

Ontario College of Pharmacy.

JUNIOR EXAMINATIONS, DECEMBER, 1895.

PRACTICAL CHEMISTRY.

Examiner—GRAHAM CHAMBERS, B.A., M.B.

1. Detect the acid in the substance marked "A."
2. Detect the acid in the substance marked "B."
3. Detect the acid in the substance marked "C."
4. Detect the metal in the substance marked "D."
5. Bend the necessary glass tubing, and set up Marsh's apparatus for testing for the presence of arsenic.
6. How would you distinguish :
 - (a) Calcium oxide from phosphorous pentoxide.
 - (b) Nitrous oxide from oxygen.
 - (c) Carbon monoxide from hydrogen.
 - (d) A nitrite from a nitrate.
7. Write equations representing the action of :
 - (a) Water on nitrogen pentoxide.
 - (b) Hot concentrated sulphuric acid on hydriodic acid.
 - (c) Dilute sulphuric acid on ferrous sulphide.
 - (d) Chlorine on hot solution of caustic potash.
8. What products are formed by the action of heat upon the following (give equations):
 - (a) Ammonium nitrate.
 - (b) Hydrogen peroxide.
 - (c) Orthophosphoric acid.
 - (d) Strong sulphuric acid with oxalic acid.

CHEMISTRY AND PHYSICS.

Examiner—A. Y. SCOTT, B.A., M.D., C.M.

Time allowed : 2 hours.

1. State the law of multiple proportion, and illustrate by means of the oxides of nitrogen.
2. Give the history, occurrence, preparation, properties of, and tests for chlorine.
3. What volume of chlorine can be obtained from 1,000 grammes of sodium chloride (a) at normal temperature, and pressure (b) at 20°C., and 785 mm. pressure?
4. What impurities may be looked for in well water, and how would they be detected?
5. Give preparation, properties, and uses of hydrogen nitrate. What are the usual impurities? How would they be detected?
6. How are yellow and amorphous phosphorus prepared? How do they differ from each other? How many atoms in a molecule of phosphorus, and why?
7. How much sulphur would it require to use up by burning the oxygen in a vessel of air 1 metre in diameter and 2 metres high?

8. What is the action of chlorine on :
 - (a) A cold solution of potassium hydrate;
 - (b) A warm solution of potassium hydrate?
9. Explain the principles involved in a Sprengel air pump.

LATIN, POSOLOGY, ETC.

Examiner—J. T. FOTHERINGHAM, B.A., M.B., M.D., C.M.

Time allowed : 2 hours.

1. Decline the following. *Pilula, in fustum, haustus, hydras.*
2. Rewrite this prescription (meant for an adult), reducing the quantities to suit a child of twelve years. Give the rule by which you work.

R. Tinct. Digitalis.
Tinct. Strophanthi aa $\mathfrak{z}\text{ij}$.
Tinct. Chloroformi... $\mathfrak{z}\text{iii}$.
Syr. Zingiberis... $\mathfrak{z}\text{ij}$.
Aq. ad $\mathfrak{z}\text{iv}$. M.

$\mathfrak{S}\text{ig}$. $\mathfrak{z}\text{ij}$. ex. aq. $\mathfrak{q}$ ta. q. h.
3. Write out in full Latin the directions in the above prescription and translate them.
4. Divide the above prescription into its main portions and subdivisions, according to the plan of a classical prescription, naming each part.
5. Describe the essential structures of a villus of the small intestine, and say what part each plays in absorption.
6. Give maximum dose of each of the following: *Vin. ferri, tr. cinch. co., tr. cannab. ind., tr. jaborandi, tr. gelsemii, syr. chloral, pulv. jalapa co., pulv. cretae aromat. c. opio, pil. ferri iodidi, pil. colocynth co., inf. digitalis, extr. nuc. vom., e. tr. taraxaci, extr. opii, extr. filicis liq., extr. bellad. alcoholicum, acet. scillae, aq. camphorae, sp. chlorof. et. morph., sp. æth. sulph. co.*
7. Write short notes on ferments, idiosyncrasy, anesthetics, hæmatics, soporifics.
8. Classify foods, giving the main use of each class in the animal economy.

BOTANY.

Examiner—A. Y. SCOTT, B.A., M.D., C.M.

Time allowed : 2 hours.

1. Distinguish between epiphytes parasites and saprophytes.
2. What are the functions of a leaf? Describe fully, giving a drawing of the transverse section of a leaf. What is the distinction between foliage and floral leaves?
3. Describe fully the ovule of a plant.
4. What is meant by fertilization and pollination? How is self-fertilization prevented in many plants?
5. Describe four forms of indefinite inflorescence, giving a drawing in each case.
6. Name the various parts of a vegetable cell. How are new cells formed?
7. Name the parts of a flower and give

their functions. Which would you term essential? Describe a perfect, a complete, and a regular flower. What is a phanerogam?

8. Explain the following: Leaf cycle, bark, primordial, uticle, stipule, raphides.

9. Practical.

PHARMACY.

Examiner—CHAS. F. HERBERT, Ph. C., Pharm. B.

Time allowed : 2½ hours.

1. METRIC SYSTEM.—Explain fully the relation existing between (a) the gram and meter; (b) the meter and the litre. What are the metric equivalents for (c) one inch, (d) one gram, (e) one fluid ounce.
2. Add together 2½ kilos, 345 milli grams, 24 dekagrams, 12 deci grams, 3 myriagrams, 4½ centigrams, 8 hectograms, and convert the result into avoirdupois weight.
3. AMMONIUM CHLORIDUM.—(a) Source; (b) how prepared; (c) usual impurities of the commercial salt; (d) describe method of purification, explaining how each impurity is removed.
4. SPECIFIC GRAVITY.—What will be the weight of 500 c.c. of (a) *Chloroformum P.B.*; (b) *Spiritus Tenuior P.B.*; (c) Given a verified pycnometer, capacity to mark on its neck 50 grams distilled water at 15°C.; a powder weighing 7.5 grams placed in it, and then distilled water (15°C.) added to fill up to established mark; powder and water together weigh 55 grams; what is the specific gravity of the powder?
5. State the meaning of the following terms, as applied to pharmaceutical preparations: (a) galenical; (b) official; (c) officinal; (d) magistral.
6. (a) Define comminution. (b) How are dusted powders made? (c) Mention and explain the processes resorted to in the preparation of *creta preparata*.
7. Required 185 grams of scammony containing 78 per cent. of resin to be made up from portions containing 90 per cent., 75 per cent., and 68 per cent. of resin; how much of each portion may be used?
8. (a) How would you verify a drachm graduate as to its marks for 30 minims and 60 minims? How test a single beam equal arm balance, (b) for parallelism of knife edges, (c) for equality of length of arms?
9. DIALYSIS. (a) Define, (b) describe the apparatus used; (c) what forces are exhibited during the operation, and (d) what are the respective directions of their action? (e) During the preparation of *Liquor Ferri Disyatus*, in what part of the apparatus will the finished product be found?