

Arithmetic.—For Senior Civil Service. Time allowed: 3 hours.

1. Divide one thousand and six million fifty thousand and seventy-three by three hundred and eighty-five in factors, and explain the method of obtaining the correct remainder.

2. Divide £27 15s. among three persons so that the second may have three times as much as the first, and the third twice as much as the second.

3. If a log of timber 20ft. long, 2ft. 3in. broad, and 1ft. 4 $\frac{1}{2}$ in. thick be worth £3 3s. 3d., what length of another log of the same timber, which is 3 $\frac{3}{4}$ sq. ft. in sectional area, can be bought for £3 9s.?

4. Simplify $\frac{(3\frac{1}{2} - 2\frac{3}{8}) \text{ of } \frac{4}{13}}{2\frac{3}{8} \text{ of } (3\frac{1}{2} - 2\frac{3}{8})} \div \frac{3}{7} \text{ of } 4\frac{1}{5}$; and find the value of $\frac{1}{5} - \frac{1}{3 \times 5^3} + \frac{1}{5 \times 5^5} - \frac{1}{7 \times 5^7} + \dots$ to seven places of decimals.

5. The specific gravity of iron with respect to water is 7.6, and the weight of a cubic foot of water is 1,000oz.: hence find the volume in cubic inches of a piece of iron weighing 9 $\frac{1}{2}$ lb.

6. If a dollar is equal to 4.2 shillings, or to 5.396 francs, what number of francs is equal to £1 sterling?

7. A contractor undertook to make 1,440 yards of railway in 90 days, and for that purpose engaged 120 men; but after 18 days' work he found that he had executed only 180 yards. How many additional men must he engage in order to finish the work in the stipulated time?

8. Divide the difference between the squares of .216 and .216 by the square root of .00197530864.

9. Extract the cube root of 5 $\frac{2}{3}$ to three places of decimals.

10. Find the present value of £1,000 due three years hence, allowing compound interest at 5 per cent. payable annually.

11. A person offered a house at an upset price which would have yielded him a profit of 25 per cent., but, being obliged to take £320 less than the upset price, he lost 15 per cent. What sum did he receive for the house?

12. A possesses two-fifths of a mine, B one-third of it, and C the remainder. A divides his portion into 100 shares, which he offers at £2 10s. per share; B divides his portion into 50 shares, which he offers at £4 per share; and C offers his portion, divided into 25 shares, at £6 10s. per share. Which of these shares is it most advantageous to purchase? What should be the price of the B and the C shares when an A share sells for £3?

Geography.—For Class D. Time allowed: 3 hours.

1. State the difference between a Mercator's chart and an ordinary map of the world in hemispheres. What are the advantages and disadvantages of each?

2. What is a snow-line? Why may it have different levels on opposite sides of a mountain range? Why may glaciers descend below the snow-line?

3. In what way is the climate of the South Island of New Zealand affected by the Southern Alps?

4. Describe the mountain system of New Zealand as fully as you can.

5. State the position of the pampas, the landes, the steppes, the tundras, and the llanos. Describe their chief characteristics.

6. Write a brief note on each of the following places: Amsterdam, Halifax, Liverpool, Chicago, Odessa, Cardiff, Archangel, Riga, Seville, Delagoa Bay, Madras, Canton, Mauritius, Belize, Lisbon. State the position of each, and name its chief exports.

7. Give an account of the Atlantic Ocean, especially with regard to boundaries, depth, area, inland seas, inlets, islands, and currents.

8. Draw a sketch-map of South America, showing the boundaries of the different States, the chief ports, the principal mountain ranges, and the most important rivers.

9. Describe the basin of the Ganges; state its approximate area and the position of its chief cities. Illustrate your answer by a diagram.

10. Contrast the faunas of Australia and New Zealand.

Geography.—For Class E, and for Junior Civil Service. Time allowed: 3 hours.

1. Define latitude and longitude. How are the latitude and longitude of a place determined?

2. What is a glacier? Describe its origin, structure, and movements. Explain moraine, crevasse, perched blocks.

3. Dublin and the south-eastern point of Labrador lie in nearly the same parallel of north latitude, but the mean annual temperature of the former is 50° Fahr., while that of the latter is only 32°. What is the cause of the difference?

4. Describe the course of the Waikato River, enumerate its most striking natural features, and state the position of the chief towns on its banks.

5. Describe the lake-system which discharges into the Clutha, and trace the course of that river. Name the chief towns in the Clutha Valley and on the shores of the lakes.

6. State the approximate boundaries of each of the Australian Colonies, describing the chief characteristics and enumerating the chief products and the principal towns of each.

7. Give a brief account of the following: Cyprus, Plain of Lombardy, Beachy Head, Cutch, Mount Vesuvius, Rangoon, Nyassaland, Assam, Smyrna, Lough Neagh, St. Helena, San Francisco, Valparaiso.

8. State the position of the following islands, describe their chief characteristics, and enumerate their most important natural products: Madagascar, Ceylon, Iceland, Borneo, Sandwich Islands, and Hongkong. To what power does each belong?