**Harris Federation**

# **BTEC National Portfolio Cover Sheet**

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| Candidate Name |  |

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| Unit Title | **Unit 2 Energy and Our Universe** |

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| **Unit Number** | **2** | **Date Issued** |  |

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| **Assessor(s)** |  | **Date Due** | **Date Submitted** |

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| **Assessment Decisions:** | **Have you completed a grading grid evidence sheet (see overleaf)** | Yes | No |
| **Have you annotated within the student’s work where the criteria are covered eg, P1, M2 etc** | Yes | No |

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| **Grading Decision** | **Pass / Merit / Distinction**  **P1, P2, P3, P4, P5, P6, P6, P7, P8, P9, P10, M1, M2, M3, M4, M5, M6, D1, D2, D3, D4, D5, D6** | | |
| **Points Awarded** | **25/30/35** | **Assignment IV’d?** | Yes |
| **Has interim feedback sheet been completed?** | **Yes/No** | **Have witness statements and observation records been included (if relevant)?** | Yes/No |

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| **Overall assessor’s Feedback should be recorded below:** |
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| **Assessor Signature** |  | **Date** |  |

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| **Student Signature** |  | **Date** |  |

RECORDING EVIDENCE AGAINST EACH

CRITERIA FROM THE GRADING GRID

**Unit 2 – Energy and our universe** Student \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Assessment Criteria | Achieved | Evidence/ Page No’s in the portfolio | Comments/Feedback/Date |
| P1 Carry out a practical that demonstrates how various types of energy can be transformed | **Yes/No** | Assignment 1 | List the 9 energy types  Carry out experiments and draw the energy transfer diagrams for these |
| P2 Calculate the efficiency of energy transformations | **Yes/No** | Assignment 1 | Complete results table for bouncing ball experiment  **Calculate** efficiency for the different bouncing ball experiments  Complete results table for burning crisps experiment  **Calculate** efficiency for the different burning crisps experiments |
| P3 Describe the electromagnetic spectrum | **Yes/No** | Assignment 2 | State the 7 main parts of the electromagnetic spectrum on your poster  State the typical wavelength and frequency of each of the parts of the electromagnetic spectrum.  State some sources of each of the parts of the electromagnetic spectrum |
| P4 Describe the different types of radiation, including non-ionising and ionising radiation | **Yes/No** | Assignment 2 | Produce a poster on Alpha radiation stating what it is, how it can be detected and what it is stopped by  Produce a poster on Beta radiation stating what it is, how it can be detected and what it is stopped by  Produce a poster on Gamma radiation stating what it is, how it can be detected and what it is stopped by  Produce a poster on Microwaves waves stating what it is, how it can be detected  Produce a poster on Infra Red waves stating what it is, how it can be detected  Produce a poster on Radio waves stating what it is, how it can be detected |
| P5 Describe how waves can be used for communication | **Yes/No** | Assignment 2 | State in your presentation, what types of wave electromagnetic waves are, the speed they travel, whether they can be reflected and refracted, and whether they can travel through a vacuum including diagrams  State in your presentation how electromagnetic waves can be used for communication  State in your presentation, what types of wave sound waves are, the speed they travel, whether they can be reflected and refracted, and whether they can travel through a vacuum including diagrams  State in your presentation how sound waves can be used for communication  State in your presentation, what types of wave light waves are, the speed they travel, whether they can be reflected and refracted, and whether they can travel through a vacuum including diagrams  State in your presentation how light waves can be used for communication |
| P6Describe how electricity can be produced | **Yes/No** | Assignment 3 | Describe how a battery produces electricity and the type of current produced  Describe how a generator produces electricity and the type of current produced |
| P7Describe how electrical energy is transferred to the home or industry | **Yes/No** | Assignment 3 | Draw a diagram showing how the National Grid transports electricity across the country  Show on your diagram where the electricity is produced  State on your diagram what happens before and after the electricity is transferred on to the pylons  State on your diagram why the electrical voltage is stepped down before it is transferred to homes |
| P8 Describe the use of measuring instruments to check values predicted by Ohm’s law in given electrical circuits | **Yes/No** | Assignment 3 | Complete the results table showing the current and voltage of a circuit with various resistors  Use the current and voltage to calculate the resistance put into the circuit and compare with actual value |
| P9 Describe the composition of the Universe | **Yes/No** | Assignment 4 | Make an accurate model solar system |
| P10 Identify evidentce that show’s how the Universe is changing | **Yes/No** | Assignment 4 | In your presentation, identify evidence that shows that the universe is changing |
| M1 Describe the energy transformations and the efficiency of the transformation process in these investigations | **Yes/No** | Assignment 1 | Draw energy transfer diagrams for bouncing ball experiment  Draw energy transfer diagrams for burning crisp experiment  Construct Sankey diagrams for bouncing ball experiment  Construct Sankey diagrams for burning crisp experiment |
| M2 Describe the uses of ionising and non-ionising radiation at home and in the workplace | **Yes/No** | Assignment 2 | Add to your alpha radiation poster for P4 uses of this type of radiation  Add to your beta radiation poster for P4 uses of this type of radiation  Add to your gamma radiation poster for P4 uses of this type of radiation  Add to your microwaves poster for P4 uses of this type of radiation  Add to your infra red waves poster for P4 uses of this type of radiation  Add to your radio waves poster for P4 uses of this type of radiation |
| M3 Explain the advantages of wireless communication | **Yes/No** | Assignment 2 | Add to your presentation for P5 how waves are used for wireless communication  Add to your presentation for P5 the advantages of wireless communication |
| M4 Compare the efficiency of electricity generated from different sources | **Yes/No** | Assignment 3 | Find out the efficiency of 2 renewable energy sources and compare them  Find out the efficiency of 2 non-renewable energy sources and compare them |
| M5Describe the main theory of how the Universe was formed | **Yes/No** | Assignment 4 | Research and state 2 theories of how the Universe was formed  Describe the big bang theory of the formation of the Universe, and the solar system  Add pictures to aid your description |
| M6Explain how the evidence shows that the Universe is changing | **Yes/No** | Assignment 4 | Add to your presentation for P10 an explanation of how this evidence shows that the universe is changing |
| D1 Explain how energy losses due to energy transformations in the home or workplace can be minimized to reduce the impact on the environment | **Yes/No** | Assignment 1 | Include in your presentation the main areas where energy is lost in the home  Include in your presentation the energy transformations involved  Include in your presentation the negative impact of energy loss on the environment  Include in your presentation the ways to reduce energy loss in the home. |
| D2 Discuss the possible negative effects of ionizing and non-ionising radiation | **Yes/No** | Assignment 2 | Produce a leaflet stating the negative effects that ionising (alpha/beta/gamma) radiation has on humans  Add to the leaflet the negative effects that ionising (alpha/beta/gamma) radiation has on the environment  Add to the leaflet the negative effects that non-ionising (microwaves/infra red/radio) waves has on humans  Add to the leaflet the negative effects that non-ionising (microwaves/infra red/radio) waves has on the environment |
| D3 Compare wireless and wired communication systems | **Yes/No** | Assignment 2 | Add to your presentation for P5/M3 a comparison of the advantages of wired and wireless communication  Add to your presentation for P5/M3 a comparison of the disadvantages of wired and wireless communication |
| D4 Assess how to minimise energy losses when transmitting electricity and when converting it into other forms for consumer applications | **Yes/No** | Assignment 3 | Add to your National Grid diagram for P7 an explanation of why the electrical voltage is stepped up before it is transported across the country  Pick a household appliance and research and explain how to reduce the energy wasted by the appliance. |
| D5 Evaluate the main theory of how the universe was formed | **Yes/No** | Assignment 4 | Add to your storyboard for M5 reasons people believe the main theory of how the universe is formed  Add to your storyboard for M5 reasons people do not the main theory of how the universe is formed |
| D6Evaluate the evidence that shows that the universe is changing | **Yes/No** | Assignment 4 | Add to your presentation for P10/M6 reasons people trust the evidence that the universe is changing.  Add to your presentation for P10/M6 reasons people do not trust the evidence that the universe is changing. |

Cc Programme Leader, Assessor NB This table is a template and expands

Assessor Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_