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|  | Year 10 Earth and Space Sciences  Topic Test  Answer Book |
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Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Marks: \_\_\_\_\_\_\_\_\_/45

* Answer all questions.
* Numbers in brackets indicate the marks allocated for each question
* Write all answers on the lines provided below each question
* Use a pencil or blue or black pen to write

**Part 1 Multiple Choice 15 marks**

1 a b c d

2 a b c d

3 a b c d

4 a b c d

5 a b c d

6 a b c d

7 a b c d

8 a b c d

9 a b c d

10 a b c d

11 a b c d

12 a b c d

13 a b c d

14 a b c d

15 a b c d

**Short Answers 30 Marks**

1. Why is **ozone** in the atmosphere important? 1 mark

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1. What is the equation for:
   1. respiration 2 marks
   2. photosynthesis 2 marks
2. Match the following terms with its correct location 4 marks

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| * 1. Transpiration |  |  | 1 | Releasing drops from clouds to fall back to Earth |
| * 1. Percolation |  |  | 2 | All the water on the Earth’s surface |
| * 1. Precipitation |  |  | 3 | Surface of the oceans |
| * 1. Evaporation |  |  | 4 | through the surface soil into ground water |
| * 1. Condensation |  |  | 5 | All living things |
| * 1. Respiration |  |  | 6 | In the stratosphere |
| * 1. Hydrosphere |  |  | 7 | Leaf surface of trees |
| * 1. Ozone |  |  | 8 | In the air |

1. What role does each of the following types of bacteria play in the nitrogen cycle? 6 marks
   1. Nitrogen-fixing bacteria

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* 1. Nitrifying bacteria

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* 1. De-nitrifying bacteria

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1. In the carbon cycle what is a **source**, a **sink** and a **release agent** give two examples of each 6 marks

**carbon sink:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**carbon source** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**release agents**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Explain the difference of the effect of El Niño and La Niña on Australia. Use a diagram to enhance your answer 4 marks

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1. Give **THREE** ways that show evidence for past changes in climate 3 marks

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1. What is carbon storage and capture? 2 marks

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**End of Test**

**Multichoice circle the correct answer in the answer booklet attached 15 Marks**

1. The process used by plants to convert energy from the sun into chemical energy is:
   1. diffusion
   2. respiration
   3. photosynthesis
   4. transpiration
2. Identify the best description of what global warming is.
   1. periods of global warming occur between periods of glaciation
   2. greenhouse gases in the atmosphere cause global warming
   3. global warming began after the Industrial Revolution
   4. during periods of global warming sea levels fall exposing more land
3. The Biosphere depends on which three other spheres
   1. Thermosphere, hydrosphere and atmosphere
   2. Lithosphere, hydrosphere and mesosphere
   3. Lithosphere, mesosphere and atmosphere
   4. Lithosphere, hydrosphere and atmosphere
4. Identify Earth’s largest and oldest long-term store of carbon.
   1. rainforest trees
   2. calcium carbonate rocks
   3. fossil fuels
   4. carbon dioxide
5. The breakdown of the remains of dead organisms on and below the Earth’s surface is largely the responsibility of:
   1. consumers
   2. decomposers
   3. producers
   4. scavengers
6. Which of the following is not involved in the carbon cycle?
   1. The burning of fossil fuels
   2. The process of respiration
   3. The process of transpiration
   4. The formation of fossil fuels
7. Plants require nitrogen and phosphorus. They obtain these elements from:
   1. air
   2. rain
   3. soil
   4. photosynthesis
8. What would be the effect of removing all the carbon dioxide gas from the atmosphere?
   1. Life on Earth would be safer as carbon dioxide is a dangerous greenhouse gas.
   2. Life on Earth would be destroyed as carbon dioxide is necessary for photosynthesis and trap heat.
   3. The Earth’s temperature would increase and life on Earth would be destroyed.
   4. There would be no effect to life on Earth.
9. The two most abundant gases in the Earth’s atmosphere are:
   1. oxygen and carbon dioxide
   2. nitrogen and carbon dioxide
   3. carbon dioxide and ozone
   4. oxygen and nitrogen
10. Which of the following is not a layer in the Earth’s atmosphere?
    1. Mesosphere
    2. Ionosphere
    3. Ozosphere
    4. Troposphere
11. Which statement does NOT describe the El Nino Southern Oscillation?
    1. During El Niño events the trade winds weaken or reverse
    2. El Nino has most effect on weather in central and southern Australia
    3. El Nino affects the atmospheric and ocean conditions across the Pacific Ocean
    4. Where there is no El Niño trade winds blow from the eastern Pacific Ocean to the west bringing average rainfall to Australia
12. What is an UNLIKELY effect of global warming?
    1. Plants on mountain tops will extend their range towards lower slopes and valleys
    2. Winters become shorter in many places so that the growing season is increased
    3. Melting ice causes sea levels to rise flooding low lying areas
    4. Animals in warm seas will extend their range away from the equator and towards the poles

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| Use the water cycle diagram to answer the following Questions 13 and 14     1. Water underground as shown at 6 is known as a    1. Underground Pond    2. Caves    3. Underground lakes    4. Aquifers |  |

1. In the diagram, identify the processes occurring at 1, 2, 3, 4 and 5 in that order.
   1. evaporation; precipitation; run-off; condensation; transpiration
   2. precipitation; evaporation; transpiration; condensation; run-off
   3. evaporation; precipitation; transpiration; run-off; condensation
   4. transpiration; condensation; run-off; precipitation; evaporation
2. Which of the following is not a Greenhouse gas?
   1. Nitrogen
   2. Carbon Dioxide
   3. Methane
   4. Water Vapour

**Answer Key**

**Multi choice**

multichoice circle the correct answer in the answer booklet attached 15 marks

1. c
2. a
3. d
4. b
5. b
6. c
7. c
8. b
9. d
10. c
11. b
12. a
13. d
14. c
15. a

**Short Answers 30 Marks**

1. Why is **ozone** in the atmosphere important? 1 mark

It blocks out over 95% of the sun’s ultraviolet rays.

1. What is the equation for:
   1. respiration 2 marks

C6H12O6 + O2 🡪 Energy +H2O + CO2

* 1. photosynthesis 2 marks

CO2 + H2O sunlight C6H12O6 + O2

1. Match the following terms with its correct location 4 marks

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| * 1. Transpiration | 7 |  | 1 | Releasing drops from clouds to fall back to Earth |
| * 1. Percolation | 4 |  | 2 | All the water on the Earth’s surface |
| * 1. Precipitation | 1 |  | 3 | Surface of the oceans |
| * 1. Evaporation | 3 |  | 4 | through the surface soil into ground water |
| * 1. Condensation | 8 |  | 5 | All living things |
| * 1. Respiration | 5 |  | 6 | In the stratosphere |
| * 1. Hydrosphere | 2 |  | 7 | Leaf surface of trees |
| * 1. Ozone | 6 |  | 8 | In the air |

1. What role does each of the following types of bacteria play in the nitrogen cycle? 6 marks
   1. Nitrogen-fixing bacteria

They absorb nitrogen and convert it into nitrates, which plants can absorb and use to build proteins.

* 1. Nitrifying bacteria

They break down ammonia formed from the proteins of dead organisms and animal waste into nitrates.

* 1. De-nitrifying bacteria

They turn nitrates back into nitrites, ammonia and nitrogen gas (nitrogen and other nitrogen compounds are also acceptable answers)

1. In the carbon cycle what is a **source**, a **sink** and a **release agent** give two examples of each 6 marks

**carbon sink:**is anything that absorbs and ***stores*** more carbon than it releases for extended periods. *Eg: limestone - calcium carbonate, long-lived trees, atmosphere, plastic, fossil fuels – coal, oil gas*

**carbon source** is anything that releases more **carbon** to the atmosphere than is absorb. *Eg: burning of fossil fuels and other organic matter, limestone weathering, respiration*

**release agents**: anything that releases carbon from a sink *eg:volcanic activity, forest fires, human activities*

1. Explain the difference of the effect of El Niño and La Niña on Australia 4 marks

|  |  |
| --- | --- |
| * 1. **El Niño**: there is little in temp difference between the west and east Pacific, so little air pressure difference, trade winds from S America weaken and moisture carrying winds do not reach Australia so bring very little rainfall |  |
| * 1. **La Niña:** central and eastern Pacific Ocean becomes cooler than normal, the trade winds blow more strongly than usual and Australia experiences more cloud and wetter-than-normal conditions, especially in the north |  |

1. Give **THREE** ways that show evidence for past changes in climate 3 marks
   1. **Glaciers:** advance in cold climate and retreat when it warms up
   2. ***Pollen analysis:*** Pollen decays so slowly often fossilises, indicates changes in vegetation and climate.
   3. ***Sea level change:*** distribution of sedimentary rocks and fossils found in them indicate changes in sea level
   4. ***Ice cores:*** giveinformation about temperatures and the composition of the air from hundreds of thousands of years
2. What is carbon storage and capture? 2 marks

½ mark - Power plant burn tonnes of coal each year.

½ mark - The smoke is released through smokestacks or scrubbers so CO2 is collected

½ mark - CO2 is transferred and stored in underground disused mines or deep in the ocean

½ mark - to remove it from circulation