|  |  |  |
| --- | --- | --- |
| **Subject:** Natural Sciences | | |
| **Strand: Matter and materials** | | |
| **Topic: Atoms, sub-atomic particles, compounds, pure substances, mixtures of elements and compounds: CAPS p 41** | | |
| **Grade:** 8 | | |
| Low order questions | Middle order questions | High order questions |
| 1 – 10 |  |  |

**Assessment task 1**

Choose the correct answer and write down only the symbol of the answer.

1. The three basic components of an atom are\_\_\_\_\_\_\_\_
2. protons, neutrons and ions
3. protons, neutrons and electrons
4. protons, neutrinos and ions
5. protium, neutroninos and electrons
6. An atom is determined by the number of\_\_\_\_\_\_\_\_\_  
   A. atoms

B. electrons

C. neutrons

D. protons

1. The nucleus of an atom consists of \_\_\_\_\_\_\_\_\_\_\_
2. electrons
3. neutrons
4. protons and neutrons
5. protons, neutrons and electrons
6. What is a charge of a proton?
7. None
8. Positive
9. Negative
10. Either a positive or negative
11. Which particles have approximately the same size and mass as each other?
12. Neutrons and electrons
13. Electrons and protons
14. Protons and neutrons
15. None – they are all very different in size and mass
16. Which two particles would be attracted to each other?
17. Electrons and neutrons
18. Electrons and protons
19. Protons and neutrons
20. All particles are attracted to each other
21. The atomic number of an atom is\_\_\_\_\_\_\_\_
22. the number of electrons
23. the number of neutrons
24. the number of protons
25. the number of protons plus the number of neutrons
26. The mass number of an atom is \_\_\_\_\_\_\_
27. the number of electrons
28. the number of neutrons
29. the number of protons
30. the number of protons plus the number of neutrons
31. According to the atomic theory, electrons are usually found\_\_\_\_\_\_\_\_\_\_\_
32. in the atomic nucleus
33. outside the nucleus, yet very near it because they are attracted to the protons
34. outside the nucleus and often far from it – most of an atom’s volume is its electron cloud
35. either in the nucleus or around it – electrons are readily found anywhere in an atom
36. Which particles carry opposite charges? :
37. Protons and neutrons
38. Neutrons and electrons
39. Protons and electrons
40. Neutrons and ions

(10)

**Answers**

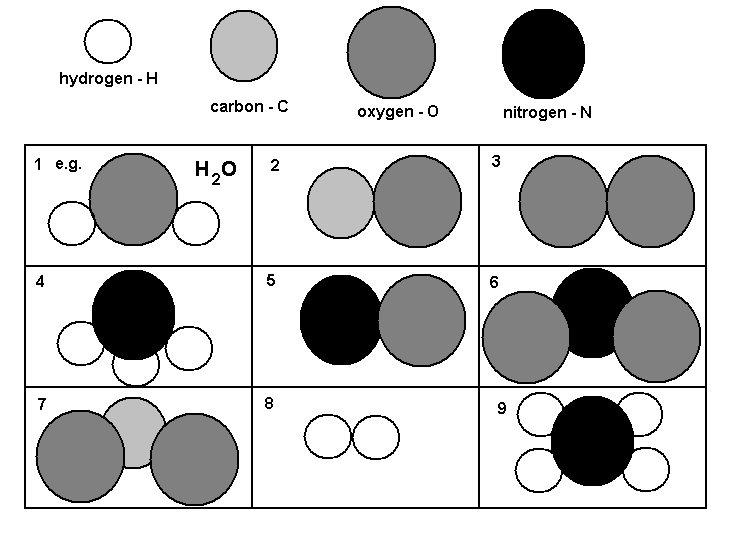
1. B
2. D
3. C
4. B
5. C
6. B
7. C
8. D
9. C
10. C

(10)

**Assessment Task 2**

|  |  |  |
| --- | --- | --- |
| **Subject:** Natural Sciences | | |
| **Strand: Matter and materials** | | |
| **Topic:** Chemical formulae, molecules, atoms: CAPS pp40 - 41 | | |
| **Grade:** 8 | | |
| Low order questions | Middle order questions | High order questions |
| Part 1: 2-9 | Part 2: 1-9  Part 3: 1-9  Part 4: 1-9 |  |

**Molecule models**

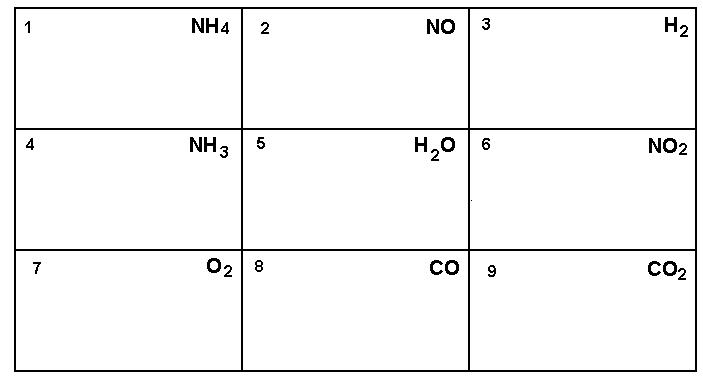
**Part One: Write the chemical formulas**

Use the model key for each element and write the chemical formula for each molecule.

[16 marks]

**Part Two: Draw the model for the molecules**

Use the same model key and draw the model for each of the molecules given.



**Part Three: Create 3D models of molecules**

The above drawings are all 2dimensional (2D) models of the actual molecules.

Use different coloured jelly tots and toothpicks and create 3D models of the above molecules.

Your partner will assess your models and you will assess your partner’s.

[20 marks]

**Checklist for assessing jelly tot models**

|  |  |  |
| --- | --- | --- |
| **Criteria** | **Yes [1]** | **No [0]** |
| **Learner has used colours of jelly tots consistently to represent each element.** |  |  |
| **Learner has created 3D models using jelly tots to represent elements and toothpicks to represent bonds.** |  |  |
| **Learner’s models are accurate and correct.** | Allocate 2 marks per completely correct model; 1 mark if partially correct; 0 if wrong.  **Total: /18** | |

**Part Four: Research on the names of the molecules**

Find out the names of each of the molecules you have made models of.

[16 marks]

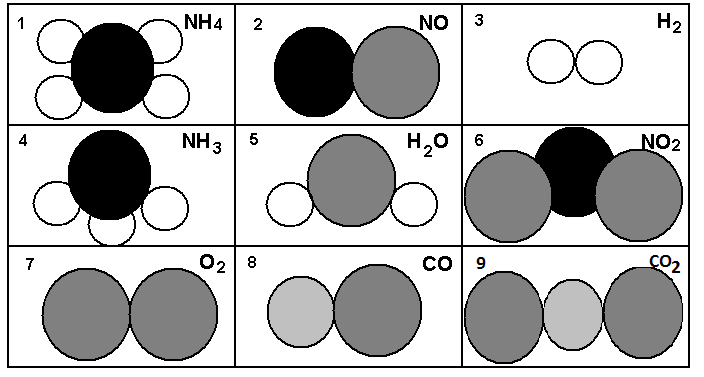
[Total: 50 marks]

**Suggested Solutions**

|  |  |  |
| --- | --- | --- |
| **Question number** | **Possible marks** | **Solution** |
| **1** | 16 | 2. CO  3. O2  4. NH3  5. NO  6. NO2  7. CO2  8. H2  9. NH4 |
| **2** | 18 | See table in Appendix of Assessment Tools. |
| **3** | 20 | See checklist in Appendix of Assessment Tools – peer assessment. |
| **4** | 16 | 1. H2O - water  2. CO – carbon monoxide  3. O2 – oxygen  4. NH3 – ammonia  5. NO – nitrogen oxide / Nitric oxide / Nitrogen monoxide  6. NO2 – nitrogen dioxide  7. CO2 – carbon dioxide  8. H2 – hydrogen |

**Appendix of Assessment Tools**

**Table for drawing the models of the formulae given**



**Checklist for assessing jelly tot models**

|  |  |  |
| --- | --- | --- |
| **Criteria** | **Yes [1]** | **No [0]** |
| **Learner has used colours of jelly tots consistently to represent each element.** |  |  |
| **Learner has created 3D models using jelly tots to represent elements and toothpicks to represent bonds.** |  |  |
| **Learner’s models are accurate and correct.** | Allocate 2 marks per completely correct model; 1 mark if partially correct; 0 if wrong.  **Total: /18** | |

|  |  |  |
| --- | --- | --- |
| **Subject:** Natural Sciences | | |
| **Strand: Matter and materials** | | |
| **Topic: Atoms – building blocks of matter: CAPS p 40** | | |
| **Grade:** 8 | | |
| Low order questions | Middle order questions | High order questions |
| * 1. – 1.6 |  |  |

**Assessment task 3**

**Atoms**

1. Look at the table below; indicate with a tick (√) in the correct box if the substance is made of a single atom or more than one atom.

|  |  |  |  |
| --- | --- | --- | --- |
| Substance | Formula | Single atom | More than  one atom |
| 1.1 Oxygen | O2 |  |  |
| 1.2 Carbon monoxide | CO |  |  |
| 1.3 Helium | He |  |  |
| 1.4 Water | H2O |  |  |
| 1.5 Carbon dioxide | CO2 |  |  |
| 1.6 Sodium chloride | NaCl |  |  |

(6)

Answers

|  |  |  |  |
| --- | --- | --- | --- |
| Substance | Formula | Single atom | More than  one atom |
| 1.1 Oxygen | O 2 | √ |  |
| 1.2 Carbon  monoxide | CO |  | √ |
| 1.3 Helium | He | √ |  |
| 1.4 Water | H2O |  | √ |
| 1.5 Carbon  dioxide | CO2 |  | √ |
| 1.6 Sodium  chloride | NaCl |  | √ |