

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

1. What meaning do you attach to the word "energy"? Write down a list of experiments illustrative of the transformation of energy.
2. Give a detailed account of the preparations which you would make before giving a lesson on the general properties of gases.
3. Describe the precautions which should be taken when filling a barometer-tube with mercury. How would you endeavour to convince a class that changes in the atmospheric pressure are accompanied by changes in the height of the barometer?
4. What general relation exists between the power and the weight in all systems of pulleys? Sketch the particular arrangements of pulleys upon which you would lay stress in elementary teaching.
5. Describe the apparatus which you would employ in explaining the expansion by heat of solids and of liquids.
6. What is meant by the "latent heat of steam"? How would you measure it approximately?
7. How would you show that some bodies are good conductors of electricity while others hardly conduct it at all? What difficulties have you met with in making these experiments?
8. How would you construct some simple apparatus for making electrically a visible signal at the other end of the schoolroom?
9. How would you illustrate chemical combination and decomposition? State exactly how you would carry out the experiments.
10. Give an account of any compounds of nitrogen with which you are acquainted, and state how you would prepare them.

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

1. Describe experiments to illustrate the indestructibility of matter and of energy.
2. What are the properties of a gas, of a liquid, and of a solid? Name and define some of the special properties of solids, such as toughness, &c.
3. Describe experiments to show that the pressure of water is proportional to its depth.
4. How can the barometer be used in determining the height of a mountain? Describe the construction of a barometer.
5. Compare sound and light. What phenomena of sound correspond to those of colour in light?
6. Describe experiments to illustrate latent heat. How would you determine the latent heat of liquid water?
7. How would you make an electro-magnet, and how illustrate the principles of magneto-electricity?
8. How would you show the composition of air? Describe the properties of its constituents.
9. Describe the process of preparing nitric acid, and mention some experiments you would make with nitric acid before an elementary class.
10. Give a general account of the nutrition of the human body, and show wherein the value of exercise consists.

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

1. What part do yeast, baking-powder, and carbonate of soda play in cookery? Explain the physical and chemical action of each.
2. Describe how to make a sponge-cake. Why do eggs make cakes light? Name and describe the various modes of using eggs.
3. Could you choose the site and aspect of your dwelling, describe what you would choose. What is your opinion of the desirability of having trees near dwellings? Would you make any distinction in this respect between deciduous trees and evergreen trees?
4. Describe the eye. What kind of light would you choose for a study-desk, and what kind for a schoolroom?
5. Describe and make a sketch of the heart. Contrast arteries and veins. Give your idea of the value of massage.
6. Describe the effect of exercise. Why is overtraining sometimes dangerous? Classify respectively outdoor and indoor exercises in the order of your estimation of their value, giving reasons for your judgment.
7. Give your idea of clothing suitable for exercise and recreation. What is your opinion of the effect of corsets on respiration and on health generally?
8. What steps would you take to prevent the spread of a contagious disease? What do you know about the micro-organisms of disease? What is the theory of the effect of vaccination?
9. In what ways may overstudy injuriously affect the health of children? Mention any conditions you know of that may be regarded as being possibly symptoms of mischief due to this cause.

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

1. Trace the development of the roots in any plant from the seedling onwards. Describe the root-cap and root-hairs, and explain the uses of these structures. How would you demonstrate root-hairs to a class?
2. In what parts do plants store up materials for growth at a future time? Give examples of such reserve materials, describing their composition and mode of formation. How are these substances finally utilised in the plant?