



# Noah's Ark Independent Primary School

Subject: Natural Science	Examiner: Moyo, S
Type: End of Year Exam	Moderator: Rwizi, A
Date: 27 November 2020	Grade: 7
Marks: 100 Marks	Time: 2 hours

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

## Instructions:

Read the questions carefully before you start writing.

Make sure you answer ALL the questions.

Write neatly and legibly.

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## Section A: Planet Earth and beyond

1. Choose the best answer for the following questions. (3)

1.1 A place that experiences high tide will experience it again after \_\_\_\_\_

- a. 6 hours
- b. 10 hours
- c. 18 hours
- d. 24 hours

1.2 The person who first used mathematics to describe the orbits of planets. Correctly was \_\_\_\_\_

- a. Galileo Galilei
- b. Johannes Kepler
- c. Albert Einstein
- d. Nicolaus Copernicus

1.3 At the equator \_\_\_\_\_

- a. day is always longer than night
- b. night is always longer than day
- c. day is always equal in length to night
- d. day is longer than night in summer

2. Fill in the missing words of the paragraph below using word bank. (2)

Word Bank			
closer	massive	gravity	distance

More (2.1) \_\_\_\_\_ objects exert a stronger gravitational pull than smaller objects over the same (2.2) \_\_\_\_\_; and for objects of the same mass, the (2.3) \_\_\_\_\_ they are to each other, the stronger the pull of (2.4) \_\_\_\_\_ is between them.

3. Mention two discoveries made by William Herschel and Caroline Herschel. (2)

- a. \_\_\_\_\_
- b. \_\_\_\_\_

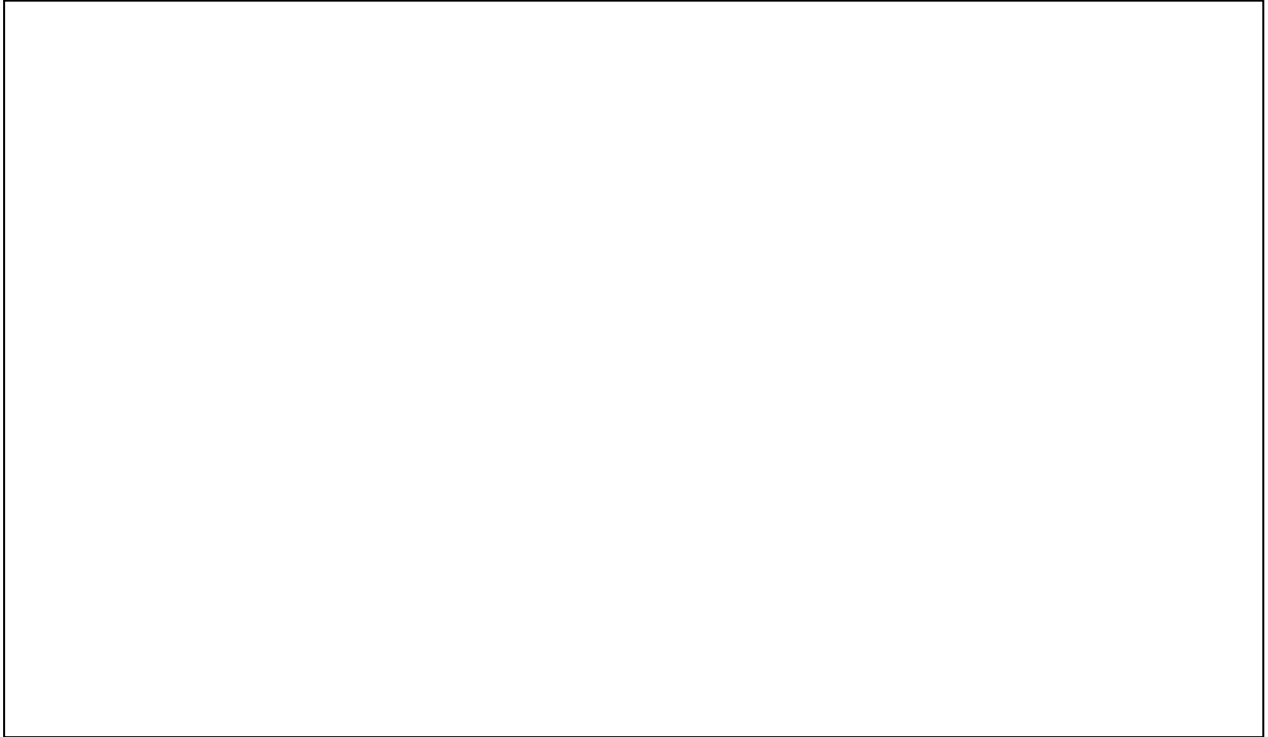
4. Define the circle of illumination (1)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. Draw a diagram showing the earth, moon and sun when it is a spring tide. Indicate the tidal bulge and the gravitational pull of the moon and sun. (7)



6. Read the case study below then answer the question which follows:

Case study: Fracking in the Karoo Recently, some big oil and gas companies have asked for permission to explore the gas reserves of the Karoo. The gas exists deep underground in layers of shale, a sedimentary rock. If there is sufficient gas, they want to use a special technique to extract it. This process is known as fracking. In fracking, deep holes are drilled and explosives are used to break up the rock. Large amounts of water and chemicals are used to release the gas from the layers of rock.

Some people say that the fracking process will benefit South Africa. It will provide much needed energy supplies, and will create jobs for unemployed people. However, many people are opposed to fracking. They say that the Karoo is a dry region, and cannot afford to have its water used for fracking. They fear that the chemicals used will pollute the groundwater, making it unsafe to drink. Wild and domestic animals will die, and crops will fail.

The Karoo is a region of great natural beauty, which could be ruined by the building of roads, pipelines and other structures needed for the process. This has happened in other places.

Opponents of fracking say that the Karoo gas reserves will run out after about 15 years, leaving vast areas of land spoilt and unproductive. Farmers and tourism will be ruined, and even more people will be left unemployed. At present, fracking is carried out in the USA, Alaska, Australia, China, Sweden, England and Ireland. However, it has been banned in Canada and France, and the USA is considering banning it too.

South Africa is in dilemma as its citizens are divided about the fracking process of extracting gas. One group is in support of the process while the other group is against it. Decide which group is correct. Justify why you say so? (4)

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7. Discuss the concept of intensity of solar energy. Clearly show its impact on the hemispheres. (4)

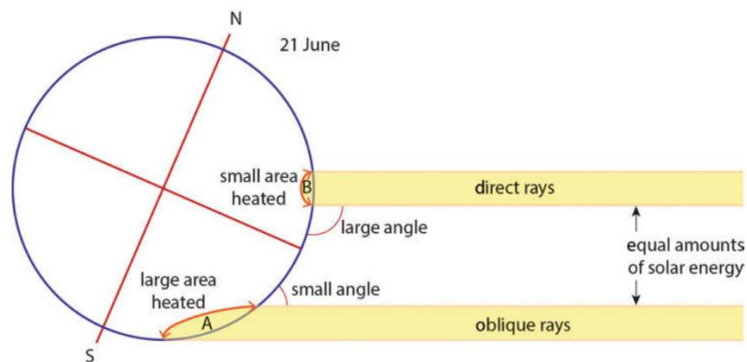
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8. Mary is convinced that the diagram below reflects Winter in the Southern hemisphere. Explain why she says that? (2)



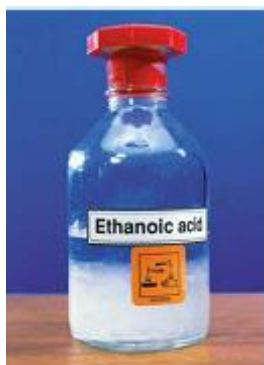
Source: Platinum Natural Science Grade 7 Learner's Book, Page 199

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## Section B: Matter and Materials

1. Choose word from the brackets to complete the sentences below. (3)
- 1.1 The strength of an object that stops it from being crushed (tensile strength/ compressive strength)
- 1.2 Temperature at which a substance changes from solid to a liquid (melting point/boiling point)
- 1.3 The ability of a material to allow heat to flow through it (heat conductivity/ thermal conductivity)
2. Look at the picture below then answer the questions that follow



Source: Platinum, Natural Science Grade 7 Learner's Book, Page 108

- 2.1 Give the more common name for the acid shown on the picture above. (1)

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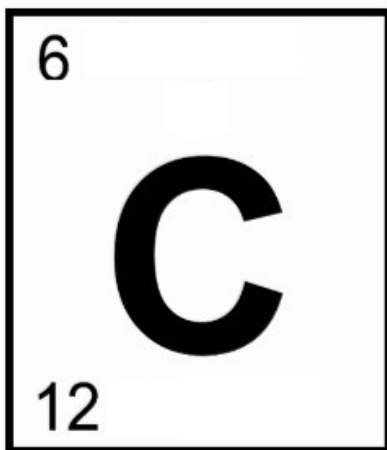
- 2.2 What hazard symbol do you see on the bottle and explain what the symbol means. (3)

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3. The diagram below shows an element on the periodic table:



Source: Platinum Natural Science Grade 7 Learner's Book, Page III

3.1 What do the two numbers represent? (2)

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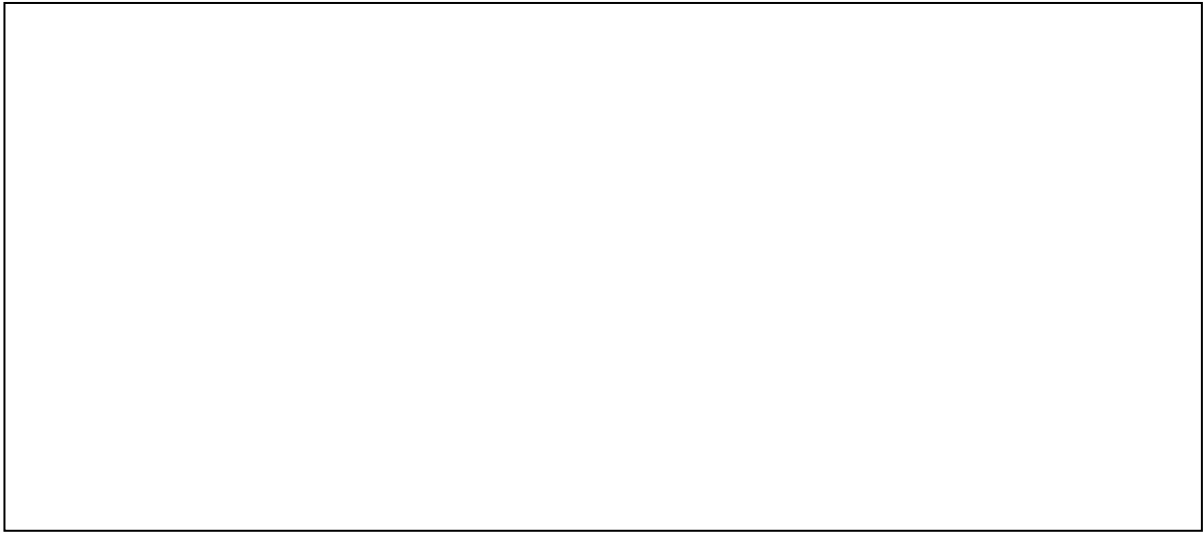
3.2 Elements on the periodic table are grouped into three categories. Name them. (3)

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4. The table below shows how temperature of water increases with time as it is heated with Bunsen burner.

Time (S)	Temperature (°C)
0	20
10	40
20	60
30	80

4.1 Use the data in the table to draw a line graph showing the temperature of the water over time. (4)



4.2 Describe what would happen to the water when it reaches  $100^{\circ}\text{C}$  (1)

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4.3 Sea water contains salt. Explain how you would use your answer in 4.2 to separate the salt from the water. (2)

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5. Explain the word "Recycled" and give one example of a material that can be recycled. (3)

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6 Evaluate the impact waste can have on the environment if it is not recycled. (3)

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\_\_\_\_\_ / 25 Marks (Section B)

Section C: Life and Living

1. Explain why people have different colour hair but are still part of the same species. (2)

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2. Distinguish between pollination and fertilisation in angiosperms(3)

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3. Explain how the use of condoms can prevent pregnancy. (2)

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4. Your Aunt wants to grow cabbage plants in her garden. She can either plant them under the shady tree in her garden or next to the bird bath in full sunlight. Where would you suggest she plants the cabbage? Motivate your answer. (3)

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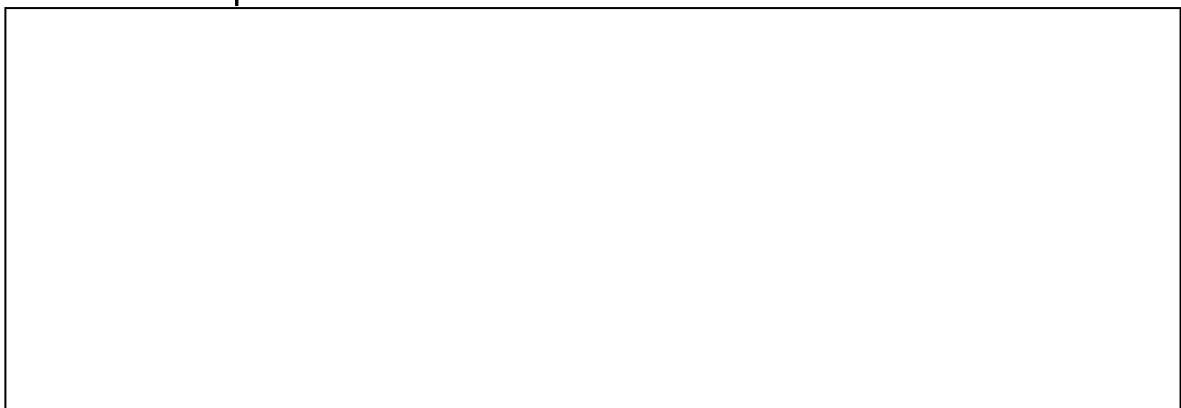
5. Explain the difference between inherited characteristics and environmental characteristics and give an example of each. (2)

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6. There are five requirements for sustaining life. Name them. ( $2\frac{1}{2}$ )

- a. -----
- b. -----
- c. -----
- d. -----
- e. -----

7. Draw a pie chart showing the main gases that make up the Earth's atmosphere. (3)



8. The diagram below shows what the biosphere is made up of. Clearly label the diagram to show the components of the biosphere.  $(1\frac{1}{2})$



Source: Spot On, Natural Science Grade 7 Learner's Book, Page 2

9. Complete the following sentences. (3)

Word Bank		
hydrostatic skeleton	exoskeleton	Pollutes
dicotyledons	monocotyledons	Pollinators

9.1 Animals that carry the pollen from one flower to the next on their bodies as they move are called

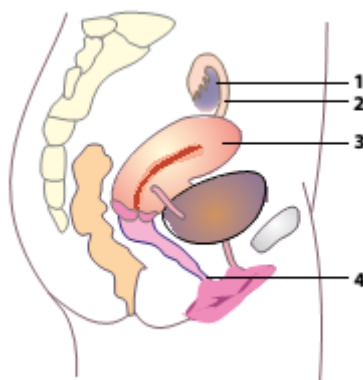
\_\_\_\_\_.

9.2 A water-based body structure that has no bones is

\_\_\_\_\_.

9.3 A bean is an example of \_\_\_\_\_ plants.

10. Give the number and name of each of the following: (3)



- a. The organ that releases an egg. \_\_\_\_\_
- b. Where semen is placed during sexual intercourse.  
\_\_\_\_\_
- c. The tube that carries the egg to the uterus.  
\_\_\_\_\_

\_\_\_\_\_ / 25 Marks (Section C)

### Section D: Energy and change

1. Multiple choice: Circle the correct answer. (3)

1.1 Which of the following options below represents a form of non-renewable energy.

- a. Hydro power
- b. Wind power
- c. Bio fuel
- d. uranium

1.2 Is a part in a coal-filled power station that converts mechanical energy into electrical energy.

- a. Generator
- b. Boiler
- c. turbine
- d. cooling tower

1.3 How does heat mainly travel through air?

- a. conduction
- b. convection
- c. radiation
- d. evaporation

2. Dumi decided to build a device that will use an electric motor to move a bucket of water up and down a ramp. Jill says that some energy will be wasted.

2.1 Explain what Jill meant when she said that energy would be “wasted” (2)

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2.2 Dumi decide to build an energy- efficient system. What is meant by an energy- efficient system, explain. (2)

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3. Look at the picture of the cell below.



3.1 Name the type of energy that is stored in the cell. (1)

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3.2 Explain the law of conservation of energy. Use the example of the cell in your answer. (2)

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4. Say whether the following are examples of kinetic or potential energy. Suggest a reason for each answer. (6)

4.1 A bungee jumper jumping off the bridge. -----

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4.2 A book lying on the edge of a table. -----

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4.3 A taxi stopping to pick up passengers. -----

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5. A certain tumble dryer uses  $4\ 200\text{J}$  of electrical energy per minute. Every minute,  $2\ 280\text{J}$  of kinetic energy is produced to make the drum turn. In addition,  $980\text{J}$  of heat energy and  $940\text{J}$  of sound energy are produced.

5.1 Determine how much of produced energy is useful energy and how much is wasted. (4)

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5.2 Suppose a hair dryer that uses the same amount of energy per minute produces 2 500J of kinetic energy, 1 000J of heat energy and 700J of sound energy. Does the hair dryer waste more energy or less than the tumble dryer. Explain your answer. (3)

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6. Paul, your cousin is of the opinion that the supply of energy to our home is not 100% efficient. Motivate why he is correct. (2)

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\_\_\_\_\_ / 25 Marks (Section D)

\_\_\_\_\_ / 100 Marks TOTAL