50

Name Marking key

Year 8 Science

Task 10: Physics 1 Test

SECTION 1: MULTIPLE CHOICE (1 mark each)
Circle your answer on the multiple choice answer sheet.

1. Which is the best definition of energy?

   a) A measure of the ability to do work.
   b) A measure of the motion of an object.
   c) A measure of the temperature of something.
   d) A measure of the amount of matter in an object.

2. An object that is sitting still on the top of a hill has

   a) a lot of potential energy and not much kinetic energy.
   b) a lot of kinetic energy and not much potential energy.
   c) a lot of kinetic and potential energy.
   d) not much kinetic or potential energy.

3. Energy is measured in

   a) metres (m)
   b) Newtons (N)
   c) Joules (J)
   d) Watts (W)

4. Which of these is not a type of energy?

   a) elastic
   b) light
   c) heat
   d) pushing

5. Which type of energy is contained in food?

   a) mechanical
   b) chemical
   c) solar
   d) nuclear

aacdb
caacdd
ddcbb
aadd

6. Which of these is not a sustainable or renewable energy source?

a) solar panels
b) wind turbines
c) diesel generator
d) wave generator

7. The original source of all energy on Earth is

a) the sun.
b) plants.
c) fossil fuels.
d) food.

8. A hair dryer works by which of the following energy transfers and transformations?

a) Electrical energy is converted to heat energy and kinetic energy.
b) Heat energy is converted to electrical energy and kinetic energy.
c) Kinetic energy is converted to heat energy and electrical energy.
d) Heat energy and kinetic energy are converted to electrical energy.

9. In a light bulb, the useful energy output is

a) sound.
b) heat.
c) light.
d) electric.

10. Which of the following best describes the energy transformation within a microphone?

a) Kinetic energy is converted to sound energy.
b) Kinetic energy is converted to potential energy.
c) Electrical energy is converted to kinetic energy.
d) Kinetic energy is converted to electrical energy.

11. Plants transform light energy from the sun into stored chemical energy by the process of

a) Respiration
b) Solar Cells
c) Growth
d) Photosynthesis

12. As compared to air, sound travels fastest in

a) Liquids
b) gases
c) vacuum
d) solid

13. Which of these is not a method of heat transfer?

a) convection
b) conduction
c) radiation
d) insulation

14. Which of the following is the most effective heat insulator?

a) metal
b) wood
c) air
d) a vacuum

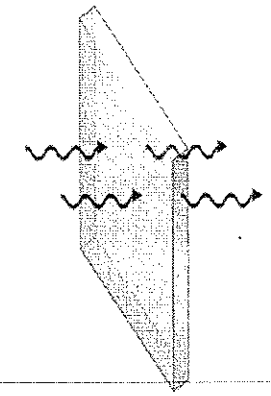
15. A material which easily allows heat to move through it is called

a) an insulator.
b) a conductor.
c) a resistor.
d) a circuit.

16. The type of energy that is found in moving objects is called

a) potential.
b) kinetic.
c) gravimetric.
d) kinaesthetic.

17. When heat radiation hits a transparent surface such as glass, it may travel straight through, as shown in the diagram below.



This is called
a) transmission
b) reflection
c) absorption
d) refraction

18. Which type of surface tends to be a good heat absorber?

a) dull and dark
b) shiny and light
c) sparkly and colourful
d) transparent

19. Most of the heat energy lost from a house in winter is lost through the

a) floor.
b) roof.
c) windows.
d) doors.

20. At a party drinks are often put into ice to keep them cool. The drinks are kept cool because of

a) insulation.
b) radiation.
c) evaporation.
d) Conduction

SECTION 2: WRITTEN

Write your answers in the spaces on the answer sheet provided.

1. Classify each of these energy types as energy in **action** or **potential.** (5)

a) Chemical — Potential ✓

b) Elastic — Potential ✓

c) Gravitational — Potential ✓

d) Heat — Kinetic / Action ✓

e) Sound — Kinetic / Action ✓

KE	PE
Electric	Chemical
Motion	Nuclear
Sound	Gravitational
Thermal	stored-mechanical
Radiant	

2. Using the types of energy from question 1 complete the correct types of energy below (9)

Appliance	Input Energy	Source	Output Energy	Receiver
electric toaster	Electric (a) ✓	power point	(b) Heat ✓	(c) bread ✓
solar hot water system	light (d) ✓	(e) Sun ✓	heat	(f) water ✓
petrol engine	chemical	petrol ✓ (g) fossil fuel	(h) Heat ✓	piston/engine (i) ✓

3. State one problem that is associated with using fossil fuels. ~~(1)~~ (2)

Pollution. ✓ Non-renewable. ✓

$$\%\ \text{Energy Efficiency} = \frac{\text{Output (J)}}{\text{Input (J)}} \times 100$$

4. A hot water system is 65% efficient. If it is supplied with 1000 Joules of energy, how much heat energy will it produce? Show all working out. (2)

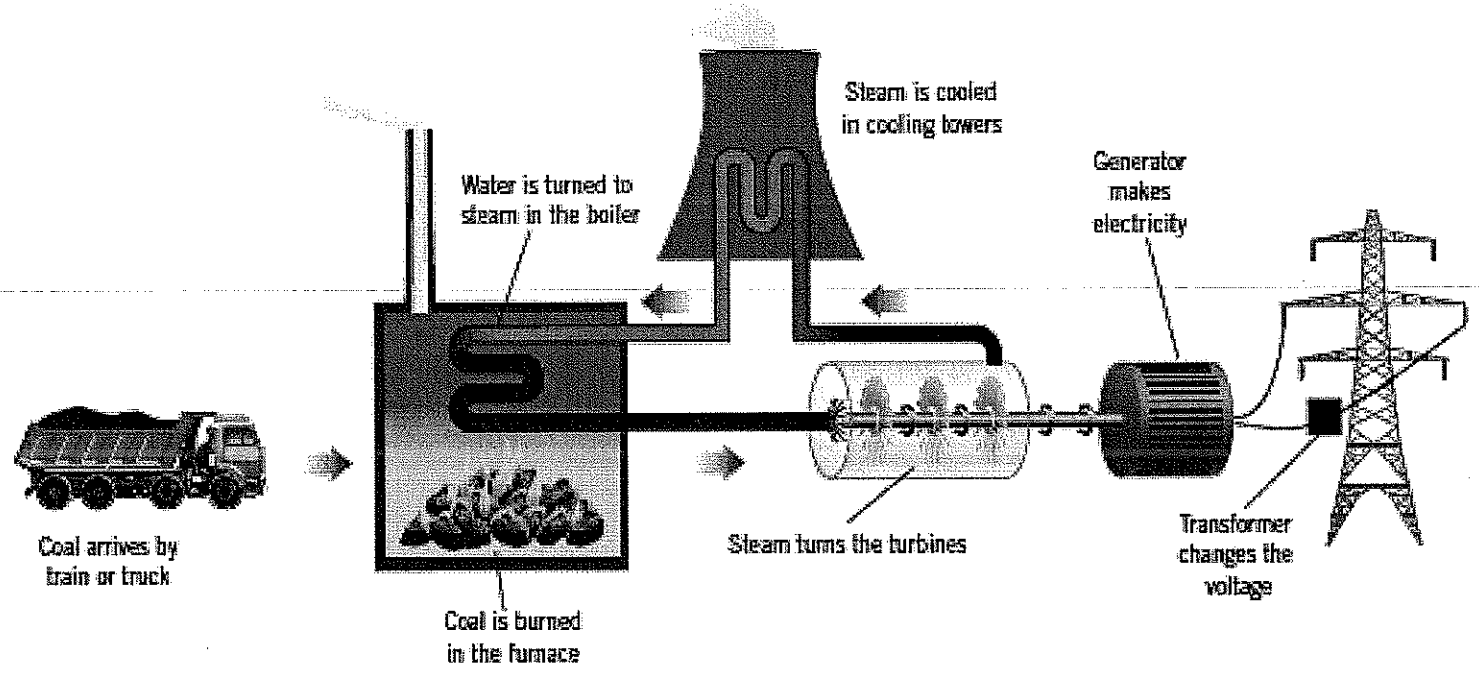
$$\frac{65\%}{(} = \frac{\text{Output}}{1000\text{J}}$$

$$\text{Output (J)} = \frac{65}{100} \times 1000 = 650\text{J}$$

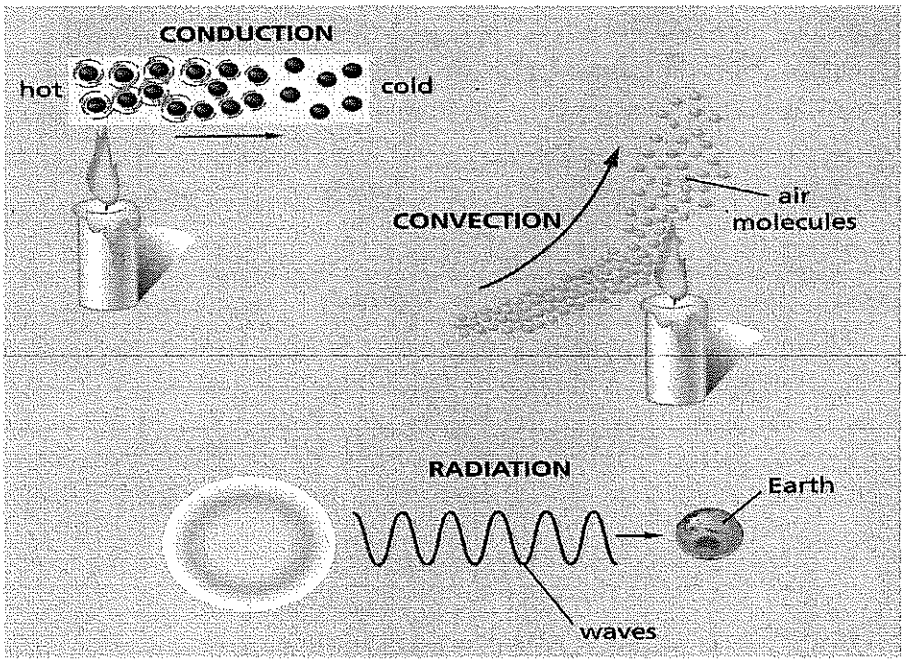
5. Draw an energy flow diagram to represent the coal fired power station shown in the diagram below (4)

CHEMI cal Energy (COAL) → HEAT (furnace) → KINETIC (turbine) → Electric (generator)

A coal-fired power station



6. The diagram below shows conduction, convection and radiation. Use these diagrams to explain how heat travels by each method.(3) Answer on the next page



Method of Energy Transfer	Explanation of how heat travels this way.
Conduction	Heat energy is transmitted through collisions (vibration) between neighbouring atoms or molecules. ✓
Convection	Occurs when particles with a lot of heat energy in a liquid or gas move and take the place of particles with less heat energy. Heat energy is transferred from hot places to cooler places by convection. Liquids and gases expand when they are heated. ✓
Radiation	Happens when heat moves as energy waves, called infrared waves, directly from its source to something else ✓

These methods of heat transfer travel through solids, liquids and gases.
Label the following as a **good** or **poor** conductor of heat. (6 marks)

State	Solid	Liquid	Gas
Conduction	Very good ✓	Good	Not happening ✓
Convection	Not happening ✓	Good	Good ✓
Radiation	Not happening ✓	Poor	Poor ✓ (best in vacuum)

END OF TEST (OUT OF 50 MARKS)