INSTRUCTIONS

① Read 1.20 (Elemental Magic)/P. 52-54

② Complete each statement by finding the word that fits in the space on the crossword below. The number in the bracket indicates the starting space. The letter represents (a)cross or (d)own.

③ Answer Q.1,3,4/P.55

1. Over the centuries, people have used _(13d)_ general types of materials to make everything they need: metal, polymers, ceramics, and composites. Their importance changed over _(2a)_.

2. _(7a)_ make up most of the _(23d)_ in the periodic table. In ancient times, _(14a)_ and _(1d)_ were used for jewellery and containers but not much else because they were hard to produce. Over time, people learned how mix metallic elements and make _(18a)_ such as bronze and steel which could be used for _(6d)_ and _(22a)_.

3. _(26a)_ are materials made up of long chains of _(16a)_ joined together. The most important elements in these substances are _(17a)_, hydrogen, and oxygen. In ancient times, the only polymers that existed were _(10a)_ polymers found in _(20d)_ and plant fibres such as wool, leather, wood, and cotton.

4. Over the years, scientists discovered and developed glues, rubbers, and other _(25a)_ (man-made) polymers that were used to make fabrics such as nylon. In the 20th century a major breakthrough in polymer chemistry was the invention of _(4d)_ including nonstick coating for cookware and _(15d)_ for drink cups.

5. Polymers are also used as substitutes for human _(11d)_ and bones, glass, metal, cardboard, furniture, rugs, ...

6. _(8a)_ and glass are materials that come from _(3d)_ and rocks. The elements that are most important in these compounds include _(21d)_, carbon, and oxygen, but many elements can be used. In ancient times, ceramics used were _(19d)_ for weapons, flint for tools, and _(5a)_ for containers.

7. _(12d)_ are materials that are formed by mixing two materials together. The first composite was probably a _(9d)_ combination. When scientists make composites, they try to combine the best properties of the materials they put together. For example, _(24a)_ is a composite of a polymer and tiny glass fibres.