

5. Show that the sum of the cubes of any three consecutive integers is divisible by three times the middle integer.

6. Extract the cube root of—

$$8x^6 + 48cx^5 + 60c^2x^4 - 80c^3x^3 - 90c^4x^2 + 108c^5x - 27c^6.$$

7. Solve the equations,—

(a.) $\frac{x}{a} + \frac{x-a}{b-a} = 0;$

(b.) $x + ay = b, ax - by = c;$

(c.) $x + \frac{2}{x-1} - \frac{4-x}{2x} = 2\frac{1}{2};$

(d.) $x^2 + xy = 15, x^2 - y^2 = 5.$

8. A can do a piece of work in a days, and B can do the same in b days: in how many days will they do it working together?

9. A person, having finished a journey, calculated that if he had not travelled so fast by 2 miles an hour he would have been 8 hours longer on the way, but if he had travelled 2 miles an hour faster he would have arrived 4 hours sooner. Find his rate of travelling.

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

1. What is meant by “the North and South Poles”? What is the Equator? What is meant by a “great circle” of the earth?

2. The mean annual rainfall of Wellington is 50in.: what is meant by this statement? State approximately the mean annual rainfall of any two localities in the colony.

3. Name the principal lakes in New Zealand, state their approximate position and altitude, and show how their discharge-waters reach the sea.

4. State the position and the chief characteristics of the following New Zealand districts: The Hammer Plains, the Spencer Mountains, the Kaipara, Stewart Island, and the Taupo Plains.

5. Draw an outline-map of England and Wales; indicate the position of Manchester, Birkenhead, Berwick-on-Tweed, Dover, Birmingham, Chester, Holyhead, Portsmouth, Bristol, Cardiff, Caernarvon, London, York, Oxford, Bangor, Cambridge, Leicester, and Nottingham.

6. Write a short description of the course of the Danube, with notes on six of the most important cities on its banks.

7. Describe the course of the North-west Passage between the Atlantic and Pacific Oceans.

8. Name the colonies included in the Dominion of Canada; state their chief characteristics and their principal exports.

9. What countries outside the British Empire yield gold, diamonds, and petroleum? State the position of the principal districts in which each mineral is obtained, and describe their chief characteristics.

10. Name the chief food-plants of the northern hemisphere and the countries in which each is most extensively used.

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

1. The latitude of Antipodes Island is $49^\circ 40'$ S., its longitude $178^\circ 43'$ E.: what is meant by this? Is the longest day on Antipodes Island longer or shorter than the longest day in Auckland, and why?

2. Draw a sketch-map of the North Island of New Zealand. Insert the most important harbours, the chief towns, the principal rivers and lakes, and the chief mountain-ranges.

3. What is the difference between a creek and an estuary? State the position of the Kaipara Estuary, and name the principal rivers which discharge into it.

4. What is a mountain-chain? Give examples from the mountain-systems of Europe and Asia. State the height of the loftiest peaks.

5. Name the chief deserts and table-lands of Asia and Africa. State the approximate position and altitude of each.

6. What is a cataract? Name remarkable cataracts in New Zealand, North and South America, and Africa. State the approximate position and altitude of each.

7. Name the chief ports of Hindostan, state their respective positions, and name the chief products exported.

8. Describe the great system of lakes which discharges into the Gulf of St. Lawrence. Name the chief Canadian cities in the immediate vicinity of the lakes.

9. State the approximate position of six of the most important cities on the Italian peninsula. Write a short note on each.

10. Write a brief note on each of the following places: Glasgow, Warwick, Derby, Lancaster, the Menai Strait, Dundee, Snowdon, Dublin, Galway, Leicester, Edinburgh, Lincoln, Birmingham, Hull, Londonderry, Limerick, Gloucester. State the approximate position of each.

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

[Candidates are expected to attempt all the Questions.]

1. Trace the development of Ministerial government in England, and characterize (a) the Walpole Ministry, (b) the first Pitt Ministry, (c) the Ministry of All the Talents, and (d) the Grey Ministry.