

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

[Women that are proficient in needlework may substitute for this paper the paper on Domestic Economy.]

1. What is meant by centrifugal force? Describe experiments to illustrate it.
2. Describe the various methods of finding specific gravities.
3. Describe experiments illustrating the pressure of the air.
4. A screwjack has three turns to 2in., and the handle is 4ft. long. What is the theoretical gain of power?
5. Describe some simple experiments to illustrate the interference of sound.
6. Of what kind is the energy in a moving cannon-ball, in a head of water, in gunpowder, and in a coiled spring?
7. Describe a galvanic battery, and state some of the experiments that may be made with it.
8. Describe the decomposition of water, and state generally the effect of sending an electrical current through various chemicals.
9. Describe the preparation and properties of nitric and hydrochloric acids.
10. State fully how the human body is kept at a constant temperature.

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

[Alternative with Elementary Science,—for women only.]

1. What is the effect of heat upon air? How would you make an experiment to illustrate it?
2. Various substances are used in cooking to make pastry, &c., light. Name the substances and describe their action.
3. Describe the various means used for the preservation of fruit.
4. What are the essential constituents of food? Describe a vegetable diet that contains them all.
5. Describe the chief stimulants and narcotics; explain their action and the disadvantages connected with the use of them.
6. Describe the skin, and give a full account of its functions.
7. Describe the eye. What is shortsightedness, and how is it corrected? Draw a diagram of a shortsighted eye, with the lens in position.
8. Give a general account of the nervous system.
9. Discuss generally the conditions of a healthy site for a house.
10. Describe the various methods of connecting a sink with a drain. Illustrate your answer by sketches.

*Elementary Knowledge of Agriculture.—For Class D. Time allowed: 3 hours.*

[Alternative with Elementary Science.]

1. Describe any seed which you have examined, and give an account of the changes which occur during germination. What conditions are necessary for germination?
2. Describe experiments which you could use to illustrate the composition of plants.
3. How do plants obtain the carbon required for their growth? Describe fully an experiment which you would use to illustrate the subject. Point out the conditions necessary to insure success, and give a rough sketch of the apparatus you would use.
4. What do you understand by the mechanical condition of the soil, and how does this condition affect its fertility?
5. What is the value of drainage in the soil? Describe experiments which illustrate your answer.
6. What elements necessary for the growth of plants are most frequently wanting in the soil, and what artificial manures could you use to supply them?
7. What is superphosphate, and what is the real object of its use? Describe how you could make a sample of superphosphate, and the precautions you would take. Give the composition of the materials you would employ, and explain the changes which would occur.
8. Why is it important that good seed should be used by the farmer? Why are some plants propagated by seed, and others by division of the plant?
9. What are bacteria, and what part do they play in Nature? In what way may they be said to aid agriculture?

*Elementary Knowledge of Agriculture.—For Class E. Time allowed: 3 hours.*

[Alternative with Elementary Science.]

1. Describe the flower of the bean, or any other plant. Which parts of the flower are essential to the formation of seed, and what is the purpose of the other parts?
2. Give an account of the composition of plants. Distinguish between the organic and inorganic materials of the plant; mention some of the commoner organic substances of the plant, and state what elements they are composed of.
3. What is air composed of, and what do plants obtain from the air? Describe experiments in support of your answer.
4. What are root-hairs, and how could you show them most satisfactorily? What is their use?
5. Give some account of the formation of soil. Why do soils differ so much in their characters?
6. What do you understand by the exhaustion of the soil? To what causes may it be due, and how may it be remedied?