Name of the Student:_____
Max. Marks : 21 Marks **Time : 21 Minutes**

Q1.

Expanded polystyrene, used to insulate buildings, has different densities.

Figure 10 shows how the thermal conductivity of expanded polystyrene changes with the density of expanded polystyrene.

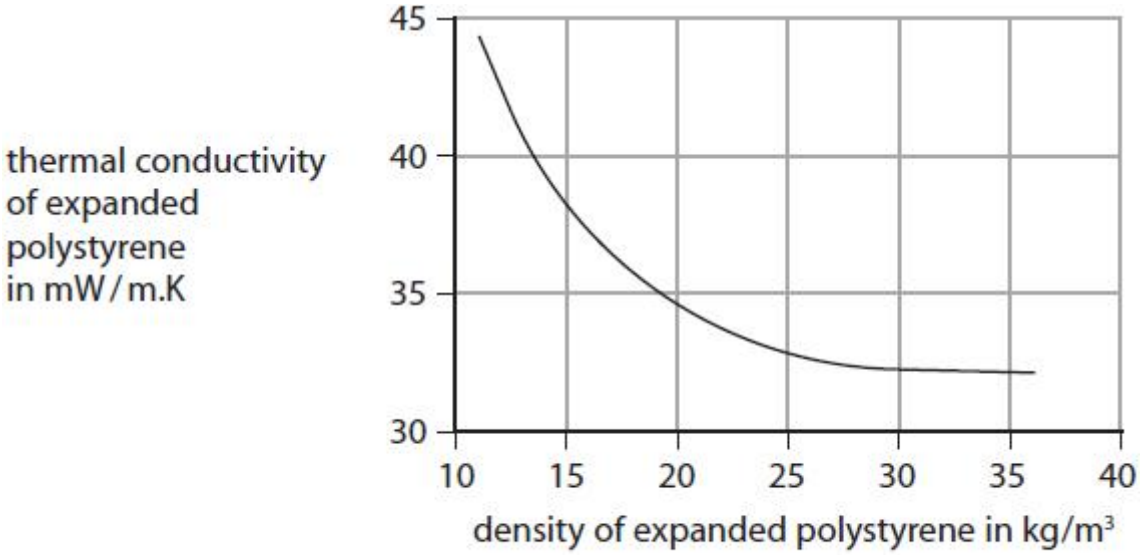

Figure 10

Using the graph in Figure 10, describe how the thermal conductivity of expanded polystyrene changes with the density of expanded polystyrene.

(2)

.....

.....

.....

.....

(Total for question = 2 marks)

Q2.

A house has a boiler to provide hot water.

One type of boiler burns natural gas.

Natural gas is a non-renewable source of energy.

* A company has developed a new material which they think could be used instead of foam around the cylinder.

Devise an investigation they could carry out to make a fair comparison of the insulating properties of their new material with those of the foam.

(6)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(Total for question = 6 marks)

Q3.

Some students investigate the efficiency of electric motors.
One of the students states that all of the energy supplied to a motor is transferred into other forms.
Complete the following sentence by putting a cross (☒) in the box next to your answer.
This statement is one example of the idea of

(1)

☒ **A** renewable energy

☒ **B** conservation of energy

☒ **C** non-renewable energy

☒ **D** sustainable energy

Q4.

A student uses the apparatus in Figure 9 to find out which of two materials, sand or sawdust, is the better insulator.

Figure 9

The student also has a kettle to boil water, a thermometer and a stop clock.

(i) Draw a labelled diagram to show how the student should set up the equipment to investigate which material is the better insulator.

(3)

(ii) Give **three** factors that the student must control in this investigation.

(3)

1 .....

.....

2 .....

.....

3 .....

.....

(Total for question = 6 marks)

Q5.

* A student stands on the ground with an egg in his hand.
He throws the egg vertically upwards.
The egg rises to a height of 10 m.
Then the egg falls and lands on the ground.

Describe the energy changes of the egg during this sequence of events.

(6)

.....

.....

.....

.....

.....

.....

.....

.....