BTEC First

Principles of Applied Science

Exam Wednesday 4th March

This powerpoint is an accompaniment to the BTEC study guide and best used with the book.

Unit 1 Exam
Physics

Unit 1 is worth 25% of the total marks

Coursework (units 2,3,&4 are worth the other 75%)

Exam Tips

(1)Make sure you read all the information given to you in the question
(2)Look at the number of marks on offer to give you an idea of how much to write
(3)If you are asked to calculate something make sure you show your working.
(4)Make sure you understand what the question is asking you to do.

Types of Exam Question

Describe - Write about what something is like.

Explain - Say how or why something happens.

Calculate - Do some maths. Show your working and give your answer with the right units.

Name/Give - Give a one or two word answer, or a short sentence.

Suggest- Use what you know to work out the answer.

Classwork

Date:xx/xx/xx

Types of Energy

Pages 76-77

1. **Describe the 9 types of energy.**
2. **Give examples of the 9 types of energy.**
3. **Explain what is meant by chemical stores and give examples.**
4. **Explain what is meant by ‘conservation of energy.**
5. **Explain how a television transfers energy.**
6. **Suggest how a car transfers energy.**

Answer these questions using full sentences in your book.

Each sentence must have a capital letter and a full stop.

Diagrams must be done with a sharp pencil and using a ruler.

Extension Task 1: Answer the practice questions on page 77.

Extension Task 2: Answer the questions on page 78-79.

Classwork

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More Energy Transfers

Pages 80-81

1. **Describe how conduction transfers heat energy from one place to another. (use a diagram)**
2. **Explain what a good conductor is, give an example.**
3. **Explain how convection transfers heat energy from one place to another (use a diagram).**
4. **Describe how radiation transfers heat energy.**
5. **Describe which materials are the best radiators.**
6. **Describe how sound energy is transferred.**

Answer these questions using full sentences in your book.

Each sentence must have a capital letter and a full stop.

Diagrams must be done with a sharp pencil and using a ruler.

Extension Task 1: Answer the practice questions on page 81.

Extension Task 2: Answer the questions on page 82-83.

Classwork

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Energy and Calculations

Pages 84-85

1. **Give the units (and symbol) that energy is measured in.**
2. **Draw an energy transfer diagram for a lightbulb. Include numbers.**
3. **Explain what is meant by the term efficiency.**
4. **Give the equation for calculating efficiency.**
5. **Give the equation and units for calculating power.**
6. **Give the equation for calculating the cost of electricity.**

Answer these questions using full sentences in your book.

Each sentence must have a capital letter and a full stop.

Diagrams must be done with a sharp pencil and using a ruler.

Extension Task 1: Answer the practice questions on page 85.

Extension Task 2: Answer the questions on page 86-87.

Classwork

Date:xx/xx/xx

Renewable Energy Sources 1

Pages 88-89

1. **Describe what renewable energy sources are and give 3 examples.**
2. **Explain how hydroelectricity provides electrical energy (use a diagram)**
3. **Suggest why hydroelectricity can be used whenever electricity is needed.**
4. **Explain the advantages and disadvantages of wave power.**
5. **Explain where tidal power can be used and why.**
6. **Suggest why we might need renewable energy.**

Answer these questions using full sentences in your book.

Each sentence must have a capital letter and a full stop.

Diagrams must be done with a sharp pencil and using a ruler.

Extension Task 1: Answer the practice questions on page 89.

Extension Task 2: Answer the questions on page 90-91.

Classwork

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Renewable Energy Sources 2

Pages 92-93

1. **Describe how wind power is used to generate electrical energy.**
2. **Describe how solar cells are used to generate electrical energy.**
3. **Suggest why wind and solar power cannot be used all year round in the UK.**
4. **Describe how geothermal energy is harnessed.**
5. **Explain how biofuels are used to generate electrical energy.**
6. **Suggest why geothermal and biofuels are used where available.**

Answer these questions using full sentences in your book.

Each sentence must have a capital letter and a full stop.

Diagrams must be done with a sharp pencil and using a ruler.

Extension Task 1: Answer the practice questions on page 93.

Extension Task 2: Answer the questions on page 94-95.

Classwork

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Non-Renewable Energy Sources

Pages 96-97

1. **Give the two types of non renewable energy sources.**
2. **Describe how fossil fuels are used to generate electricity and give the energy transfers involved.**
3. **Describe the energy transfers when generating electrical energy in nuclear power stations.**
4. **Explain the advantages and disadvantages of non-renewable energy sources.**
5. **Explain why batteries are useful.**
6. **Suggest why despite the disadvantages we still mostly rely on fossil fuels.**

Answer these questions using full sentences in your book.

Each sentence must have a capital letter and a full stop.

Diagrams must be done with a sharp pencil and using a ruler.

Extension Task 1: Answer the practice questions on page 97.

Extension Task 2: Answer the questions on page 98-99.

Classwork

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Wave Basics

Pages 100-101

1. **Describe what waves do.**
2. **Describe the different parts of a wave (You must include a labelled diagram).**
3. **Explain how we measure the wavelength of a wave.**
4. **Give the formula used to calculate we speed and the units for the different parts.**
5. **Calculate the wave speed of a wave 4m long with a frequency of 0.5Hz.**
6. **Calculate the wavelength of a wave with a speed of 2m/s and a frequency of 2Hz.**

Answer these questions using full sentences in your book.

Each sentence must have a capital letter and a full stop.

Diagrams must be done with a sharp pencil and using a ruler.

Extension Task 1: Answer the practice questions on page 101.

Extension Task 2: Answer the questions on page 102-103.

Classwork

Date:xx/xx/xx

Uses of Electromagnetic Waves 1

Pages 104-105

1. **Describe the electromagnetic spectrum (include a diagram).**
2. **Give a way of remembering the order of the electromagnetic spectrum.**
3. **Name two uses of radio waves.**
4. **Explain how radio waves are used.**
5. **Describe 4 uses of microwaves.**
6. **Suggest how we use microwaves to predict the weather.**

Answer these questions using full sentences in your book.

Each sentence must have a capital letter and a full stop.

Diagrams must be done with a sharp pencil and using a ruler.

Extension Task 1: Answer the practice questions on page 105.

Extension Task 2: Answer the questions on page 106-107.

Classwork **Date:xx/xx/xx**

Uses of Electromagnetic Waves 2

Pages 108-109

1. **Give the other name for infrared radiation.**
   Infrared radiation is also known as…
2. **Explain how optical fibres use infrared radiation. (use a diagram.**
   Optical fibres use IR radiation to….
3. **Name 5 uses for Infrared radiation.**
   Five uses of IR radiation are….
4. **Describe the visible light spectrum (include a diagram).**
   Visible light splits into…
5. **Explain how we see objects (include a diagram).**
   The two ways we see objects are…
6. **Use what you know about how we see and UV radiation to suggest how we detect forged bank notes.**
   We see things when…

Answer these questions using full sentences in your book.

Each sentence must have a capital letter and a full stop.

Diagrams must be done with a sharp pencil and using a ruler.

Extension Task 1: Answer the practice questions on page 109.

Extension Task 2: Answer the questions on page 110-111.

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Uses of Electromagnetic Waves 3

Pages 112-113

1. **Describe what are X-rays used for?**
   X-rays are used for…..
2. **Give 3 uses of Gamma Rays?**
   The 3 uses of gamma rays are…
3. **Suggest why Gamma rays can be used to sterilise food but X-rays can't.**
   Gamma rays can be used to sterilise food because….
4. **Name 4 types of harmful electromagnetic radiation.**
   The four types of EM radiation which are dangerous are…
5. **Suggest how frequency of electromagnetic waves affects how harmful they are.**
   As the frequency of EM waves increases….
6. **Explain how gamma and X-rays are harmful.**
   Gamma rays are harmful because…

Answer these questions using full sentences in your book.

Each sentence must have a capital letter and a full stop.

Diagrams must be done with a sharp pencil and using a ruler.

Extension Task 1: Answer the practice questions on page 113.

Extension Task 2: Answer the questions on page 114-115.