Term test

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One word items

1. A type of energy source of which the energy can be replenished.

Renewable

2 The type of energy that an object has due to its motion.

Kinetic

3. The type of heat transfer between two objects that are in contact with each other.

Conduction

4. A material that prevents conduction of heat.

Insulator

5. The description of a system that is measured by the comparison between the energy input and the energy output.

Efficiency

Multiple-choice questions

Four possible answers are given for the following questions. Each question has only ONE correct answer. Choose the correct answer and mark the applicable LETTER with a cross (X).

1. Crude oil is an example of:
   A. nuclear fuel.
   B. biofuel.
   C. fossil fuel.
   D. renewable fuel.

2. An example of a renewable energy source is:
   A. sun
   B. coal
   C. natural gas
   D. uranium

3. An example of a non-renewable energy source is:
   A. sun
   B. natural gas
   C. wind
   D. water

4. Which one of the following situations represents an object with potential energy?
   A. A rolling ball
   B. A wagon being pulled.
   C. A child at the top of a slide
   D. A suitcase on the floor

5. Which one of the following represents an object with kinetic energy?
   A. Book on the edge of a table
   B. A ball held in the air.
   C. Breakfast cereal
   D. A moving car

6. When a hot oven's door is left open accidentally the rest of the room becomes warm because of:
   A. conduction
   B. convection
   C. radiation
   D. diversion

7. Which one of the following substances is a good conductor of heat?
   A. Wood
   B. Plastic
   C. Cork
   D. Copper

8. Which one of the following is a good insulator?
   A. Wool
   B. Silver
   C. Copper
   D. Steel

9. Which one of the following objects will become hottest when left in the sun for an hour?
   A. Mirror
   B. Black cast iron pot
   C. White paper
   D. Yellow woolen cloth

10. What type of heat transfer takes place in a room with a heater.
    A. Conduction
    B. Convection
    C. Diversion
    D. Insulation

True or false

Study the statements below and answer this question on the table. Make a cross in the block that represents the correct answer.

1.	TRUE	**FALSE**
2.	**TRUE**	FALSE
3.	**TRUE**	FALSE

1. Nuclear fuel is a renewable energy source.
2. An advantage of coal is that it is cheap and mining it provides jobs.
3. Natural gas is found in the sea at Mossel Bay.

Match column B to column A

Each time, choose the term in column B that fits best to the description in column A and then write the correct LETTER in the answer column.

Answer	Column A	Column B
C	Energy that animals transfer in the food chain.	A. Heating system
D	An LED light glows in a circuit.	B. Mechanical system
B	A crane lifts up bricks.	C. Biological system
A	A geyser is used to provide hot water.	D. Electrical system
E	A spring jumps back.	E. Kinetic energy
		F. Potential energy

Contextual questions

1 A man wants to play golf and packs all his golf clubs in a bag.

1.1 What type of energy does he use to pull the bag?

Chemical

1.2 Where does he get this energy from?

The food that he ate.

1.3 What type of energy does he transfer to the bag?

Kinetic

1.4 Give the law of conservation of energy.

Energy cannot be created or destroyed, only converted from one kind to another.

1.5 In which way is heat transferred to the golf clubs when the sun shines on them?

Radiation

1.6 Why are the handles of the golf clubs covered with another material, e.g. plastic, rubber?

The iron clubs are good conductors of heat and will become very hot, the material is a good insulator preventing his hands from burning. They also provide a comfortable grip and friction so that the golf player's swing is effective.

1.7 Look at the two pictures below.

A.

B.

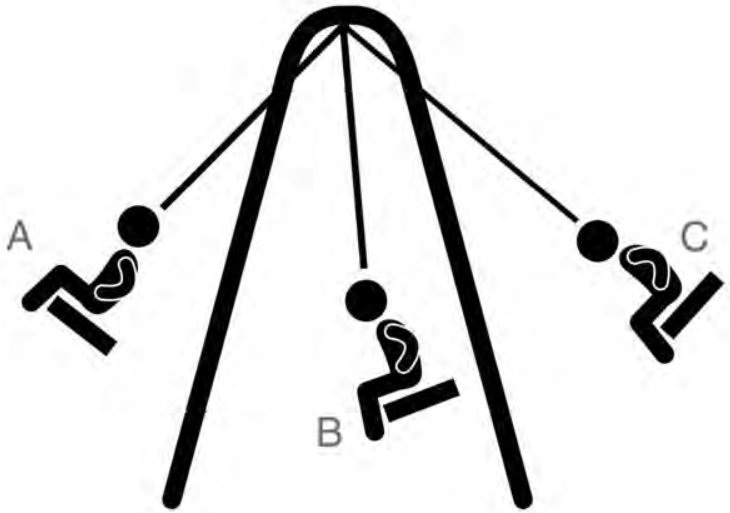
1.7.1 In which picture would the girl be able to hit the ball harder?

Picture A

1.7.2 Explain your answer to Question 1.7.1.

The higher the club is lifted, the more potential energy it has. When this is converted into kinetic energy when the club is swung, more kinetic energy is transferred to the ball.

2 A child swings in the playpark.



2.1 What type of energy does the child have at the highest point A?
Potential energy

2.2 What type of energy does the child have at the lowest point B?
Kinetic and potential

2.3 What type of energy does the child have at point C?
Potential energy

2.4 At which point will the child swing fastest?
B

2.5 At which points will the child be stationary?
A and C

2.6 Why would the child swing increasingly lower if he simply sat still on the swing?
Air friction and the friction between the chain and the bar at the top waste energy

3 In the kitchen many energy changes take place.



Use the pictures to help with the following questions.

3.1 Give one example of potential energy.
The cereal can provide energy to the people eating it.

3.2 Give three examples of where energy could be wasted.
Oven door not closing properly
Smaller pots on large stove plates
Geyser not insulated properly
Fridge door not closing properly

3.3 Give two examples of insulation used in the kitchen to prevent loss of heat.
Insulation around the geyser
Insulating the room with curtains in front of the windows and insulating material in the ceiling.

3.4 Why is it important for a fridge door to close securely?
Heat will move from outside the fridge to the inside of the fridge by convection.
This causes the motor of the fridge to work harder to try and keep the air inside the fridge cold.

3.5 What type of heat transfer takes place in a kettle?
Convection and conduction

3.6 What type of heat transfer takes place in the oven?
Convection and radiation

4 A farmer uses large amounts of energy on his farm.



Use the pictures to help you answer the following questions.

4.1 What type of energy source is the diesel that the farmer uses for his tractor?

Non-renewable

4.2 Give two examples of renewable energy sources that the farmer could use for electricity on his farm.

Wind turbine, biofuel, solar panels

4.3 Name two advantages of the use of renewable energy sources.

Less pollution, the source does not get depleted.

4.4 Give one disadvantage of the use of maize as biofuel.

There might be not enough maize for food, it causes air pollution when burned.

4.5 What energy advantage is there in placing a water tank high up on a platform? Explain fully.
The water on top has more potential energy, when it flows from the tank it has more kinetic energy and will flow faster.

4.6 What energy conversion takes place when water is drained from the tank?
Potential energy to kinetic energy

5 Petrol and diesel are used every day in various vehicles and are non-renewable energy sources.

5.1 What is a non-renewable energy source?
An energy source that cannot be replenished.

5.2 Give two disadvantages of the use of non-renewable energy sources.
Air pollution and the source becomes depleted and cannot be replenished.

5.3 What type of energy is in petrol?
Chemical potential energy

5.4 To what type of energy is the energy mentioned in Question 5.3, converted when the vehicle is driven?
To kinetic energy

5.5 Where is energy wasted or "lost" in a car?
Heat and sound because of the engine

5.6 How is the available energy usefully applied in a car?
To transport goods and people to different places.

6 Kate decides to investigate the heat transfer from the sun to three different chairs. She places three garden chairs in the sun for a while. She uses a white plastic chair, a black plastic chair and a steel chair.
After two hours in the sun, Kate determines which chair is the hottest.

6.1 Give an investigative question for this experiment.
How does the type of material of which a garden chair is made influence the temperature of the chair when placed in the sun for a certain amount of time?

6.2 Give a hypothesis for this experiment.
The chair made of steel will be the hottest

6.3 What is the independent variable in this experiment?
The type of chairs

6.4 What is the dependent variable in this experiment?
The temperature of the chairs

6.5 Which factors are kept constant during this experiment?
The time in the sun and the same place in the sun

6.6 Which chair will be the hottest after two hours in the sun?
The steel chair

6.7 Explain why.
Steel is a good conductor of heat and absorbs the heat from the sun and conducts it to the rest of the chair.

6.8 Complete the following conclusion:

The white chair (6.8.1) **reflects** the heat and does not become very hot.

The black chair is (6.8.2) **warmer** than the white chair because it (6.8.3) **absorbs** heat.

The steel chair is a good (6.8.4) **conductor** of heat and becomes (6.8.5) **hottest**.