Natural Science Cycle Test
GRADE 7
11 September 2014
TIME: 50 minutes
Mark: 95

1. There are 17 pages including this cover page and one Answer Sheet. Make sure you have all of them.
2. Answer all questions in blue or black ink. Diagrams must be done in pencil.
3. Write neatly and legibly.
4. Give sufficient detail in your answers. Pay attention to the mark allocation.
5. Read each question carefully before answering it.
6. Plan your time carefully.
MULTIPLE CHOICE ANSWER SHEET
Use pencil only. Choose the answer, which you consider most appropriate and cross the corresponding letter on this Answer Sheet. If more than one cross appears in any line, the answer will be marked wrong. If, for example, you select D as the correct answer to question 1.3 you have to place a cross on that block, as shown in the example below.

<table>
<thead>
<tr>
<th>1.3</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<tbody>
<tr>
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<table>
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<th>C</th>
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<th>1.9</th>
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<table>
<thead>
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<th>1.10</th>
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<tbody>
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<td>A</td>
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</table>
QUESTION 1: MULTIPLE CHOICE

Each question has only one correct answer. Mark the correct answer on the Answer Sheet provided.

1.1 Which of the following is NOT a mixture?
   A. beer
   B. Tap water
   C. Pure silver engagement ring (no jewels)
   D. Coke (soda)

1.2 When municipal workers separate solid waste into glass, paper and plastic piles, which separation method do they use?
   A. distillation
   B. filtration
   C. sieving
   D. hand sorting

1.3 What method would you use to separate the colours in a black board marker pen?
   A. distillation
   B. chromatography
   C. sieving
   D. hand sorting.

1.4 What method would you use to separate a mixture of flour and raisins?
   A. sieving
   B. melting
   C. hand sorting
   D. filtration
1.5 Which of the following apparatus is **not** used for the evaporation of salt water using sunlight?

A. watch glass  
B. salt and water  
C. teaspoon and small beaker  
D. Bunsen burner

1.6 If a pollen grain has two sacs filled with air, it is probably carried by:

A. birds  
B. wind  
C. insects  
D. water

1.7 Which one of the following statements about the ovary is **INCORRECT**?

A. Fertilization takes place in the ovary.  
B. The ovary contains one or more ovules.  
C. Pollen is produced in the ovary.  
D. The stigma is connected to the ovary by the style.

1.8 A plant's organ of sexual reproduction is the:

A. stem  
B. root  
C. flower  
D. shoot
1.9 The following flower is most suited to pollination by which of the organisms pictured below?

A. 
B. 
C. 
D. 

1.10 A dicotyledonous flower has:

A. 1 whorl  
B. 2 whorls  
C. 3 whorls  
D. 4 whorls  

10 X 2 = (20)
QUESTION 2: TERMINOLOGY

Choose the word/s for each of the following descriptions. Each word/s in the box can only be used once.

<table>
<thead>
<tr>
<th>Conduction</th>
<th>Soluble</th>
<th>Mixture</th>
<th>Solute</th>
<th>Condensation</th>
<th>Solvent</th>
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</thead>
<tbody>
<tr>
<td>Pure substance</td>
<td>Insoluble</td>
<td>Solution</td>
<td>Evaporation</td>
<td>Dispersal</td>
<td></td>
</tr>
<tr>
<td>Zygote</td>
<td>Sepals</td>
<td>Thermometer</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.1 Two or more substances with different physical properties that are mixed together.

2.2 A substance that is made up of only one type of particle.

2.3 An instrument used to measure temperature.

2.4 A mixture that consists of a solid dissolved in a liquid.

2.5 Fertilized egg cell.

2.6 Protects flower bud.

6x1 = (6)
QUESTION 3: MATCH THE COLUMNS
Choose the word/phrase from COLUMN B that matches the word/phrase/ in COLUMN A. Write only the letter (A-J) next to the question number (3.1-3.10).

<table>
<thead>
<tr>
<th>ANSWER</th>
<th>COLUMN A</th>
<th>COLUMN B</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>wetlands</td>
<td>A separating pigments</td>
</tr>
<tr>
<td>3.2</td>
<td>dandelion</td>
<td>B water dispersed</td>
</tr>
<tr>
<td>3.3</td>
<td>carbon dioxide</td>
<td>C wind dispersed</td>
</tr>
<tr>
<td>3.4</td>
<td>coconut</td>
<td>D bees</td>
</tr>
<tr>
<td>3.5</td>
<td>chromatography</td>
<td>E pure substance</td>
</tr>
<tr>
<td>3.6</td>
<td>ovule</td>
<td>F iron</td>
</tr>
<tr>
<td>3.7</td>
<td>magnetic</td>
<td>G natural filter</td>
</tr>
<tr>
<td>3.8</td>
<td>Solute in sea water</td>
<td>H seed</td>
</tr>
<tr>
<td>3.9</td>
<td>Pollen sticks on legs</td>
<td>I salt</td>
</tr>
</tbody>
</table>

10 X 1 = (9)
SECTION B (MATTER & MATERIALS; LIFE & LIVING; SCIENTIFIC METHOD)

QUESTION 4

4.1 Decide whether the following statement is true or false. Explain your answer.

“The parts that make up gold can be physically separated”

4.2 Nina, Mr. Frank’s daughter, has poured a packet of jelly tots into a container of Pronutro cereal and has mixed the two substances with a wooden spoon. Explain how you would separate this mixture and why you chose this method.

4.3 What properties must a mixture have if it is to be separated by magnetism?

4.4 Explain why filtration is a suitable separation method for a mixture of ground dried tea leaves and hot water.

4.5 Explain how you would separate the water from a cup of hot chocolate.
QUESTION 5

Mr Joseph placed a mixture of salt and water in a distilling flask. Study the diagram below and answer the questions which are related to the diagram.

5.1 What is the name of this method that is used to separate mixtures? 1

5.2 Explain why the thermometer is not really necessary for this particular experiment. 2

5.3 What vapour is present in the distilling flask? 1

5.4 What is the purpose of water flowing in and out of the Liebig condenser? 2

5.5.1 Name the solute used in this experiment. 1
5.5.2 Name one piece of laboratory apparatus that we used for this experiment that is absent from the above diagram.


5.6 Could a mixture of pure alcohol and water be separated using this method? Explain your answer.


ANNUAL PLANTS IN SOUTH AFRICA - *taken from Wikipedia.com*

An **annual plant** is a plant that completes its life cycle, from germination to the production of seed, within one year, and then dies. Winter annuals germinate during the autumn and mature (flower) during the spring or summer.

One seed-to-seed life cycle for an annual can occur in as little as a month in some species, though most last several months. Oilseed rape can go from seed-to-seed in about five weeks under a bank of fluorescent lights. This style of growing is often used in classrooms for education.

**Winter annuals** germinate in autumn or winter, live through the winter, then bloom in winter or spring. Winter annuals die after flowering and setting seed. The seeds germinate in the autumn or winter when the soil temperature is cool and rain starts to fall (Mediterranean climates).

**Namaqualand annuals**

Namaqualand is popular with both local and international tourists during early springtime, when for a short period this normally arid (dry) area becomes covered with a kaleidoscope of colour during the flowering season. This is known throughout South Africa as the Namaqualand daisy season, when annual plant species such as orange (*Dimorphotheca sinuata*) and white daisies (*Dimorphotheca pluvialis*), as well as hundreds of other flowering species, spring up from a previously barren landscape.

A display of annual vygies (*Dorotheanthus belliformis*) in Herzlia's Fynbos Garden 2014
6.1 Explain what an annual plant is.

6.2 During which season do most annual plants bloom in the Western Cape Province?

6.3 What is meant by the term “germination”?

6.4 Give one reason why Namaqualand is an important tourist area according to this article.

6.5 Give the scientific name of two annual plant species found in Namaqualand. Ensure that you write the names correctly, according to the rules.
QUESTION 7
Mr Frank collected a pretty pink flower of a Cape primrose (*Rosarius capensis*) and carefully cut it in half (bisected). He then drew a scientific diagram of it, which he then painted. The flower had four petals.

7.1 Provide labels 1 to 7 from the diagram.

1.

2.

3.

4.

5.

6.

7.

7.2 Give the **label number** where the following processes take place:

7.2.1 Fertilization _____

7.2.2 Production (making of) of pollen_______

7.2.3 Female part of the flower where pollen is placed by the pollinator_______
7.3 State whether the following flowers are mainly pollinated by birds or insects (circle the correct answer) and for give a reason for your answer for each flower.

**Babiana rubrocyanea**: birds insects

Reason______________________________________________________________

____________________________________________________________________

**Lachenalia aureus**: birds insects

Reason____________________________________________________________________

____________________________________________________________________
An investigation was done by Grade 7 pupils to compare the growth rate of Namaqualand daisies (*Dimorphotheca sinuata*) in a wet patch of the fynbos garden compared to a moist (less water) patch over a period of 5 months. They put their results in a table, as shown below.

**Table 1: Comparison of the growth rates of Namaqualand daisy plants in a wet and moist site in the Herzlia Middle School Fynbos Garden over a period of 5 months**

<table>
<thead>
<tr>
<th>Dates</th>
<th>Average height of plants (cm) in the wet site.</th>
<th>Average Height of plants (cm) in the moist site.</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 April</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>17 May</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>17 June</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>17 July</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>17 August</td>
<td>13</td>
<td>21</td>
</tr>
<tr>
<td>17 September (flowering stage)</td>
<td>18</td>
<td>24</td>
</tr>
</tbody>
</table>

8.1 Use the information for the plants **in the moist site only** to draw a **line graph** on the graph paper on the following page (remember to include the following in your graph: X and Y axis labels, a main heading, and an appropriate division of numbers on the Y axis).
8.2 Use the results to answer the following questions.

8.2.1 Name the independent variable in this investigation.  

8.2.2 Name the dependent variable in this investigation.  

8.2.3 Name one variable that should be controlled in this investigation.  

8.2.4 Give one possible reason why the plants grew better in the moist site compared to the wet site.  

8.3 Give two advantages of having a Fynbos Garden at the Middle School.