Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Q1.

Figure 6 shows a spinning flywheel.

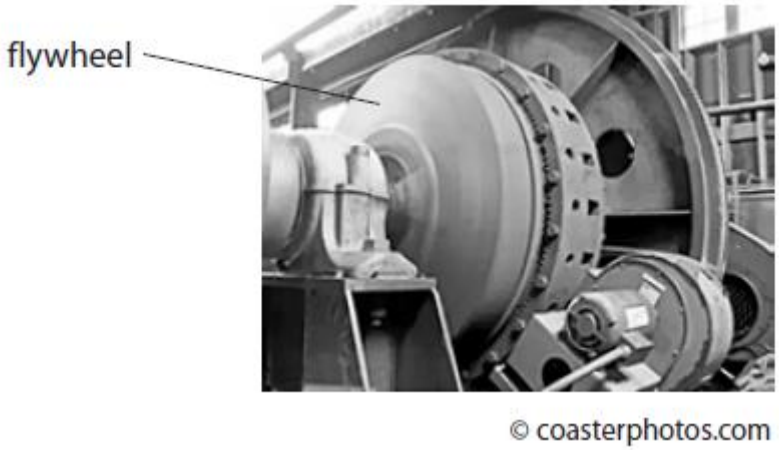

Figure 6

(i) State how energy is stored in a spinning flywheel.

(1)

.....

(ii) State **one** way to increase the amount of energy stored in the flywheel.

(1)

.....

(Total for question = 2 marks)

Q2.

The photographs show two ways of supplying thermal energy.

Use words from the box to complete the sentence under each photograph.

chemical	electrical	kinetic	light	sound

(i) The photograph shows a kettle.

The kettle transfers ..... energy to thermal energy.

(1)

(ii) The photograph shows a barbecue.

The barbecue transfers ..... energy to thermal energy.

(1)

Q3.

This photograph shows a fan.

The blades of the fan are turned by an electric motor.

In one second, the motor gets 200 J of electrical energy from the mains supply.
Only 180 J of this energy is used to turn the blades of the fan.

The rest of the energy is wasted.

(i) Calculate how much of the 200 J of energy is wasted.

(1)

wasted energy = ... J

(ii) State what happens to the wasted energy.

(1)

.....

.....

(iii) Calculate the efficiency of the motor.

(2)

efficiency = ...

Q4.

In the UK, electricity is generated using non-renewable and renewable energy resources.

The graph in Figure 18 shows how the amount of electricity generated by these resources changed from 2012 to 2020.

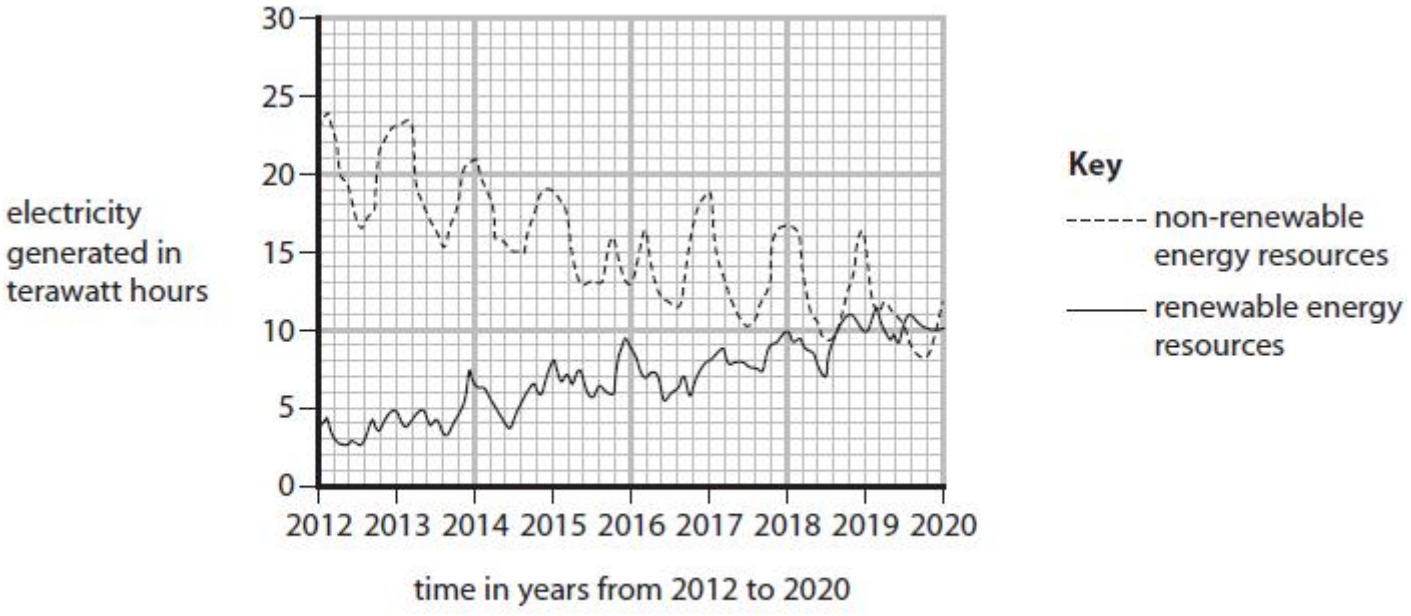

Figure 18

Explain how and why the amount of electricity generated by renewable and nonrenewable energy resources has changed from 2012 to 2020.

Your answer should include

- the trends shown in Figure 18
- the change in the amount of electricity generated by at least one renewable resource
- the change in the amount of electricity generated by at least one non-renewable resource.

(6)

.....

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(Total for question = 6 marks)

Q5.

A student lifts a toy car from a bench and places the toy car at the top of a slope as shown in Figure 16.

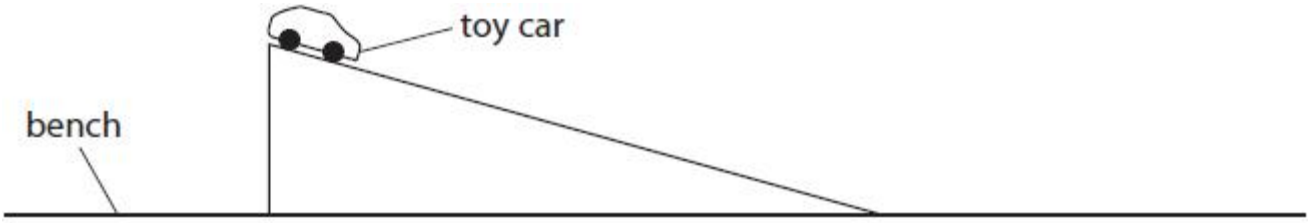

Figure 16

Explain **one** way the student could reduce the amount of thermal energy transferred to the surroundings as the toy car rolls down the slope.

(2)

.....

.....

.....

.....

(Total for question = 2 marks)

Q6.

Figure 2 shows a solar farm.

(Source: © Science Photo Library)

Figure 2

The solar panels use energy from the Sun to generate electricity.

Electricity generated in this way is sometimes called 'free' electricity.

(i) Give **one** reason why this might be called 'free' electricity.

(1)

.....

.....

(ii) Give **one** reason why this electricity is **not** 'free'.

(1)

.....

.....

(iii) In one second, 1000 J of energy from the Sun reaches 1 m^2 of the surface of a solar panel.

In one second, the amount of energy from the Sun reaching the whole surface of a solar panel is 2800 J.
Calculate the area of this solar panel.

(2)

area = ... m^2

(Total for question = 4 marks)