

11. Write a short essay on "The General Culture of a Teacher."
12. Why is a knowledge of Elementary Psychology of great importance to a teacher?

Elementary Experimental Science.—For Class D. Time allowed: 3 hours.

1. Define the term "inertia" as applied to matter. How may a balance be made to serve as an example of inertia?
2. Describe exactly how you would exhibit the phenomena of gaseous diffusion, making a sketch of the apparatus which you would consider necessary.
3. What is meant by "specific gravity"? How could the fact that the specific gravity of sulphuric acid is about 1.8 be ocularly demonstrated to a class?
4. How would you explain the theory of the lever, and what experiments would you make in illustration of your explanation?
5. How would you prove, experimentally, that sound is conveyed by the air, and that in this respect it differs from light?
What precautions must be taken to insure the success of the experiment?
6. Write an account of specific heat in the form in which you would deal with the subject before a class, and describe the experiments which you would make.
7. How would you construct for class purposes—
(a.) An ordinary mariner's compass;
(b.) An instrument for measuring the magnetic dip?
8. Mention experiments by means of which a general knowledge of the distribution of static electricity on freely-charged conductors might be conveyed.
9. Describe experiments which you would make in illustration of the properties of hydrogen gas.
10. Explain the softening of hard water by the addition of lime. Give details of the experiments required to render your explanation of value to a class.
11. What elements are necessary to plant-life? How would you show their presence in a sample of wheat?
12. Write an abstract of a lesson on sugar.

Elementary Science.—For Class E. Time allowed: 3 hours.

[NOTE.—Female candidates for E, if proficient in Needlework, may substitute for this paper the paper on Domestic Economy and the Laws of Health; but passing in Science will not exempt them from passing in Needlework also.]

1. Give a simple explanation of the meaning of the terms "inertia," "momentum," and "energy." Describe experiments to illustrate each.
2. What are the principles upon which the usual method of taking specific gravities depends? How is the specific gravity of a substance lighter than water determined?
3. Describe the diving-bell. Suppose a diving-bell to be cylindrical, how deep must it be immersed that the water may half fill it?
4. A screw-jack makes three turns to the inch, and has a handle 3ft. long: what is the gain of power, disregarding friction?
5. If a lens be placed in the shutter of a dark room, a picture is seen on the opposite wall; it is sometimes clear and sometimes blurred, according to the distance of the wall. Show by a sketch why this is so.
6. Describe the simple facts of magneto-electricity.
7. Describe the construction of a simple electric machine, and some experiments that may be made with it.
8. Draw a sketch of the apparatus you would employ to make hydrogen gas. State the materials you would use, and the precautions you would take in making it.
9. Describe the process of making nitric and hydrochloric acids, and the properties of each.
10. Describe the mechanism of respiration. Sketch any simple piece of apparatus designed to illustrate it, and explain the changes in the body that are effected by its means.

Domestic Economy and Laws of Health.—For Class E. Time allowed: 3 hours.

NOTE.—This paper is for female candidates for E who are proficient in needlework, and, in consideration of this, are allowed, if they prefer it, to be examined in Domestic Economy and the Laws of Health instead of in the general subject of Elementary Science. (See the note on the Elementary Science paper.)

1. Explain fully why cooking-vessels should be clean.
2. What are the chief differences between grilling and frying? Which is to be preferred for invalids, and why? Why is dry toast considered good and buttered toast bad for invalids?
3. Describe exactly how you would make an ordinary plain cake; and make an intelligible sketch showing the course of the flues around an ordinary kitchen-range provided with an oven and boiler.
4. What varieties of food are requisite for man? Show how a meal of bread and cheese furnishes the three essential constituents of food.
5. What are the chief narcotics and stimulants that are used by man? What are the especially deleterious effects of the more important?
6. State what you know of the more important recent discoveries as to the organic causes of diseases.