bitesize	YouTube
4.5.3 Forces and elasticity	-Give examples of the forces involved in stretching, bending or compressing an object -Describe the difference between elastic deformation and inelastic deformation caused by stretching forces. -Describe the relationship between the extension of an elastic object and the force applied, provided that the limit of proportionality is not exceeded. -Use an equation that links force applied, the spring constant and extension of a spring -Calculate work done/energy stored in stretching a spring (up to the limit of proportionality)	93-94	https://www.bbc.co.uk/bitesize/guides/z9v8msg/revision/1	https://www.youtube.com/watch?v=FAHOI32oAns https://www.youtube.com/watch?v=ACDbJ8rsQDo&t=5s https://www.youtube.com/watch?v=Qw_9kX9PARc&t=44s
4.5.5 Pressure and pressure differences in fluids	-Use an equation to calculate the pressure at the surface of a fluid -Use an equation to calculate the pressure due to a column of liquid -calculate the differences in pressure at different depths in a liquid. -Describe the factors which influence floating and sinking.	100-101	https://www.bbc.co.uk/bitesize/guides/z93dxfr/revision/1	https://www.youtube.com/watch?v=P08-lYPy1hI https://www.youtube.com/watch?v=9Gw0rlXn6ec

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Spec point	Concepts	CGP revision guide pages	Bitesize	YouTube
4.5.6.1: Describing motion along a line	-Describe the difference between distance and displacement -Use an equation to calculate speed -describe the difference between speed and velocity -explain that motion in a circle involves constant speed but changing velocity. -Interpret distance-time graphs and velocity-time graphs -Calculate speed of an accelerating object at any particular time by drawing a tangent and measuring the gradient of the distance–time graph at that time -Calculate the distance travelled /displacement of an object by calculating the area under a velocity–time graph. -Use an equation to calculate acceleration -Describe how an object reaches terminal velocity	104-109	https://www.bbc.co.uk/bitesize/guides/zwc7pbk/revision/1 https://www.bbc.co.uk/bitesize/guides/zp2fcj6/revision/1	https://www.youtube.com/watch?v=QaU9jMHh7gE https://www.youtube.com/watch?v=M_0FRIX8wIM https://www.youtube.com/watch?v=DkCw2C-DkT0 https://www.youtube.com/watch?v=b0VKlpetP9A https://www.youtube.com/watch?v=Kzx8GBTl5VM https://www.youtube.com/watch?v=YCVSQp428GI https://www.youtube.com/watch?v=VRvjQBJi0oY https://www.youtube.com/watch?v=EKrAPvSin-M
4.5.7 Momentum	-Use an equation to calculate the momentum of an object from its mass and velocity -Describe the law of the conservation of momentum -Explain examples of momentum in an event, such as a collision -Calculate change in momentum -explain safety features with reference to the concept of rate of change of momentum.	121--123	https://www.bbc.co.uk/bitesize/guides/zytb8mn/revision/1	GCSE Science Revision Physics "Momentum" – YouTube GCSE Physics - Momentum Part 1 of 2 - Conservation of Momentum Principle #59 – YouTube GCSE Physics - Momentum Part 2 of 2 - Changes in Momentum #60 – YouTube

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4.6.1 Waves in air, fluids and solids	-Describe the differences between transverse and longitudinal waves and give examples -Define the property terms of waves -Compare properties of waves -Use an equation to calculate a time period -Use an equation that links wave speed, frequency and wavelength -describe a method to measure the speed of sound waves in air -describe a method to measure the speed of ripples on a water surface. -construct ray diagrams to illustrate the reflection of a wave at a surface. -describe the effects of reflection, transmission and absorption of waves at material interfaces.	126-128, 130-133	https://www.bbc.co.uk/bitesize/guides/zgf97p3/revision/1 https://www.bbc.co.uk/bitesize/guides/z9bw6yc/revision/1 https://www.bbc.co.uk/bitesize/guides/zw42ng8/revision/1	https://www.youtube.com/watch?v=aCu4VRKMstA https://www.youtube.com/watch?v=8K6gOST8pZk https://www.youtube.com/watch?v=wO49W5lsP0s
Required practical 9: investigate the reflection of light by different types of surface and the refraction of light by different substances.	-Identify dependent, independent and control variables -How to measure the dependent variable -Analysing results -Plotting graphs -Drawing conclusions from data	132-133	https://www.bbc.co.uk/bitesize/guides/zw42ng8/revision/3	https://www.youtube.com/watch?v=2fN_jvf4fw8 https://www.youtube.com/watch?v=tiqiN3y1ze4

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4.8.1 Solar system, stability of orbital motions, satellites	-Describe the structure of the universe and our solar system -Describe the life cycle of a star -explain how fusion processes lead to the formation of new elements. -describe the similarities and distinctions between the planets, their moons, and artificial satellites. -explain qualitatively how for circular orbits, the force of gravity can lead to changing velocity but unchanged speed, for a stable orbit, the radius must change if the speed changes.	175-176	https://www.bbc.co.uk/bitesize/guides/zt2fcj6/revision/1 https://www.bbc.co.uk/bitesize/guides/zpxv97h/revision/1	https://www.youtube.com/watch?v=mndRVjMovQk https://www.youtube.com/watch?v=V0Y1JlVuin4 https://www.youtube.com/watch?v=okMA18ppu98
4.8.2 Red shift	-Explain how red-shift provides evidence for the expansion of the universe and the Big Band model -Describe the Big Bang theory -Explain that the change of each galaxy's speed with distance is evidence of an expanding universe - Explain how scientists are able to use observations to arrive at theories such as the Big Bang theory	177	https://www.bbc.co.uk/bitesize/guides/zstb8mn/revision/1	https://www.youtube.com/watch?v=C90DOE87TYc https://www.youtube.com/watch?v=bWEtm-7cYzM

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Spec point	CGP Revision Guide Pages
4.5.4 Moments, levers and gears	97-98
4.6.2 Electromagnetic waves	136-140
4.6.3 Black body radiation	150
4.7.1 Permanent and induced magnetism, magnetic forces and fields	159-160