

5. What is the velocity of light? How has it been determined?
 6. Two tubes containing water are heated, one at the top and the other at the bottom: how is the heat transmitted in each case?
 7. What are the effects produced by passing a current of electricity (a) through acidulated water, (b) through a thin platinum wire, and (c) through an insulated wire surrounding an iron bar?
 8. Describe the preparation and properties of ammonia gas.
 9. Describe the structure of the eye, and state some of the causes of defective sight.
 10. Write what you know of the composition of plants, and state the sources and functions of their more important food constituents.
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Domestic Economy and Laws of Health.—For Class E. Time allowed: 3 hours.

1. Name the different food products obtained from wheat, and describe the process of bread-making.
 2. What is the composition of milk, and what purposes are served by its several constituents when it is used as food?
 3. In the selection of a dwellinghouse, what conditions would you endeavour to secure as to its sanitary arrangements?
 4. What chemical changes take place in the ordinary constituents of foods in passing through the body?
 5. Mention what you consider some of the errors made in dress, giving your reasons for your selection. State the essential features of effective clothing.
 6. Describe the process of alcoholic fermentation, and state the physical, chemical, and physiological properties of alcohol.
 7. Describe the structure of the heart, and the circulation of the blood.
 8. State fully how you would proceed in the preparation and cooking of the following: (a) pea soup, (b) grilled steak, (c) rice pudding; giving reasons for each step in the several processes.
 9. How does air become contaminated in an ordinary living-room, and what are then its chief impurities? What are the main points to be attended to in ventilation?
 10. State as fully as possible how you would proceed in the management of the sick-room of a person suffering from diphtheria.
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Elementary knowledge of Agriculture.—For Class D. Time allowed: 3 hours.

[Illustrate your answers with diagrams where possible.]

1. Give the outline of a lesson on germination. What experiments would you perform?
 2. Name all the cultivated plants you know belonging to the following natural orders: Gramineæ, Leguminosæ, Cruciferae.
 3. Write what you know about humus. How is the fertility of a soil affected by the presence of humus?
 4. Give examples showing how bacteria assist in the preparation of plant food in a soil.
 5. What experiments would you employ in demonstrating to a class (a) the physical properties of soils, (b) the chemical properties of soils?
 6. Contrast the effects produced by nitrate of soda and by sulphate of ammonia when used as manures. What conditions would determine which of these manures would be the better suited for application as a top dressing to a crop?
 7. Contrast the habits of growth of a wheat plant with those of a barley plant.
 8. Explain why leguminous crops are but little benefited by the application of nitrogenous manures.
 9. Give the outline of a lesson on the effects of drainage on soils, stating what experiments you would use.
 10. Write an account of the life history of any grass grub.
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Elementary Knowledge of Agriculture.—For Class E. Time allowed: 3 hours.

1. Describe the different parts of a turnip plant during the second year of its growth.
2. Name as many of the organic and of the inorganic constituents of plants as you are acquainted with, and state briefly their properties.
3. How do plants obtain the carbon and the nitrogen required by them as food?
4. Give a classification of soils. How far is the chemical composition of a soil to be accepted as an indication of its fertility? Give reasons for your answer.
5. By what methods is it possible to restore fertility to an exhausted soil?
6. What manures would you employ for the following crops: wheat, peas, mangels?
7. Give examples of catch-crops, and state what advantages are secured by their growth.
8. How would you propagate the following plants: potato, tulip, geranium, pansy, strawberry, raspberry?
9. What is meant by clover-sickness? How would a crop of wheat be affected by being grown on clover-sick land?
10. Give the life history of some form of insect pest.