TOM NEWBY SCHOOL – TERM 4 TEST

Subject	**Natural Sciences**	**Examiner**	**Miss Coppenhagen**
Date	**2021**	**Total marks**	**80**
Grade	**7**	**Duration**	**90 min**
		Moderator	**Mrs Fourie**

Special instructions/ Equipment	**1. Answer all the questions on the answer sheet provided.** **2. Read and answer ALL questions thoroughly.** **3. Write neatly and legibly in blue pen.** **4. Use a pencil for any drawings.** **5. Good luck! Think before you INK!**

This assessment has been compiled using notes and information contained in the Tom Newby School resource material. The marking memorandum has been compiled accordingly. While alternative responses will be given due acknowledgement, the official memorandum will be considered a priority document to ensure uniformity of marking.

NAME:	SURNAME:	CLASS:

SECTION A: SHORT QUESTIONS [10]

QUESTION 1 **[5]**

Multiple choice. Read each statement or question carefully and choose the correct answer from the options provided, circle the corresponding letter.

1.1 Why is the heating coil placed at the bottom of an electric kettle? (1)

a) To save space.
b) Conduction occurs in metals.
c) Because of the chemical potential energy.
d) Hot water rises.

1.2 Why does the air conditioner unit that blows cold air into a room have to be placed close to the ceiling? (1)

a) To allow for a convection current to form.
b) Hot air is trapped against the ceiling.
c) Cold air sinks.
d) Air that is less dense sinks.

1.3 Why do shiny teapots keep tea warmer for longer than black teapots? (1)

a) They radiate heat inwards and outwards.
b) They reflect heat back into the tea.
c) They attract air which is a good insulator.
d) They absorb heat far more efficiently than black tea pots.

1.4 The tilt of Earth's axis means that we have… (1)

a) day and night.
b) a year that is 365 days.
c) seasons.
d) A day that is 24 hours.

1.5 In South Africa, we have summer when… (1)

a) the southern hemisphere is tilted away from the Sun.
b) the southern hemisphere is tilted towards the Sun.
c) earth changes.
d) the northern hemisphere is titled towards the Sun.

QUESTION 2 **[5]**

Match the words in Column A with their meaning in Column B. Write only the letter representing the correct answer in the Answer Grid.

	COLUMN A		**COLUMN B**
2.1	Spring tide	A	The predictable, repeated rise and fall of sea and ocean levels.
2.2	Tides	B	The fixed path an object in space travel in as it revolves around another object.
2.3	Orbit	C	The tide when high tide is extra high and low tide is extra low.
2.4	Radiate	D	Transfer energy from a hot body through space.
2.5	Insulators	E	Substances that do not transfer heat energy easily.

2.1	_____	**2.2**	_____	**2.3**	_____	**2.4**	_____	**2.5**	_____

SECTION B:SOURCES OF ENERGY [50]

QUESTION 3 **[18]**

Read the following case study of water reservoirs and answer the questions that follows.

CASE STUDY: WATER RESERVOIRS

Water reservoirs are built to provide water for towns. They are built uphill from the houses in a town. In this way, the stored water has enough potential energy to flow when a tap in the town is opened. The height of the reservoir determines how strongly the water will flow from the taps. When the water reservoir is not much higher than the houses, the water only trickles out of the taps slowly. Water in reservoirs that are positioned lower than the houses, or water from boreholes and wells has to be pumped up to the houses. This is because the water below the level of the houses does not have enough potential energy to reach the houses.

3.1 Briefly explain the Law of Conservation of energy. (3)

_____

_____

_____

3.2 Name three types of potential energy with examples of each energy. (6)

_____

_____

_____

_____

_____

_____

_____

3.3 Explain why a water reservoir that is built on a higher level gives the water in it more potential energy. (3)

_____

_____

_____

3.4 Rainwater naturally flows downhill. Therefore, dams are built in valleys downstream. Explain how the water gets from the dam (downstream) to a town (upstream)? (2)

_____

_____

3.5 How would you explain potential energy in a waterfall? (2)

_____

3.6 Identify instances in which people in your community make use of potential energy to meet their needs? (2)

_____

_____

QUESTION 4 **[12]**

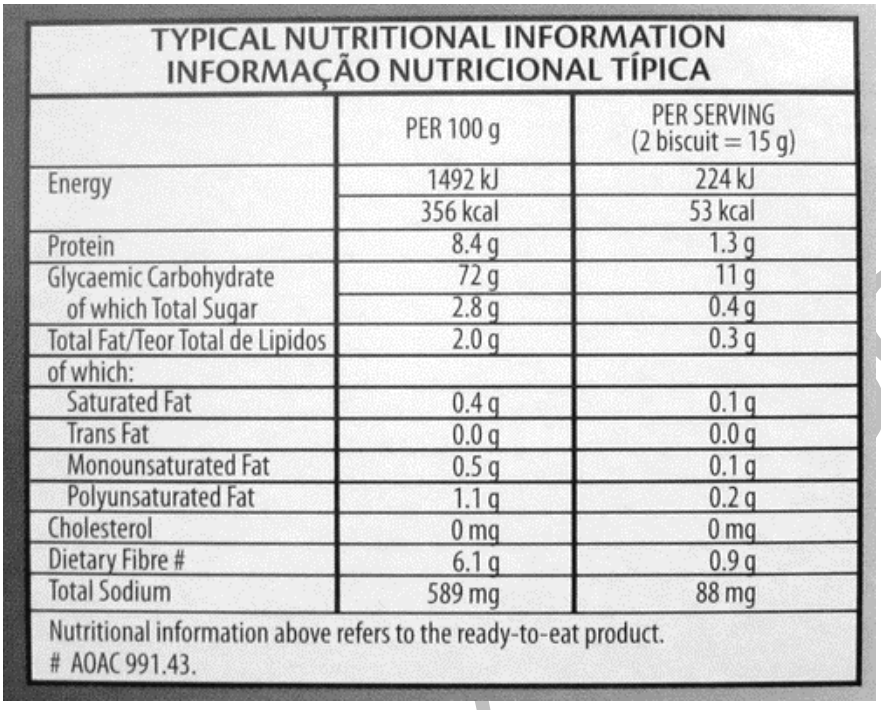
Look at the following table which gives the recommended daily amount of energy for an individual depending on your age and level of activity. This is a guideline as to how much energy you should consume in food in one day.

Gender	**Age (years)**	**Sedentary (kJ)**	**Moderately Active (kJ)**	**Active (kJ)**
Female	9 - 13 14 - 18	8 000 8 500	8 000 - 9 000 8 500 - 10 000	8 500 - 9 500 9 500 - 10 500
Male	9 - 13 14 - 18	8 500 10 000	8 500 - 10 000 10 000 - 11 500	9 500 - 11 000 11 000 - 13 000

4.1 According to the table, what is the recommended daily amount of energy for a 13-year old boy, who is not active? (1)

_____

4.2 The following photograph shows the nutritional information on a box of cracker biscuits. Study it and then answer the questions that follow.



TYPICAL NUTRITIONAL INFORMATION INFORMAÇÃO NUTRICIONAL TÍPICA		
	PER 100 g	PER SERVING (2 biscuit = 15 g)
Energy	1492 kJ	224 kJ
	356 kcal	53 kcal
Protein	8.4 g	1.3 g
Glycaemic Carbohydrate	72 g	11 g
of which Total Sugar	2.8 g	0.4 g
Total Fat/Teor Total de Lipidos	2.0 g	0.3 g
of which:		
Saturated Fat	0.4 g	0.1 g
Trans Fat	0.0 g	0.0 g
Monounsaturated Fat	0.5 g	0.1 g
Polyunsaturated Fat	1.1 g	0.2 g
Cholesterol	0 mg	0 mg
Dietary Fibre #	6.1 g	0.9 g
Total Sodium	589 mg	88 mg
Nutritional information above refers to the ready-to-eat product. # AOAC 991.43.		

4.2.1 What is the energy content per 100g in **joules**? (2)

_____

_____

4.2.2 What is the mass of **one** biscuit? (2)

_____

4.2.3 The nutritional information gives the serving size of 2 biscuits, but you want to know what the energy content will be if you only eat one biscuit. Write down the answer below. (2)

_____

4.2.4 You now decide that you want to eat 5 biscuits. What is the energy content for this serving of 5 biscuits? (2)

_____

4.2.5 What percentage of **the boy's recommended daily energy** (refer to question 4.1) is being supplied by one serving of the biscuits? Show your calculations below. (3)

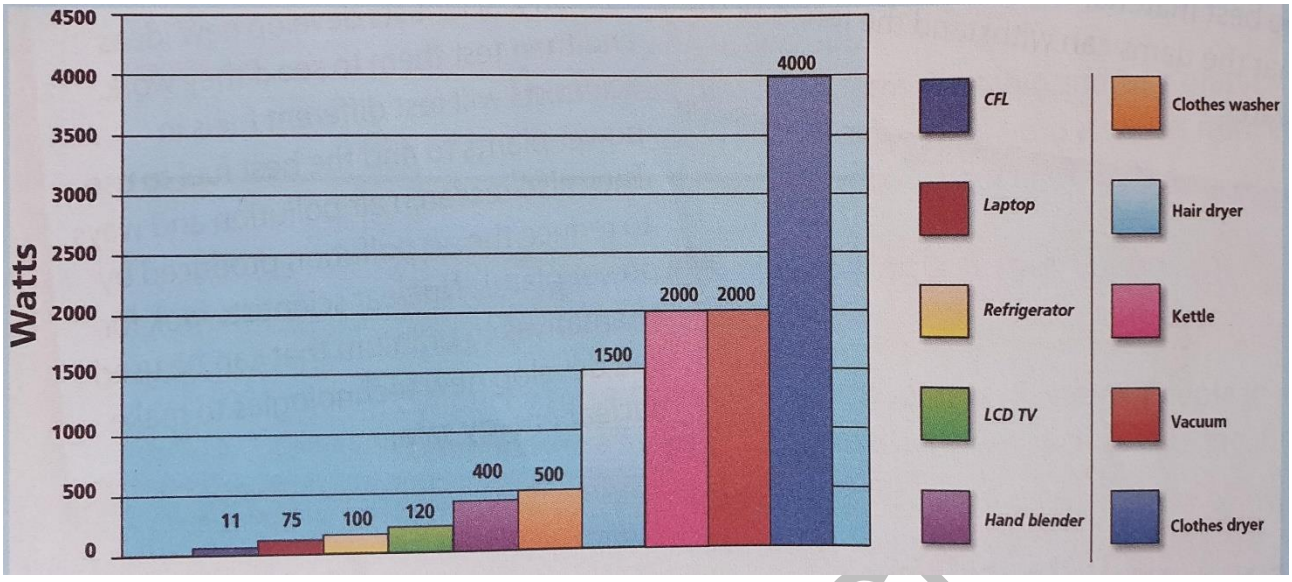
_____

_____

_____

QUESTION 5 **[20]**

Refer to the graph in the figure below and answer the questions that follow.



5.1 Which three appliances use the most electricity in the home? (3)

_____

_____

_____

5.2 What is the electrical consumption of these three appliances? (3)

_____

_____

_____

5.3 Give two suggestions how the energy usage of each of three appliances identified above can be reduced. (2)

_____

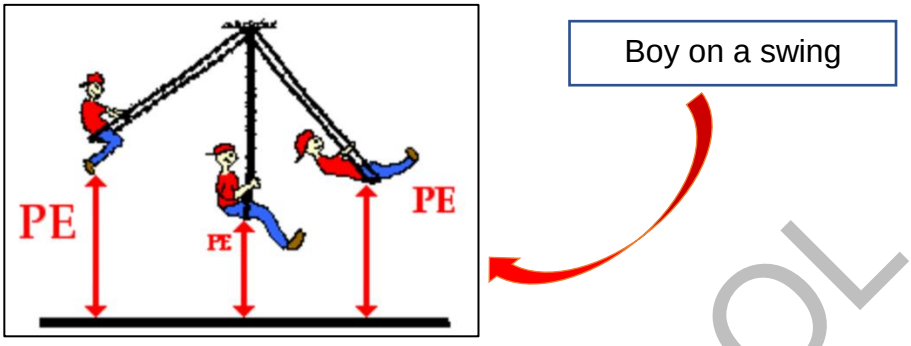
_____

5.4 Explain why all appliances are not 100% energy efficient. (2)

_____

_____

5.5 Draw an energy flow diagram in the block provided below and explain the Input, Process and Output stage of the image below. (3)



5.6 Discuss how heat is transferred by:

a) Conduction_____

_____(2)

b) Convection_____

_____(2)

c) Radiation_____

_____(2)

5.7 If a house is built in a hot environment, what colour would you paint the roof? Give a reason for your answer. (1)

_____

_____

_____

SECTION C: PLANET EARTH AND BEYOND [20]

QUESTION 6 **[20]**

Answer the following questions on planet earth and beyond.

6.1 Give two reasons that have an influence on the pull of gravity? (2)

_____

_____

6.2 Explain how the Earth is held in its orbit around the Sun. (1)

_____

6.3 Explain how the Moon is held in its orbit around Earth. (1)

_____

6.4 Explain why the Sun's rays strike different places on Earth at different angles. (2)

_____

_____

6.5 Below is a table that describes the Sun's radiation on both hemispheres at the same point in time. One entry has been filled in for you. (5)

You should:

a) describe the tilt of Earth's axis.

b) say whether the Sun's rays shine obliquely or directly on that part of Earth.

c) say which season that hemisphere will be in.

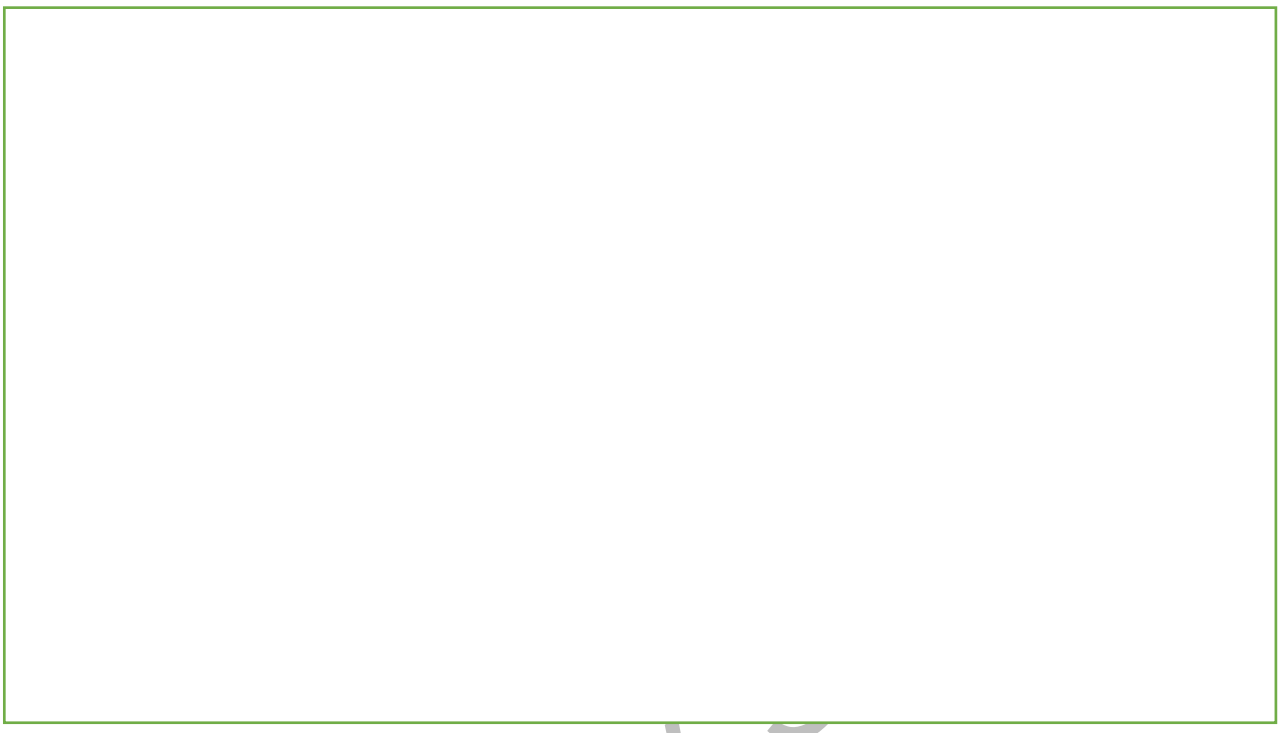
	Tilt of Earth's axis	**Sun's rays shine obliquely/directly**	**Season**
Southern Hemisphere	Towards the Sun		
Northern Hemisphere			

USE THE BLOCK BELOW TO ANSWER QUESTION 6.6 - 6.8

6.6 Draw a diagram to show the alignment of the Moon, Earth and Sun at New Moon. Label each object clearly. (3)

6.7 Shade the unlit part of the Earth and the Moon in your diagram. (2)

6.8 Draw in the water of the Earth to show where the tide is high and where it is low and label these tides. (2)



6.9 What name do we give to the tides at this place? (2)

GRAND TOTAL [80]

TOM NEWBY SCHOOL
GRADE 7 NATURAL SCIENCE
TEST
PERFORMANCE ANALYSIS
TERM 4 2021

Name and Surname:_____Class:_____

Marks obtained by:	**SECTION A [10]**		**SECTION B [50]**			**SECTION C [20]**
	Q 1	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**
Possible mark	**5**	**5**	**18**	**12**	**20**	**20**
Learner mark						