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| **Learning Outcomes**   * Motion, Motion graphs * Forces, Moments, Momentum, Hookes law * Density, Pressure * Work, Energy, Power, Efficiency * Electrical charge, current, resistance * Electrical energy, power * Waves   **Total marks** : | GCSE Physics | IAS Physics Rev T3.01  Revision Worksheet  Name ……………………………………………. |

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| **Question 1** | | Ref : 2021 Homework > Term 2 > WS.03  > Q5.2 > Circuit & LDR | Edexcel | June 2017 | 5PH2F/01 | P48802A | Pp | Q 4 |
| A student experiments with filament lamps in a circuit. | | | | | | | | |
| (a) | She starts with one lamp. Which of these circuits will let her measure the current in the circuit and the potential difference (voltage) across the lamp (1) | | | | | | | |
|  | Diagram  Description automatically generated | | | | | | | |
| (b) | The student finds that the current in the lamp is 0.80 A. | | | | | | | |
| (i) | Calculate the amount of charge that passes through the lamp in 4.0 minutes. (3) | | | | | | | |
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| (ii) | The student also finds that the potential difference across the lamp is 3.0 V.  Calculate the power of the lamp. (2) | | | | | | | |
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| (c) | The student replaces the lamp in the circuit with a different one.  The current in this lamp is 0.60 A when the potential difference across it is 3.0 V.  State how the resistance of this lamp compares to the resistance of the first lamp. (1) |
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| (d) | The student connects both lamps in parallel to the 3.0 V battery as shown in the diagram.  A picture containing text, clock  Description automatically generated |
|  | What is the size of the current in the battery? (1)  **A**  0.2 A **B**  0.7 A **C**  1.4 A **D** 1.8 A |
| (e) | A filament lamp is one example of a component in a circuit.  A light-dependent resistor (LDR) can be another component in a circuit.  The student replaces one lamp in the circuit with a light-dependent resistor (LDR)  A light is shone on a light-dependent resistor (LDR) in a circuit.  Explain how this changes the current in the circuit. (2) |
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| **Question 2** | | Ref : 2021 NB Worksheets> Term 2 > WS.01  > Q1.1 > Work, Power, Energy, Efficiency | Exam Boards > Edexcel Exam & Revision Papers > IG Physics Edexcel Rev Papers **Previous** > Energy > Energy Transfers, GPE, KE & Efficiency 2 QP> Q 1 | |
| Some students carry out investigations with an electric motor. | | | |
| (a) | The students read the statement:  *‘All the energy supplied to the motor eventually ends up as thermal energy in the surroundings.’*  This statement best describes the idea of  (1)  **A** renewable energy **B** energy efficiency  **C**  sustainable energy sources **D** conservation of energy | | |
| (b) | The students use the electric motor to lift a weight. The current in the motor is 0.5 A.  The potential difference (voltage) across the motor is 6  V.  Calculate the input power to the motor. State the unit.  (3) | | |
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| (c) | The diagram represents the energy transfers in the electric motor.  Shape  Description automatically generated with medium confidence | | |
| (i) | How much energy is wasted?  (1) | | |
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| (ii) | Calculate the efficiency of the motor.  (2) | | |
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| **Question 3** | | Ref : 2021 NB Worksheets > Term 2 > WS.02  > Q1.1 > Work, Power, Energy, Efficiency | Exam Boards > Edexcel Exam & Revision Papers > IG Physics Edexcel Rev Papers **Previous** > Energy > Energy Sources 1 > Q 1 | | |
| The International Space Station (ISS) has several solar panels called wings. | | | | |
| (a) | The energy reaching the ISS from the Sun is carried by waves which are  (1)  **A** transverse and electromagnetic  **B** electromagnetic but not transverse  **C** transverse but not electromagnetic  **D** neither transverse nor electromagnetic | | | |
| (b) | In one second, the useful energy available from one wing is 34.3 kJ.  The energy incident on the wing from the Sun is five times this amount. What is the percentage efficiency of the wing?  (3) | | | |
|  |  | | | |
| (c) | A wing is in direct sunlight. The ISS is not receiving energy from the wing.  The temperature of the wing remains constant.  Explain why the temperature of the wing remains constant in these conditions.  (2) | | | |
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| (d) | The diagram shows how a solar cell produces electricity when receiving energy from the Sun. When energy from the Sun is absorbed in a silicon layer, it makes charges move.  This movement of charges produces a current.  Diagram  Description automatically generated  Suggest two reasons why the efficiency of this solar cell at producing electricity from sunlight is less than 100%.  (2) |
| 1. |  |
| 2. |  |

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| **Question 4** | | Ref : 2021 Homework > Term 2 > WS.06  > Q3.1 > Materials > Hookes law | Ref : > Eam Boards> PMT > Edexcel > Exam & Rev Papers > GCSE Physics Exam & Rev Pprs > IG Physics Rev Pprs Previous > Hookes law QP  > Hookes Law 1 > Q3 |
| A student uses a digital calliper to measure the length of a spring, as shown in **Figure A.**  A picture containing caliper, device  Description automatically generated  **Figure A** | | | |
| The spring is bendy and difficult to measure. The student takes the six readings shown in **Figure B**.  A white sign with black text  Description automatically generated with low confidence  **Figure B** | | | |
| (a) | Calculate the average length of the spring.  (2) | | |
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| (b) | The student investigates the stretching of a spring with the equipment shown in Figure C.  The student investigates the extension of the spring using six different weights. The results are shown in **Figure D**.   |  |  | | --- | --- | | Weight (N) | Extension (mm) | | 0.20 | 4.0 | | 0.40 | 8.0 | | 0.60 | 12.0 | | 0.80 | 16.0 | | 1.00 | 20.0 | | 1.20 | 24.0 |   **Figure D** | Diagram  Description automatically generated  **Figure C** | |
| (i) | Draw a graph for the readings, using the grid shown. (3) | | |
|  | A picture containing shoji, indoor, tiled  Description automatically generated | |  |
| (ii) | The student writes this conclusion:  *‘The extension of the spring is directly proportional to the weight stretching the spring.’*  Comment on the student’s conclusion.  (3) | | |
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| (c) | The student extends the investigation by finding information about the stretching of wires.  The student finds the graph shown in **Figure E** for the stretching of a wire. |
|  | Chart, line chart  Description automatically generated  **Figure E** |
|  | Describe the non-linear stretching of the wire shown in **Figure E**.  (3) |
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| **Question 5** | | Ref : 2021 Homework > Term 2 > WS.02  > Q3.1 > Materials > Density | Edexcel | June 2019 | 4PH1/1PR | | P60184A | Pp 1PR | Q6 |
| The photograph shows a small glass ball used to investigate density and pressure. | | | | | | A picture containing black  Description automatically generated | | | |
| (a) | The mass of the ball is 19 g. The density of the ball is 2.3 g/cm3 . | | | | | | | | |
| (i) | State the formula linking density, mass and volume. (1) | | | | | | | | |
|  |  | | | | | | | | |
| (ii) | Calculate the volume of the ball. (2) | | | | | | | | |
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| (b) | The ball is dropped into deep water and sinks to a depth of 560 cm. | | | | | | | | |
| (i) | State the formula linking pressure difference, height, density and gravitational field strength. (1) | | | | | | | | |
|  |  | | | | | | | | |
| (ii) | Calculate the increase in pressure at this depth. [density of water = 1000 kg/m3 ] (2) | | | | | | | | |
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| **Question 6** | | Ref : 2021 Homework > Term 2 > WS.05  > Q3.1 > Materials > Density | Edexcel | January 2020 | 4PH1/2P | P62043A | Pp 1 | Q2 |
| The photograph shows a brass mass.  A close-up of a salt shaker  Description automatically generated | | | | | | | | |
| (a) | State the formula linking density, mass and volume.  (1) | | | | | | | |
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| (b) | The brass mass has a mass of 454 g.  The density of brass is 8.46 g/cm3 .  Calculate the volume of the brass mass. Give the unit.  (3) | | | | | | | |
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| **Question 7** | Ref : 2021 Homework > Term 2 > NB WS.01  > Q1.5 > Materials > Pressure | Exam Boards > Edexcel Exam & Revision Papers > IG Physics Edexcel Rev Papers **Previous** > Particle Model > Q 4b | |
| A student makes the following hypothesis:  ***‘When I increase the pressure on a fixed mass of gas, the volume of the gas decreases.’***  She has the equipment shown in Figure 1.  Diagram  Description automatically generated  **Figure 1** | | |
| She measures the area of the plunger.  Devise a plan to test her hypothesis.  (4) | | |
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| **Question 8** | | Ref : 2021 Homework > Term 2 > WS.02 >  > Q2.1 > Momentum | Edexcel | June 2019 | 4PH1/2PR | | P60185A | Pp 2PR | Q7 |
| A game is played on a table with balls of different colours. | | | | | | | | | |
| (a) | The diagram shows the white ball moving across a flat surface. | | | | | Diagram  Description automatically generated | | | |
| (i) | State the formula linking momentum, mass and velocity. (1) | | | | |
| (ii) | The white ball has a mass of 170 g. Calculate the momentum of the white ball. (2) | | | | | | | | |
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| (b) | The white ball collides with a stationary black ball.  A picture containing graphical user interface  Description automatically generated | | | | | | | | |
| (i) | The black ball has a mass of 160 g.  After the collision, the black ball moves away from the white ball with a velocity of 5.0 m/s. Calculate the velocity of the white ball after the collision. (4) | | | | | | | | |
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| (ii) | During the collision, the white ball exerts a force of 80 N on the black ball.  The direction of this force is to the right.  State the **magnitude** and **direction** of the force the black ball exerts on the white ball during the collision. (2) | | | | | | | | |
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| **Question 9** | Ref : 2020 Solids Liquids Gases > Worksheets > WS5.01 > Q13 > Kinetic Theory |  |  | March 2019(v2) | 0625/42 | Qp 4 | Q7 |
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| Diagram  Description automatically generated with low confidence  Table  Description automatically generated | | | | | | | |

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| **Question 10** | Ref : 2021 Topic 1 DN T1.02 >  > Q8 > Moments |  | Physics | | June 2017(v3) | 0625/23 | Pp2 | Q7 |
| The diagram shows a man holding a sack and barrow stationary.  He applies a vertical force to the handle.  The centre of mass and the weight of the sack and barrow are shown. The wheel acts as a pivot.  What is the magnitude of the vertical force exerted by the man? (3) | | | | Diagram  Description automatically generated | | | | |
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