

10. Mention the conditions required for the formation of large and perfect crystals from solution.

PHARMACAL LABORATORY.

Examiner: CHAS. F. HERRNEN, Ph.G., PHM.B.

Time allowed: 2½ hours

1. Prepare 90 grams of solution of subacetate of lead by the following formula, submitting a report in accordance with the subjoined synopsis, and illustrating the chemical changes by an equation:

LIQUOR PLUMBI SUBACETATIS.

Lead acetate.... 88.3
Lead oxide, in
powder..... 62.5
Distilled water .. 425.0 or q.s.

Make finished product..... 450.0 grams

Heat the distilled water to boiling, and dissolve in it the lead acetate. Add the lead oxide gradually and boil gently for half an hour, agitating well, and keeping up the original volume of the liquid. Filter, and make up to proper weight.

REPORT 1.

(Exhibit all figures used in calculations required.)

Amount of each ingredient used:

Lead acetate.... grams.
Equivalent in grains....
Lead oxide.... grams.
Equivalent in grains....
Distilled water.... c.m.
Equivalent in fl. ozs....
Equation.....

2. Determine the specific gravity of the solution of subacetate of lead. (Bottle and label properly, and submit solution to the examiner.)

REPORT 2, SPECIFIC GRAVITY.

Weight of solution used.....
Weight of equal volume of water...
Specific gravity.....

(Exhibit figures.)

N.B.—Neatness of work, order in arrangement, and cleanliness of working desk and outfit, will enter as important factors in your ratings.

SENIOR EXAMINATIONS, DECEMBER, 1895.

MATERIA MEDICA.

Examiner: J. TOLBERT PEPPER.

Time allowed: 2 hours.

1. Name ten drugs of the natural order leguminosæ, official in the British Pharmacopœia.
2. Oleum Morrhuæ—Give origin, class, order, family, habitat, a description of the method of production, and of the oil as you have seen it in drug stores. Give good reasons

why some samples of oleum morrhue are so much better than others. Give constituents and medicinal properties.

3. Name plants in which the following constituents are found: pil carpine, caffeine, cocaine, emetine, vanillin, inulin, jervine, atropine, amygdalin, salicine.
4. Give in one or two words the therapeutic action of each of the following drugs: ergot, cantharides, belladonna, cubeba, buchu, nux vomica, asafoetida, cascara, senega, sarsaparilla.
5. Give natural order and habitat of the following: ricinus, galbanum, rheum, gelsemium, colocynthis.
6. Name part used and medicinal properties of the following: digitalis, camphora, opium, ulmus, scilla.
7. What seeds are official in the British Pharmacopœia?
8. What is benzoin? How is it procured? What varieties are found in commerce? Where is it obtained? Name its properties and uses. What acid is obtained from it? Is this acid, as usually found in drug stores, made from benzoin? If not, what is its source?
- 9 and 10. Recognition of specimens and oral examination.
- Values—10, 10, 10, 10, 10, 10, 10.

CHEMISTRY.

Examiner: PAUL L. SCOTT.

Time allowed: 2 hours.

1. Explain fully the application of the law of Avogadro in determining the number of atoms in a molecule of mercury.
2. The hardness of a sample of spring water is found to be due to the presence of carbonate and sulphate of calcium. State—giving equations—how the hardness of the water would be affected by
- (a) Boiling.
- (b) The addition of lime water, not in excess.
- (c) The addition of solution of ammonia.
- (d) The addition of carbonate of potassium.
3. Show by means of equations the action of
- (a) Hydrochloric acid on the official calcium phosphate.
- (b) Cream of tartar on wet oxide of antimony.
- (c) Sodium carbonate on magnesium sulphate in solution.
- (d) Corrosive sublimate on lime water.
- (e) A stream of carbondioxide on ferrous sulphate in solution.
- (f) Dilute nitric acid on iron.
4. Define compound and haloid ethers,

and give the name and formula of an official compound of each class. State what is meant by a homologous series, and give the general formulæ of the homologous series to which chloroform and ether respectively belong.

5. Give the formula, and tests for identity and purity of the official carbonate of lead, explaining, with or without equations, precisely what facts as to identity or purity are indicated by each test. Show how
- (a) Carbonate of bismuth, or
- (b) White lead, adulterated with carbonate of barium, would fail to conform to these tests.
6. What weight of acetic ether would, upon heating, yield a quantity of vapor which, at a temperature of 182° C., and a pressure of 950 mm., would measure 10 litres? What quantity of 90% alcohol would theoretically be required to produce this quantity of acetic ether? Show work.
7. Give the sources and usual method of preparation of boracic acid and of borax. Give tests for identity and purity of boracic acid, and state what changes are effected upon it by heat.
8. Give the formulæ of iron and potassium alums, and state how much N. and how much Al. are contained in 1000 gm. of ammonium alum B.P. Show work.
- Values—8, 8, 12, 10, 12, 10, 10, 10.

PHARMACY.

Examiner: F. T. HARRISON.

Time allowed: 2 hours.

1. Give in detail the B.P. process for preparing the solid extracts made from the fresh leaves and flowering tops of the plant; and state reasons for each step.
2. The following preparations, being more or less unstable, require to be tested from time to time to see if they are in proper condition for dispensing: Spirit of nitrous ether, diluted hydrocyanic acid, and sulphurous acid. State in each case how you would perform such tests.
3. Give the percentage of morphine in extract of opium, liquid extract of opium, aromatic powder of chalk and opium, and compound tincture of camphor, and the per cent. of total alkaloids in extract of nux vomica and liquid extract of cinchona.
4. State what excipients you would use in making pills of the following: Sulphate of quinine, phosphorus, nitrate of silver, permanganate of potash, and sulphate of iron. Give reasons for your choice in each instance.
5. From what materials are prepared: Simple ointment, Donovan's solution, Hoffman's anodyne, compound pill of soap, and Griffith's mixture.