

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

1. How is pressure distributed in fluids? Give experimental illustrations.
2. What is centrifugal force? How may it be illustrated? Give any natural examples you know of.
3. What is the gain in power of a screwjack the handle of which is 3ft. long, the screw having two turns to the inch? (Friction to be disregarded.)
4. What is meant by "specific gravity"? In what several ways may the specific gravity of liquids be determined?
5. Explain the use of a lens in an eye-glass, and in a camera. Draw sketches to illustrate your answer.
6. Describe an electrical machine, and the experiments you could make with it.
7. How would you make oxygen and hydrogen? Describe some of the experiments you would make to illustrate their properties.
8. Describe the manufacture of chlorine, and state its uses.
9. Describe the mechanism of breathing. What are its uses? How would you experimentally illustrate the action of the lungs?
10. Describe the skin, state its functions, and give an account of the nature and properties of soap.

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

[For women only,—alternative with Elementary Science.]

1. What is the advantage in digestibility of the peculiar physical condition of ordinary bread? How is this condition obtained, and what means are used to produce a similar condition in pastry?
2. Give a sketch of the digestive system, and describe the functions of its various parts.
3. Sketch the circulatory system, and describe the parts played by its excretory organs.
4. What are the essential points in the matter of house-drainage? How and why are sinks trapped?
5. Give the composition of soap, and state its uses. Why are wood-ashes occasionally substituted for it?
6. Draw a diagram illustrating the structure of the eye. What precautions are necessary in the schoolroom to avoid straining the children's sight?
7. What is the effect of muscular contraction on the circulation and respiration respectively, both local and general?
8. Distinguish between the stimulating effects of physical treatment, such as shower-baths or quick exercise, and of chemical stimulants, such as alcohol.
9. What are the main changes produced in food by cooking?
10. Give a general idea of the light that bacteriology has cast on the cause and cure of disease.

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

1. Describe the structure of any flower you know well, and show how the fruit is formed from the flower.
2. What substances are formed when a plant is burnt? How could you prove the presence of some of the more important of these substances?
3. How does nitrogen occur in nature, and what are its chief chemical properties? Describe experiments which illustrate your answer. What important relation has nitrogen to the growth of plants?
4. What is humus, how is it formed, and what is its importance in the soil? How would you demonstrate the presence of humus, and what proportion may be found in a fertile soil?
5. How is water absorbed by the plant, and what purposes does it serve in it?
6. Give some account of the formation of soils. State in what important respects soils differ from one another, and explain why.
7. What do you understand by the capillary action of the soil, and what important lesson does it teach as to methods of cultivation? Describe experiments which will illustrate your meaning. How could you compare the capillary power of different soils?
8. What do you know as to the general composition of farmyard manure? Under what conditions is it subject to deterioration, and how would you prevent this?
9. By what principles would you be guided in choosing a manure for a particular crop or soil?

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

1. What are the usual characters of the roots of plants? What are the various functions of the roots?
2. In what parts of the plant may supplies of food be stored? What is the source of food-materials, and for what purposes are they employed by the plant?
3. Distinguish between elements and compounds, and give examples. What is the composition of water? Describe experiments which illustrate your answer.
4. What are the functions of foliage-leaves? Give some account of the minute structure of the leaf, and show how it is related to its function.
5. What are the conditions necessary for the healthy growth of plants?