

SCHOLARSHIP EXAMINATION

Physics

2019

Candidate Name: _____

School: _____

Time: 30 minutes

Total Marks Available: 40

Instructions:

Candidates require a pen, a pencil, a ruler and a calculator.

An A4 sheet of graph paper is supplied.

1. Name a renewable energy source (1)

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2. What is the equation for pressure?

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3. Hertz is the unit for which quantity? (1)

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4. Name a device which transfers electrical energy into sound energy (1)

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5. What is speed measured in? (1)

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6. What is the unit for force? (1)

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7. What is the formula for density? (1)

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8. What is electrical current measured in? (1)

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9. What does LED stand for? (1)

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10. What force allows a satellite to orbit the Earth? (1)

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11. Jenny, a bright 13 year old girl Scholarship candidate, wants to measure the speed of her friend on a bicycle. Describe an experiment she may undertake providing the sizes of any measurements she would take and any equations she may use (4)

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12. Jenny's friend, Peregrine, decides to investigate how the resistance of a light dependent resistor changes as the distance from a light bulb is changed.
i. Draw a labelled diagram of the how he could carry out the experiment and describe the procedure he should undertake (4)

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The results from his experiment are shown below:

Distance of LDR from Light Bulb (cm)	Resistance of Light Dependent Resistor (Ohms)
10	500
20	260
30	200
40	130
50	100
60	120
70	60
80	50

(ii) Draw a graph on the paper supplied and add a line of best fit - circling the anomalous result (5)

(iii) Describe an application where a light dependent resistor could be used (2)

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13. A see saw is 6 metres long and with a pivot in the middle.

(i) If Billy sits on one end and his mass is 50kg, calculate his weight. (2)

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(ii) If Billy's older brother, Donald, has a mass of 80 kg how far from the pivot must he sit to balance the seesaw? (3)

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14. When white light passes through a prism it is dispersed.

(i) What does this mean? (1)

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(ii) Red light has a lower frequency than blue light. Draw a diagram representing the difference between these colours (2)

15. A power supply and is connected to coil of wire with many turns.

(i) Draw a diagram of the apparatus and draw the shape of the magnetic field around this electromagnet (3)

Electromagnets can be used to pick up metal objects, such as cars.

(ii) What energy changes occur when a car is picked up using an electromagnet? (2)

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(iii) State two ways how can the strength of the electromagnet be increased (2)

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