



**Subject:** Grade 7 Natural Sciences  
**Topic:** Heat transfer, insulation and energy saving  
**Total:** 43 Marks

**Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**This image refers to question: 1**



**Question 1: True/False**

2 marks

Covering water pipes with an insulating material will prevent hot water in a metal water pipe from losing heat quickly.

**TRUE**

**FALSE**

**Question 2: Please Fill In The Blanks**

8 marks

When air heats up it expands because the particles move (1) each other. The hot air moves (2) and then starts to cool down. The particles then begin to move (3) to each other and the cool air moves (4) . This results in a convection current.

Possible Answers: closer to | further away from | upwards | downwards | around | upwards and downwards | in circles | with more energy to

**1**

**3**

**2**

**4**

**Question 3: Text Input**

3 marks

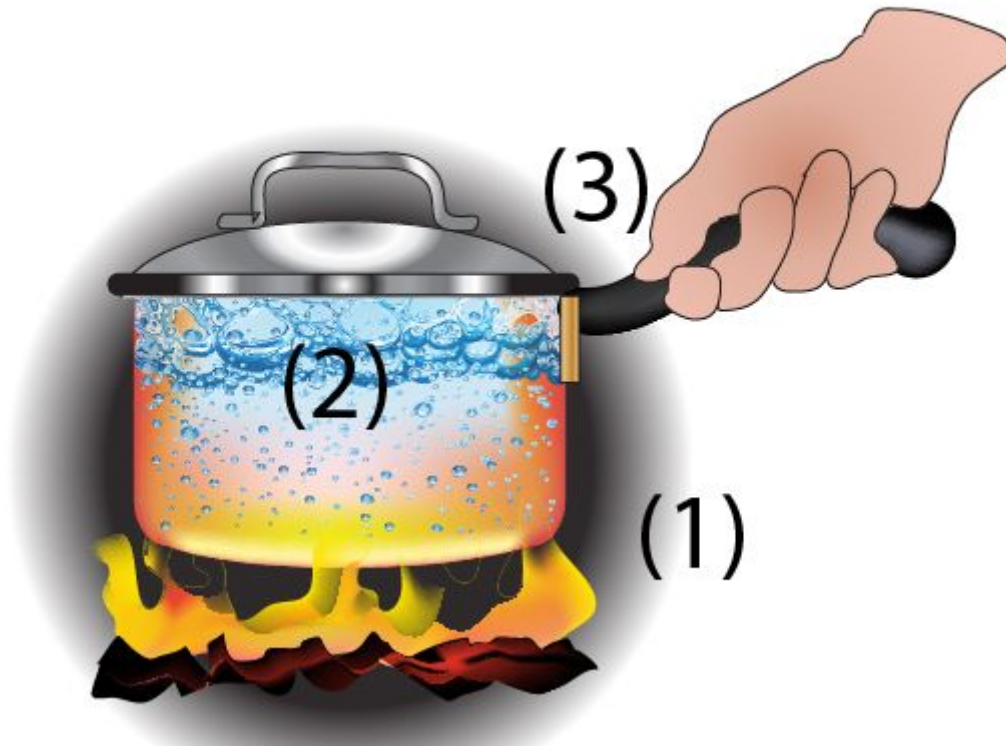
Materials that prevent or slow down heat transfer are called thermal ... .

**Question 4: Text Input**

3 marks

... is the transfer of heat between solid objects that are in direct physical contact with each other.

**This image refers to question: 5**



**Question 5: Please Fill In The Blanks**

6 marks

The attached graphic shows a pot of water that is heated over a fire.

Three examples of heat transfer are shown. Identify the correct labels:

(1) (1) .

(2) (2) .

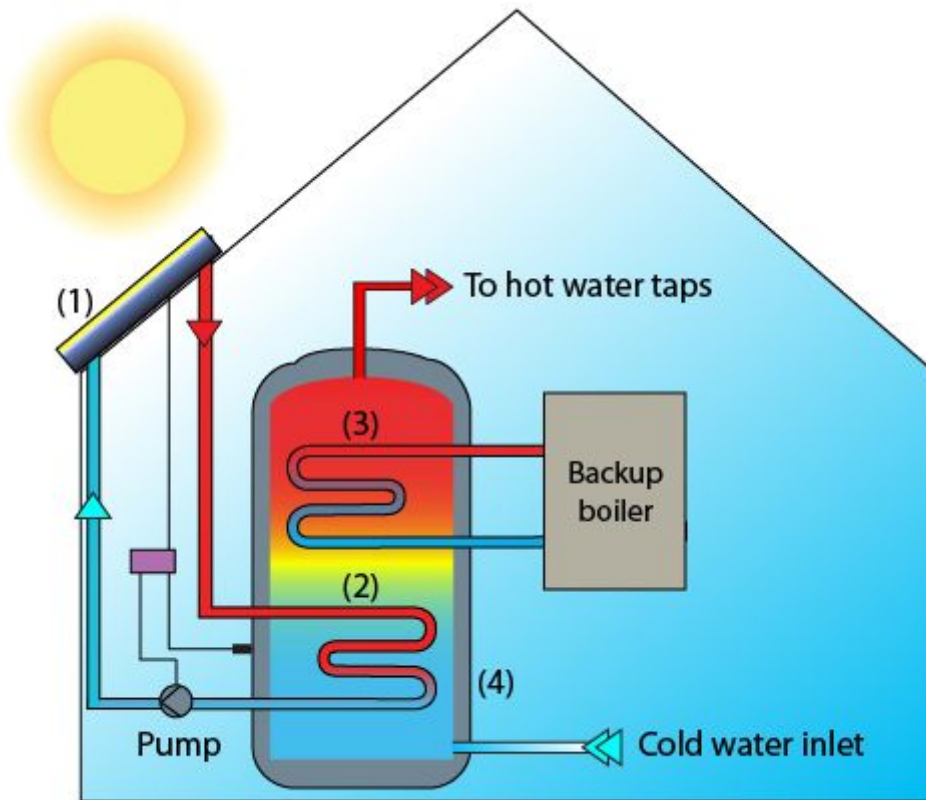
(3) (3) .

Possible Answers: conversion | insulation | convection | transformation | conduction | radiation

<b>1</b>	
<b>3</b>	

<b>2</b>	
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**This image refers to question: 6**



**Question 6: Please Fill In The Blanks**

8 marks

The attached graphic shows the basic design of a solar water heating system.

Choose the correct labels to explain how the system works:

- (1) (1) .
- (2) (2) .
- (3) (3) .
- (4) (4) .

Possible Answers: Hot water moves into tank through conduction | Insulation prevents heat transfer from storage tank | Heat exchange by transferring heat energy to stored water | Convection currents move hot water towards outlet | Solar collector receives radiation | Convection moves cold water to roof | Radiation from storage tank heats house | Backup boiler heats top layer of water through radiation | Light-sensitive cells convert electrical energy to radiation

<b>1</b>	
<b>3</b>	

<b>2</b>	
<b>4</b>	

**This image refers to question: 7**



**Question 7: Multiple Choice**

4 marks

The graphic shows a cup of hot tea on a table.

Which one of the following is NOT true?

- |          |  |
|----------|--|
| <b>A</b> | The tea cools down because heat energy is transferred from the tea to the surrounding air.                 |
| <b>B</b> | The tea cools down because the colder surrounding air is transferred to the tea.                           |
| <b>C</b> | Heat energy will be transferred until the tea and the surrounding air have the same temperature.           |
| <b>D</b> | Heat energy is transferred from the tea because the tea has a higher temperature than the surrounding air. |
-

**This image refers to question: 8**



**Question 8: Multiple Choice**

4 marks

Traditional homes in South Africa are built in such a way that heat transfer is as low as possible.

Which one of the following is NOT true of traditional homes, which make use of natural insulators.

- |          |  |
|----------|--|
| <b>A</b> | Floors are made of cement.   |
| <b>B</b> | The roofs are made of grass.   |
| <b>C</b> | Walls are made of grass or mud smeared onto a framework.                           |
| <b>D</b> | Traditional homes in South Africa generally have only one entrance and no windows. |
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**This image refers to question: 9**



**Question 9: True/False**

2 marks

A thermos flask can be used to prevent cold cooldrink from heating up.

**TRUE**

**FALSE**

**Question 10: Text Input**

3 marks

You are standing in a room with one foot on a carpet and one foot on the tiles.

Which of these two is a good insulator?

Answer with one of the underlined words.

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**Total: 43 Marks**