**GCSE**

*“We are what we repeatedly do. Excellence, therefore, is not an act but a habit”*



Core Gateway Science B

P1: Energy from the Home

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Use the activities and past exam questions in this booklet to plan and support your revision ready for the B1C1P1 science exam.

REVISION WEBSITE – The follow website is available for you to use to support you revision and help you answer the exam questions in this revision guide

http://www.bbc.co.uk/schools/gcsebitesize/science/ocr\_gateway/



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| **P1a: Heating Houses** |
| Grade E 🡪 Grade C 🡪 Grade A |
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| *Key Information* |
| Heat **energy** is needed to **increase** the **temperature** of an object. The amount of energy needed depends on the mass of the object, the **type** **of** **material** it is made from and the **temperature** **increase**.Heat energy is also absorbed when substances **melt** or **boil**, but the **temperature does not alter during a change of state.** The amount of energy needed to melt or boil something depends upon the **mass** of the object and the type of material it is made from. |
| *Revision Ideas*  |
| 1. Draw a mind map for the P1 unit. Add pictures and colour code key words and information
 |
| 1. Write some practice exam questions for other students to try, make sure you write a mark scheme.
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| QWC Question (6 marks) |
| When answering a QWC question remember the following points: Use correct science vocabulary, organise ideas, avoid using “it”, and write in full sentences. You also need to try and keep you answer relevant to the question. A good way to do all this is to write out important key vocabulary and then use them to structure your answer. Underlining them will help you keep track and highlight to the examiner your good use of key terms, |
| ***Question – This question is heating***A liquid in a beaker is heated to a certain temperature. **State** what the amount of energy needed to heat the water depends on, and **describe** what happens to the temperature of the water as it changes state. (***6marks)*** |
| ***Important words list***TemperatureHeatChanges of stateMeltingBoilingGas, Solid, LiquidLatent heatMassEnergy |  |
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| **P1b: Keeping Homes Warm**  |
| Grade E 🡪 Grade C 🡪 Grade A |
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| *Key Information* |
| **Heat** **energy** can be lost from homes in many different places but there are ways of reducing these losses. Heat can be **transferred** from place to place by **conduction**, **convection** and **radiation**. **Dark** **matt** surfaces are better at absorbing heat energy than **light** **shiny** surfaces |
| *Revision Ideas*  |
| 1. Draw a diagram of a house. Label all the places where heat is being lost and how heat loss is minimised.
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| 1. Write out the formula for working out energy efficiency. Practice using the equation.
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| QWC Question (6 marks) |
| When answering a QWC question remember the following points: Use correct science vocabulary, organise ideas, avoid using “it”, and write in full sentences. You also need to try and keep you answer relevant to the question. A good way to do all this is to write out important key vocabulary and then use them to structure your answer. Underlining them will help you keep track and highlight to the examiner your good use of key terms, |
| ***Question – This question is about Energy transfer***It is very cold in the Arctic. Explorers keep warm because they have fur coats. **Describe** the different ways an explorer can lose heat and **explain** how they could reduce heat loss. (***6marks)*** |
| ***Important words list***ConductionConvectionRadiationAbsorbsRadiatesParticlesInsulatorConductorVacuumVibrations |  |
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| **P1c: A Spectrum of Waves** |
| Grade E 🡪 Grade C 🡪 Grade A |
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| *Key Information* |
| **White light** can be split up into many colours by using a **prism**. This **visible light** is just part of the whole spectrum of **electromagnetic radiation**. Not all types of electromagnetic radiation are **visible**. Each type has a **different wavelength** and a different use in everyday life. Electromagnetic radiation can be used for **wireless communications.** |
| *Revision Ideas*  |
| 1. Draw a diagram of a transverse wave and label the following; crest, trough, amplitude, wavelength
 |
| 1. Create a poster of the electromagnetic spectrum. Add pictures for all the different uses of the different wavelengths.
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| QWC Question (6 marks) |
| When answering a QWC question remember the following points: Use correct science vocabulary, organise ideas, avoid using “it”, and write in full sentences. You also need to try and keep you answer relevant to the question. A good way to do all this is to write out important key vocabulary and then use them to structure your answer. Underlining them will help you keep track and highlight to the examiner your good use of key terms, |
| ***Question – This question is fighting disease.*** When a ray of light hits a mirror it is reflected. **Draw** a **diagram** showing this reflection, labelling the key parts and then use the **diagram** to **explain** how a periscope uses this reflection to view objects. ***(6marks)*** |
| ***Important words list***ReflectionPlane MirrorAngleIncidenceRefectionEqualNormal LineRay of lightPeriscope |  |
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| **P1d: Light and Lasers** |
| Grade E 🡪 Grade C 🡪 Grade A |
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| *Key Information* |
| **Digital signals** are a series of **pulses** with two states - **on or off**. Light can be used for digital communications, such as in **Morse code** and **CD players**. **Optical fibres** can carry information coded in light waves or infrared waves. **Lasers** produce intense **narrow beams of light.** |
| *Revision Ideas*  |
| 1. Write a message using a digital signal such as Morse code.
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| 1. Produce a revision card on Total Internal Reflection. Your revision aid should include a diagram.
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| QWC Question (6 marks) |
| When answering a QWC question remember the following points: Use correct science vocabulary, organise ideas, avoid using “it”, and write in full sentences. You also need to try and keep you answer relevant to the question. A good way to do all this is to write out important key vocabulary and then use them to structure your answer. Underlining them will help you keep track and highlight to the examiner your good use of key terms, |
| ***Question – This question is about sending signals.***Signals can be sent by light, electrical, radio waves or microwaves. **Discuss** the **advantages** and **disadvantages** of each type of signal (***6marks)*** |
| ***Important words list***InstantaneousSecureEquipmentWiresAmplifiedLarge Distances SpaceAtmosphere |  |
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| **C1e: Cooking and Communicating Using Waves** |
| Grade E 🡪 Grade C 🡪 Grade A |
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| *Key Information* |
| **Infrared** **radiation** and **microwaves** can be used to **cook** **food**. Microwaves are also used to **transmit** **information**, such as **mobile** **phone** networks. |
| *Revision Ideas*  |
| 1. Make some true false statements cards. Practice sorting them into true/false piles. Time yourself and see if you can beat it the next day.
 |
| 1. Write a script for a “TV drama” where the characters are concerned about the dangers from a new mobile phone mast being situated near their homes
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| QWC Question (6 marks) |
| When answering a QWC question remember the following points: Use correct science vocabulary, organise ideas, avoid using “it”, and write in full sentences. You also need to try and keep you answer relevant to the question. A good way to do all this is to write out important key vocabulary and then use them to structure your answer. Underlining them will help you keep track and highlight to the examiner your good use of key terms, |
| ***Question – This question is about infrared and microwave cookery.***Infrared radiation and microwaves are part of the electromagnetic spectrum. Both can be used to cook food. **Describe** how food is cooked using microwaves and infrared, making sure you **identify** the **differences** between the two methods. (***6marks)*** |
| ***Important words list***Absorbed by waterMoleculesPenetrationSurfaceReflectedKinetic EnergyConduction / Convection EnergyWavelength |  |
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| **C1f: Data Transmission** |
| Grade E 🡪 Grade C 🡪 Grade A |
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| *Key Information* |
| Information can be transmitted using **analogue** or **digital** signals |
| *Revision Ideas*  |
| 1. Produce a revision card on the uses of infrared radiation
 |
| 1. Make a card sort on the differences between digital and analogue signals. Practices sorting the statements into two piles.
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| QWC Question (6 marks) |
| When answering a QWC question remember the following points: Use correct science vocabulary, organise ideas, avoid using “it”, and write in full sentences. You also need to try and keep you answer relevant to the question. A good way to do all this is to write out important key vocabulary and then use them to structure your answer. Underlining them will help you keep track and highlight to the examiner your good use of key terms, |
| ***Question – This question is about Optical Fibres***Optical fibres are used to transmit data. **Draw** a diagram to show how optical fibres work and state the **advantages** of using optical fibres instead of copper wires for data transmission.(***6marks)*** |
| ***Important words list***ReflectionSpeed of lightLong distancesCoatingTotal Internal ReflectionAngle of incidenceAngle of reflectionEnergy Loss |  |
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| **C1g: Wireless Signals** |
| Grade E 🡪 Grade C 🡪 Grade A |
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| *Key Information* |
| Wireless communication is convenient. It is used for **radio programmes**, **mobile phones** and **computer networks**. **DAB broadcasts** have advantages and disadvantages compared to traditional **analogue** **broadcasts**. |
| *Revision Ideas*  |
| 1. Make a poster showing how the TV signal to a house can be reflected causing a problem called “ghosting”
 |
| 1. Write an exam question with mark scheme about the refraction of electromagnetic waves
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| QWC Question (6 marks) |
| When answering a QWC question remember the following points: Use correct science vocabulary, organise ideas, avoid using “it”, and write in full sentences. You also need to try and keep you answer relevant to the question. A good way to do all this is to write out important key vocabulary and then use them to structure your answer. Underlining them will help you keep track and highlight to the examiner your good use of key terms, |
| ***Question – This question is about radio interference.***Shaun is listens to the same radio station every day. Some days he can hear the faint sound of a different station in the background. **Explain** to Shaun why he can hear the other station and **describe** the **advantages** and **disadvantages** of buying a digital radio(***6marks)*** |
| ***Important words list***FrequencyInterferenceDistanceWeatherDigitalMore stationsPoor coverageAudio Quality |  |
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| **C1h: Stable Earth** |
| Grade E 🡪 Grade C 🡪 Grade A |
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| *Key Information* |
| Earthquakes produce **shock waves** that cause **damage**. There are two types of **seismic wave**, **P-waves** and **S-waves**. **Seismometers** can detect these waves and provide evidence of the Earth’s structure.The **ozone layer** reduces the amount of **ultraviolet light** from the Sun that reaches the Earth’s surface. Exposure to ultraviolet radiation can lead to **sunburn** and **skin cancer**, but sunscreens can reduce this damage. |
| *Revision Ideas*  |
| 1. Draw a picture showing how a seismometer measures the strength of an earthquake. Cut it up and make it into a jigsaw puzzle.
2. Write an information card that can be passed to tourists as they go on holiday informing them about the harmful effects of UV radiation and how to avoid them.
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| QWC Question (6 marks) |
| When answering a QWC question remember the following points: Use correct science vocabulary, organise ideas, avoid using “it”, and write in full sentences. You also need to try and keep you answer relevant to the question. A good way to do all this is to write out important key vocabulary and then use them to structure your answer. Underlining them will help you keep track and highlight to the examiner your good use of key terms, |
| ***Question – This question is variation***Sandra is going on holiday and wants to get a suntan. A tan is caused by the action of ultraviolet radiation. **Describe** the dangers of sunbathing and **explain** to Sandra how she can use the sun index to **reduce** the risks of sunbathing. (6marks) |
| ***Important words list***MelaninPigmentSkin CancerUltra VioletStrength of the SunSunscreenSPF NumberAmount of time in the sun |  |
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