

Ontario College of Pharmacy.

Junior Examinations, December, 1899.

At the Junior Examinations held at the Ontario College of Pharmacy, commencing December 11th, 117 candidates presented themselves. Of these, 104 were successful. The following were the examining papers submitted:

PHYSICS.

Examiner: GRAHAM CHAMBERS, B.A., M.D. Time allowed: Two hours

1. Define and explain what is meant by (a) a Caloric, (b) Radiant heat, (c) Specific heat, (d) Latent heat of vaporization of water.

2. A kilogramme of steam is passed into ten kilogrammes of water at 20° C. What is the temperature of the mixture?

3. Describe the construction of a barometer.

4. Draw a diagram and explain the principle of a common pump.

5. I. Describe—(a) a Grove cell, (b) a Small cell.

II. What do you mean by polarization of the negative plate of a cell?

6. Draw an image of candle produced by a convex lens when the candle is between the principal focus and the lens.

7. State the laws of reflection of light. Draw an image of a candle placed in front of a plain mirror. Explain the formation of more than one image of an object placed in front of a thick glass mirror.

8. Draw a diagram illustrating the dispersion of light by a glass prism.

9. Give the optical explanation of long-sightedness and of short-sightedness, and show what kind of glasses will assist in each case.

CHEMISTRY.

Examiner: A. V. SCOTT, B.A., M.D., C.M. Time allowed: Two hours.

1. Define—Atom, molecule, mechanical mixture, valency, empiric and molecular formulae.

2. Describe fully history, occurrence, preparation, properties, and tests of chlorine. Why are fluorine, chlorine, bromine and iodine classified together?

3. What is the composition of air? What are some of the ordinary impurities, and how would they be detected?

4. Give fully the chemistry of arsenic.

5. How is phosphine prepared, and what are its properties?

6. Complete the following—

(a) Chlorine + calcium hydrate =

(b) Potassium nitrate + hydrogen sulphate =

(c) Phosphorus + water + bromine =

(d) Ammonium nitrate + heat =

(e) Nitric acid + sulphurous acid =

(f) Sodium chloride + manganese dioxide + sulphuric acid =

7. Find the percentage composition of potassium ferrocyanide.

8. How much zinc would be required to produce 1000 litres of hydrogen

(a) at normal temperature and pressure,

(b) at 91° C. and 950 mm. pressure?

9. By the ordinary method of preparation what per cent. of phosphorus remains in combination?

10. 0.25 grms. of an organic substance gave 0.8103 grms. of carbon dioxide and 0.2655 of water. If the vapor is 3.76 times heavier than air, find the empirical and molecular formulæ.

PHARMACY.

Examiner: CHAS. F. HERBER, Ph. G., Phm. B. (T.C.) Time allowed: 2½ hours.

1. Metrical System—Give the derivation of (a) the unit of weight; (b) the unit of linear measure; (c) the unit of capacity. What are the metrical equivalents for (d) an imperial fluid-ounce; (e) an English inch; (f) a grain.

2. Add and reduce the amount to *avoirdupois ounces*:—2½ Kilos., 25¼ D. Gm., 430 c. Gm., 32 d. Gm., 5008 m. Gm., 56¾ H. Gm., 2 M. Gm., 86½ Gms.

3. Extraction—(a) What forces are at work while carrying on the process of percolation? (b) What is the duration of the period of maceration, and (c) what untoward circumstances are likely to follow prolongation of this period?

4. Potassium Chlorate—A quantity of this salt contains the following impurities:—KCl, K₂SO₄, CaCl₂, coloring and insoluble matter; briefly outline a process of purification, and state at what stage and in what manner each of the contaminations mentioned will be removed.

5. A saturated solution (at 15° C) of pure potassium chlorate, has sp. gr. 1.028 and measures 300 c.m.; (a) how much saline matter is present? (b) What is the percentage strength of the solution?

6. Wanted 4 ozs. of a 4 per cent. solution of cocaine hydrochloride, containing also 2½ p.c. hydrogen borate; state weight of water and chemical ingredients required.

7. Give specific gravity and strength of the following official substances:—(a) rectified spirit; (b) nitric acid; (c) solution of ammonia; (d) glycerin; (e) syrup ferrous iodide.

8. A piece of wax weighs 14.25 grams; a block of brass (sufficiently large to immerse wax in water) weighs in distilled water, 15° C., 30 grams; wax and brass together weigh, in distilled water, 15° C., 29.25 grams. What is the specific gravity of the wax?

9. State how each of the following are affected by exposure in uncorked bottles of colorless glass:—(a) calcii chloridum, (b) sodii carbonas, (c) plumbi acetat, (d) liquor chlori, (e) liq. plumbi subacetatis fertis, (f) acidum sulphuricum.

10. Wanted 50 kilos. powdered cuprea bark, representing 5 p.c. of quinine. What quantity of each of the following powders assaying 3½, 4, 6 and 7 p.c. of quinine must be mixed to yield a product in compliance with this requirement?

LATIN, ETC.

Examiner: J. T. FOTHERINGHAM, B.A., M.B., M.D., C.M. Time allowed: two hours

1. What are the uses of the ablative case as seen in the ordinary prescription?

2. Define the terms: Basis, corrigens, subscription and signature in the prescription.

3. Write concise notes on the kidney as an excreting organ.

4. Define the following terms: An excretion, a secretion, a ferment, an alterative, a hypnotic.

5. Give doses of following preparations: Vin. ij ecac, vin. ferri., syr. chloral, syr. tolut., tr. aloes, tr. asafoetida, tr. valer. ammon., tr. iodi, tr. bellad., tr. nuc. vom., tr. digitalis, sp. chlorof, pv. rhei co., pv. ipecac co., ol. santali, liq. calcis, liq. arsen., extr. colchici, extr. bellad. viride, and ac. hydrocyan dil.

BOTANY.

Examiner: A. V. SCOTT, B.A., M.D., C.M. Time allowed: two hours.

1. Describe a plant cell. Distinguish between xylem and phloem.

2. What is meant by aestivation and vernalization? Give the different varieties of the former, illustrating by drawings.

3. Name the organs of vegetation and of reproduction and the function of each.

4. Describe the different forms of indefinite inflorescence.