Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ /47

**Year 8 Physics**

**End of Topic Test**

**Multiple Choice Answer Sheet**

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|  |  |  |  |  |
| **1.** | **A** | **B** | **C** | **D** |
| **2.** | **A** | **B** | **C** | **D** |
| **3.** | **A** | **B** | **C** | **D** |
| **4.** | **A** | **B** | **C** | **D** |
| **5.** | **A** | **B** | **C** | **D** |
| **6.** | **A** | **B** | **C** | **D** |
| **7.** | **A** | **B** | **C** | **D** |
| **8.** | **A** | **B** | **C** | **D** |
| **9.** | **A** | **B** | **C** | **D** |
| **10.** | **A** | **B** | **C** | **D** |
| **11.** | **A** | **B** | **C** | **D** |
| **12.** | **A** | **B** | **C** | **D** |
| **13.** | **A** | **B** | **C** | **D** |
| **14.** | **A** | **B** | **C** | **D** |
| **15.** | **A** | **B** | **C** | **D** |
| **16.** | **A** | **B** | **C** | **D** |
| **17.** | **A** | **B** | **C** | **D** |
| **18.** | **A** | **B** | **C** | **D** |
| **19.** | **A** | **B** | **C** | **D** |
| **20** | **A** | **B** | **C** | **D** |

**Multiple Choice**

**1** Energy is measured using a unit called the:

A kilogram.

B metre.

C second.

D joule.

**2** Select which of the following require energy to happen.

A running in a race

B a leaf falling from a tree

C clothes drying in the sun

D all of the above

**3** The energy of a moving object is called:

A nuclear energy.

B gravitational potential energy.

C elastic potential energy.

D kinetic energy.

**4** Jordan watches a music video clip on his iPhone. Choose the best description of the energy transformations that are happening.

A electrical energy 🡪sound energy + light energy + heat energy

B electrical energy 🡪sound energy + light energy

C sound energy + light energy + heat energy 🡪 electrical energy

D sound energy + light energy 🡪 electrical energy

**5** A particular electric knife is 40% efficient. If 100 J of energy is supplied to the knife how many joules are then transformed into kinetic energy ?

A 40

B 100

C 60

D 140

**6** The number of stars found on an Energy Rating Label indicate:

A the energy efficiency of an appliance.

B how much energy the appliance will require to operate.

C how much effort needs to be taken to maintain the appliance.

D how easy the appliance is to clean.

**7** Select which of the following contains elastic potential energy.

A a stretched bow about to fire an arrow

B a tree branch

C a seagull in flight

D an apple

**8** Select which device transforms chemical energy into kinetic energy.

A a torch

B a battery operated car

C a kettle

D an electric knife

**9** Heat flows from areas of:

A higher temperature to those of lower temperature.

B the same temperature.

C lower temperature to those of higher temperature.

D all of the above.

**10** Select the correct energy flow diagram showing energy changes that occur when operating a battery-operated fire truck that moves and sounds a siren.

A electrical energy 🡪 chemical energy + sound energy

B chemical energy 🡪 sound + heat energy

C electrical energy 🡪 heat + elastic potential energy

D chemical energy 🡪 kinetic energy + sound + heat

**11** If a food processor is 25% efficient, then for every 10 kJ input, its useful energy output is:

A 25 kJ

B 75 kJ

C 2.5 kJ

D 7.5 kJ

**12** The efficiency of the Spinners washing machine is 40%,

Sparkles washing machine is 35%

Sprinkles washing machine is 52%,

The machines listed from most to least efficient are:

A Spinners, Sparkles, Sprinkles

B Sparkles, Sprinkles, Spinners

C Sprinkles, Spinners, Sparkles

D Sparkles, Spinners, Sprinkles

**13** The table below lists the specific thermal capabilities of a number of materials. This specific heat or specific thermal capacity is the number of joules of energy that is needed to raise the temperature of 1 kg of this substance by 1° Celsius.

|  |  |
| --- | --- |
| **Substance** | **Specific thermal capacity (J/kg/°C)** |
| water | 4180 |
| oil | 2800 |
| glass | 840 |
| copper | 385 |

If each material listed in the table was heated with 100 kJ of energy, the material that would be the hottest after heating is:

A water

B oil

C glass

D copper

**14** What does the prefix mega mean?

A one hundred

B one thousand

C one thousandth

D one million

**15** Which of the following is an example of energy efficiency (as opposed to reducing consumption)

A Only having the TV or the ipad on, not both

B Having insulation installed in a house

C Turning the lights off when leaving a room

D All of the above

**16** Energy can not be created or destroyed. This is known as

A Energy Efficiency

B Newtons Law

C The Law of conservation of energy

D A force of nature

**17** Which of the following factors affect the amount of kinetic energy possessed by an object?

A Mass and speed.

B Volume and height.

C Temperature and volume.

D Height and speed.

**18** How many Joules in a kilojoule?

A 10

B 100

C 1000

D 10000

**19** Whenever an object is shifted or changes shape, work has been done. Select the situation below in which work has been done on an object:

A a cat sits on a rug

B Ben lifts his dog’s food dish

C sunlight shines on a parked car

D music plays from a radio

[](http://www.google.com.au/imgres?hl=en&biw=1920&bih=931&tbm=isch&tbnid=rELzCzmWGMl_FM:&imgrefurl=http://www.outdoorandcountry.co.uk/Thermos-Flask-e28093-Stainless-King-Travel-Mug-Hammertone-450ml.html&docid=jT__EPlCarbg2M&imgurl=http://www.outdoorandcountry.co.uk/userimages/productstyles/product_large/0078490000000.jpg&w=1000&h=1200&ei=2b5CUf_sMdDYkQW5kYDIDA&zoom=1&sa=X&ved=0CMICEIQcMEk&ved=1t:3588,r:73,s:0,i:322&iact=rc&dur=1501&page=2&tbnh=178&tbnw=142&start=40&ndsp=50&tx=76&ty=124)**20** An effective insulator traps heat. The effectiveness of three brands of thermos are shown below. An equal volume of water at 80°C was poured into each thermos. The temperature of the water was tested every 10 minutes. These temperatures in each thermos are shown in the table below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time (mins) | Silvertop thermos | Geyser thermos | Thermocool thermos | Radiant thermos |
| 0 | 80 | 80 | 80 | 80 |
| 10 | 72 | 80 | 68 | 79 |
| 20 | 65 | 77 | 55 | 78 |
| 30 | 57 | 76 | 48 | 77 |
| 40 | 54 | 76 | 41 | 76 |
| 50 | 52 | 75 | 36 | 73 |
| 60 | 49 | 75 | 34 | 66 |

The most effective insulator is the:

A Silvertop thermos

B Geyser thermos

C Thermocool thermos

D Radiant thermos

**Short Answer**

**1** A red Honda travels at 20 km/h around a curved road near the top of a mountain. A blue Honda travels at 50 km/h along a flat road near a beach.

a State which car has the greatest kinetic energy. 1

b State which car has the greatest gravitational potential energy. 1

c Explain your answer. 2

**2** Explain the difference between an energy transfer and an energy transformation. 2

**3** James watches a television show after school.

a State the source of energy for the television. 1

b List any forms of energy that this energy is transformed into. 2

c Can a television can be 100% efficient? 1

d Explain your response. 1

**4**

This diagram shows a solar cell that is used to operate a solar fan.

Draw an energy flow diagram to show the energy changes that take place in this process. 2

**7** Consider the four situations listed below. 4

Write the corresponding letter in each box below to match the situation to its energy transformation flow diagram.

a a solar fan starts to spin

b Abdul dives into a pool

c newspaper burns in a fire

d a battery operated mouse rolls along the floor

gravitational potential energy 🡪 kinetic energy + sound energy + heat energy

light energy🡪 kinetic energy + sound energy + heat energy

chemical energy 🡪 light energy + sound energy + heat energy

chemical energy🡪 kinetic energy + sound energy + heat energy

**8** Some students investigated the effect of colour on the ability of a container to radiate heat. They painted two identical steel cans blue and yellow. Each was filled with 50 mL of hot water at 80°C and the temperature was recorded every minute. The results are below.

|  |  |  |
| --- | --- | --- |
| **TIME (mins)** | **TEMPERATURE (°C)** | |
| **BLUE** | **YELLOW** |
| 0 | 80 | 80 |
| 1 | 76 | 78 |
| 2 | 71 | 73 |
| 3 | 67 | 69 |
| 4 | 62 | 67 |
| 5 | 58 | 63 |
| 6 | 54 | 59 |
| 7 | 49 | 56 |
| 8 | 44 | 51 |

a What is the variable being ***changed*** (independent variable)? 1

b What is the variable being ***measured*** (dependent variable)? 1

c Give two variables that are controlled and kept the same. 2

d Graph the results on the grid below using a ***legend and different colours***. 5

e What conclusion would you make based on these results and graphs? 1

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Solutions /47

**Year 8 Physics**

**End of Topic Test**

**Multiple Choice Answer Sheet**

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| --- | --- | --- | --- | --- |
|  |  |  |  |  |
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| **3.** | **A** | **B** | **C** | **D** |
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**Short Answer**

**1** A red Honda travels at 20 km/h around a curved road near the top of a mountain. A blue Honda travels at 50 km/h along a flat road near a beach.

a State which car has the greatest kinetic energy. 1

Blue

b State which car has the greatest gravitational potential energy. 1

Red

c Explain your answer. 2

It is at the top of a hill, so has stored energy

**2** Explain the difference between an energy transfer and an energy transformation. 2

Energy transfer from one object/medium to another

Energy transformation changes from one form to another

**3** James watches a television show after school.

a State the source of energy for the television. 1

Electrical

b List any forms of energy that this energy is transformed into. 2

Heat, Light Sound

c Can a television can be 100% efficient? 1

No

d Explain your response. 1

Energy always lost as heat during energy transformation

**4**

Light/solar -> electrical (optional) -> Kinetic + Sound + Heat

**7** Consider the four situations listed below. 4

Write the corresponding letter in each box below to match the situation to its energy transformation flow diagram.

a a solar fan starts to spin

b Abdul dives into a pool

c newspaper burns in a fire

d a battery operated mouse rolls along the floor

B gravitational potential energy 🡪 kinetic energy + sound energy + heat energy

A light energy🡪 kinetic energy + sound energy + heat energy

C chemical energy 🡪 light energy + sound energy + heat energy

D chemical energy🡪 kinetic energy + sound energy + heat energy

a What is the variable being ***changed*** (independent variable)? 1

Colour of Can

b What is the variable being ***measured*** (dependent variable)? 1

Temp Change oC

c Give two variables that are controlled and kept the same. 2

Volume of Water

Time

d Graph the results on the grid below using a ***legend and different colours***. 5

-1 each for no

Title

Lables

Units

Key/Legend

Ruler

Neat

Pencil

e What conclusion would you make based on these results and graphs? 1

Blue radiates more heat