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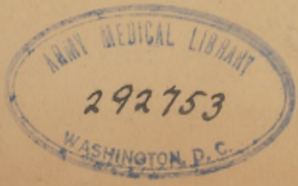


A GUIDE
FOR
EXAMINATIONS
IN
PHARMACY



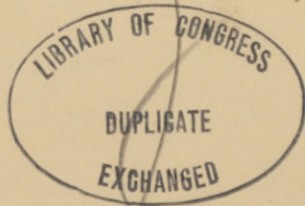
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CAMBRIDGE, MASS.:
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PREFACE.

HAVING had the experience of several State Board examinations in Pharmacy, the author saw the need of some guide to study from, and this edition was found most practical and useful. The average clerk has very little time to hunt in text books for every little point and odd question, and a book containing these things together with a general quiz, is a great help to every clerk preparing for examination. The Pharmacopoeia of 1890, should be studied in connection with this Guide.

THE AUTHOR.

METROLOGY.— Questions.

1. What is a grain?
2. What is a meter?
3. State denominations of both Troy and Avoirdupois system?
4. Give the metric table?
5. What is the difference between a Wine pint and Imperial pint?
6. What does one fluid ounce of water weigh?
7. How do you find the specific gravity of a body?
8. How many fl. oz. in a lb. (av.) of Glycerin, ether et chloroform?
9. Convert 1 oz. 2 dr. 15 gr. (Troy) into Metric system.
10. Convert 51 gmmes. into Troy weights.
11. What does 1 Gram equal?
12. What does 1 Meter equal?
13. What does 1 Liter equal?
14. What does 1 Troy oz. equal?
15. What does 1 Avoid. oz. equal?
16. What does 1 Wine fluid oz. equal?
17. What does 1 Imperial fluid oz. equal?
18. What does 1 Fluid drachm equal?
19. What does 1 grain equal?
20. What is the difference between a pint and a pound of glycerin?

METROLOGY.— Answers.

1. "An English silver-penny, called the sterling, round and without clipping, shall weigh 32 grains of wheat, well dried and gathered out of the middle of the ear."
2. $\frac{1}{40}$ millionth of the circumference of the earth from pole to pole.
- 3-4. Look it up if not fresh in your memory.
5. Wine pint = 16 oz.; Imperial = 20 oz.
6. 455.7 grs., or about 456 grs.
7. Divide it by the weight of an equal bulk of water.

$$8. \text{ Glycerin} = \frac{7000}{456 \times 1.25} = 12.9 \text{ fl. oz.}$$

$$\text{Ether} = \frac{7000}{456 \times .72} = 21.0 \text{ fl. oz.}$$

$$\text{Chloroform} = \frac{7000}{456 \times 1.5} = 10.2 \text{ fl. oz.}$$

$$9. 1 \text{ oz. 2dr. 15 gr.} = 480 + 120 + 15 = 615 \times 65 = 39.975 \text{ gm.}$$

$$* 10. \frac{51 \times 1000}{65} = 784 + \text{grs.}$$

$$11. 15.4 \text{ grains.}$$

$$12. 3 \text{ ft. } 3\frac{3}{8} \text{ in.}$$

$$13. 2.11 \text{ wine pts., or } 1.76 \text{ imp. pts.}$$

$$14. 31.103 \text{ gms. or about } 30 \text{ gms.}$$

$$15. 28.35 \text{ gms. or about } 28.5 \text{ gms.}$$

$$16. 29.57 \text{ c.c. or about } 30 \text{ c.c.}$$

$$17. 28.39 \text{ c.c. or about } 28.5 \text{ c.c.}$$

$$18. 3.7 \text{ c.c. or about } 4.$$

$$19. 65 \text{ milligrams or } .065 \text{ gms.}$$

$$20. \begin{cases} \text{A pint} = 16 \text{ fl. oz.} \\ \text{A lb. (av.)} = 12.9 \text{ fl. oz.} \end{cases}$$

HEAT.

In studying up on heat I would advise you to read what Remington has to say on the subject, and get kind of a general idea of it.

In changing from Fahrenheit to Centigrade or *vice versa*, if you will remember two things you can do any problem.

1st. $100^{\circ} \text{ C.} = 212^{\circ} \text{ F.}$ or boiling point of H_2O .

2d. That 1.8 and 32 are the figures used in converting.

In an examination, if you forget how to convert, try to change 100° C. to 212° F. and it will come back to you.

Be sure and know the definition for Ignition; Fusion; Calcination; Deflagration; Carbonization; Torrefaction; Incineration; and Sublimation.

Explain the difference between Evaporation and Distillation; Desiccation and Granulation.

Give difference between Levigation and Elutriation.

What is the process of powdering camphor called? It is powdering by intervention.

*(Note.—In doing problems of this kind it is better to change everything to grains or milligrams before converting.)

SOLUTION.

Tell what a solution is, and when it is saturated.

Give an example of a chemical solution. Example: Liq. Amm. Actatis.

What is a simple solution? Example: sugar in water.

Name the solvents used in Pharmacy in their order of importance? Water, alcohol, glycerin, ether, chloroform, carbon bisulphid, benzin, acid and oils.

Name different ways of separating liquids from solids.

Washing, by a siphon, decanting, straining or colation, filtering, expressing or percolating.

Explain difference between a precipitate and a sediment. A sediment is in the lime water bottle; a precipitate is in Brown's mixture.

Be familiar with the different ways of percolating, and terms used in percolation.

OFFICIAL PREPARATIONS.

| LIQUIDS. | No. | SOLIDS. | No. |
|--------------------------|-----|-------------------------|-----|
| Waters | 19 | Extracts | 32 |
| Solutions | 24 | Resins | 4 |
| Syrups | 32 | Powders | 9 |
| Honeys | 3 | Triturations | 1 |
| Mucilages | 4 | Masses | 3 |
| Emulsions | 4 | Confections | 2 |
| Mixtures | 4 | Pills | 15 |
| Glycerites | 6 | Troches | 15 |
| Spirits | 25 | Cerates | 6 |
| Elixirs | 2 | Ointments | 23 |
| Colloctions | 4 | Plasters | 13 |
| Oleates | 3 | Papers | 2 |
| Liniments | 9 | Suppositories | 1 |
| Infusions | 4 | | |
| Decoctions | 2 | | |
| Tinctures | 72 | | |
| Fluid Extracts | 88 | | |
| Wines | 10 | | |
| Oleoresins | 6 | | |
| Vinegars | 2 | | |

U. S. P. PREPARATIONS.

AQUAE.

1. What is an aqua?
2. How many official?
3. Name different ways of making them.
4. Tell how to make the following:— Chloroformi, Aurantii Florum, Rosae, Chlorig, Camphorig, Hydrogenii Dioxidig, and Creasotig.
5. Give the strength of the following:— Chlorig, Camphorig, Chloroformig, and Creasote.
6. Give dose of waters. $\left\{ \begin{array}{l} \text{Ammonia water} = 10\text{--}30 \text{ m.} \\ \text{all others} = \frac{1}{2} \text{ to } 2 \text{ dr.} \end{array} \right.$
7. Write the U. S. P. name for Rose water.

LIQUORES.

1. What is a liquor?
2. How many official?
3. What two classes are there?
4. How make the following:— Ammonii Acetatis, Calcis, Sodae Chloratae, Potassii Arsenitis and Ferri et Ammonii acetatis?
5. What is the strength of the following: Arsenious acid, Iodide of Arsenic and Mercury, Comp. Iodine, Plumbi Subacetatis, Sodae Chloratae, Zinci Chloridig?
6. What are the following:— Donovan's Sol. ; Basham's Mixture ; Monsel's Sol. ; Lugol's ; Goulard's Sol ; Lead water ; Labarague's Sol.
7. Give dose of liquors. $\left\{ \begin{array}{l} 4 \text{ the dose} = \frac{1}{4} \text{ to } 1 \text{ dr.} \\ \text{all others} = 3\text{--}10 \text{ m.} \end{array} \right.$
8. Write the U. S. P. name for Lugol's solution.

SYRUPI.

1. What is a syrup?
2. How many official?

MISTURAE.

1. What is a mixture ?
2. How many official ?
3. Give composition of each.
4. What is Brown's, and Griffith's mixture ?
5. Give dose of each.
6. Write U. S. P. name for Brown's mixture.

GLYCERITAE.

1. What is a glycerite ?
2. How many official ?
3. Strength of Tannic acid and Carbohc acid glycerites.
4. Give dose of glycerite of Phenol and write U. S. P. name.

SPIRITUS.

1. What is a spirit ?
2. How many official ?
3. Name four ways of making them.
4. Give strength of Spirit of Bitter Almond ; Glonoimi ; Phosphorus ; and Chloroform.
5. Give composition of Spirits of Ether Comp. ; Aurantii Comp. ; and Ammonii Aromaticus.
6. Write U. S. P. name for Spirits of ether.

ELIXIRIA.

1. What is an elixir ?
2. How many official ?
3. Give composition of Elixir of Phosp.
4. Amount of Phosp. in Elixir ? $\left\{ \begin{array}{l} \frac{1}{65} \text{ gr.} \\ \text{in 1 dr.} \end{array} \right.$
5. Write U. S. P. name for simple elixir.

COLLODIA.

1. What is a collodion ?
2. How many official ?
3. Give composition of each.

4. How is collodion made?
5. What is H_2SO_4 used for in its manuf.? (It takes the water from the HNO_3 thus making the HNO_3 stronger).
6. Write U. S. P. name for Flex. Collodion.

OLEORESINAE.

1. What is an oleoresin?
2. How many official?
3. Give general way of making.
4. Dose of each. $\left\{ \begin{array}{l} 2 \text{ large doses,} \\ \text{rest are small.} \end{array} \right.$
5. Write U. S. P. name for Oleores. Cubeb.

LINIMENTA.

1. What is a liniment?
2. How many official?
3. What are the bases used?
4. Give composition of Liniment of Belladonna, Soap; Comp. Mustard, and Chloroformi.
5. Write U. S. P. name for Carron oil.

OLEATA.

1. What is an oleate?
2. How many official?
3. Give strength of each.
4. Write U. S. P. name of oleate of zinc.

INFUSA.

1. What is an infusion?
2. How many official?
3. Give official formula for any non-official infusion, and tell how to make it.
4. What ones made without heat?
5. What ones made with heat?

6. Give composition of infusion of digitalis, cinchona, and senna comp.
7. Give dose of each. { All given in ℥'s
 except one.
8. Write U. S. P. name for infusion Senna Comp.

DECOCTA.

1. What is a decoction ?
2. How many official ?
3. Give general formula and how made.
4. How is Iceland Moss Decoction made ?
5. Give composition and write U. S. P. name for Decoc. Sarsap. Comp.

TINCTURAE.

1. What is a tincture ?
2. How many official ?
3. Name three ways of making them.
4. Give the composition and strength of paregoric; Iodine.
5. Give the ingredients of

| | | |
|------------------|-----------|-------------------|
| Benzoin Comp. | | B. a. s. t. |
| Cardamon Comp. | | C. C. C. C. |
| Catechu Comp. | | C. C. |
| Cinchona Comp. | | C. O. S. |
| Gentian Comp. | | G. O. C. |
| Lavendulae Comp. | | L. R. C. C. N. S. |
| Rhei aromatic | | R. C. C. N. |
| Rhei Dulcis | | R. L. A. C. |
| Rhei | | C. |
| Aloes | | G. |
| Aloes and Myrrh | | G. |

6. How make, and formulae for Tinct. of Recent Herbs ?
7. Write U. S. P. name for Tinct. Iodine.

VINA.

1. What is a wine?
2. How many official?
3. How make wine of antimony and opium, and give strength and composition?

EXTRACTA FLUIDA.

1. What is a fluid extract?
2. How many are official?
3. Give a formula for U. S. P. fluid extract?
4. Give ingredients of the Comp. Fl. Ext.?
5. Give the dose of

| | | | |
|---------------------------|------|---------------------------|------|
| Aconite | ½-1 | Lobelia | 1-5 |
| Arnica Rad | 5-20 | Mezerium | 2-15 |
| Belladonnae Rad | 1-3 | Nux Vomica | 1-4 |
| Canabis Indica | 2-5 | Mandrake | 5-15 |
| Capsici | ½-2 | Sabinae | 5-15 |
| Conii | 1-10 | Sanguinaria | 1-5 |
| Colchicum Rad | 2-5 | Scillae | 1-5 |
| Convallaria | 3-10 | Senega | 3-15 |
| Digitalis | 1-2 | Stram. Seed | 1-3 |
| Gelsemium | 2-3 | Veratrum Viridi | 1-5 |
| Hycocamus | 3-10 | | |

ACETA.

1. What is a vinegar?
2. How many official?
3. What is the menstruum used?
4. What is in Acetum Opii?
5. Give dose of each?
6. Write U. S. P. name for vinegar of squills.

EXTRACTA.

1. What is an extract?
2. How many official?
3. How are they made?

4. What one has acetic acid in menstruum?
5. Give ingredients of the comp. ext.
6. Get a general idea of the doses.
7. Write U. S. P. name for extract Nux Vomica.

RESINA.

1. What is a resin?
2. How many official?
3. How are they made?
4. Dose of each { One is large
 { rest are small.

TRITURATIONES.

1. How many official?
2. Give dose of it.

MASSAE.

1. What is a mass?
2. How many official?
3. Give composition of each and dose.

PULVIS.

1. What is a powder?
2. How many official?
3. Give ingredients of each one.

Jalap Comp.
Creta Comp.
Licorice Comp.
Morphine Comp.
Rhei Comp.
Anitmonial.
Aromatic.

} Also give the common *name* for each.
And the *dose*.

4. Write U. S. P. name for Tully's Pd.

CONFECTIONES.

1. What is a confection ?
2. Give composition of each.
3. What are they used for ?
4. Write U. S. P. name for Confection of Rose.

PILULAE.

1. What is a pill ?
2. How many official ?
3. Name some excipients used.
4. Give composition of the comp. pills.
5. Write U. S. P. name for Opium Pill.

TROCHISCI.

1. What is a troche ?
2. How many official ?
3. How are they made ?

CERATA.

1. What is a cerate ?
2. How many official ?
3. What one is made by incorporation ?
4. What is the difference between cerate and ointment ?
5. Write name for one.

OINTMENTS.

1. How many official ?
2. How would you make the following ointments, — Cold Cream, Diachylon, Blue, Citrine ?
3. Give strength of them all.

EMPLASTRA.

1. How many official ?
2. Name the three bases.

3. What is a strengthening plaster; warming plaster; adhesive plaster?
4. Give strength of the two mercury plasters.

CHARTA.

1. How many official?
2. How is mustard paper made?
3. What is the benzine used for? (To take out fixed oil.)

SUPPOSITORIA.

1. How many official?
2. Describe the three shapes.
3. Give U. S. P. weights for each.
4. How make Glycerin Suppos.?
5. Write U. S. P. name for it.

ACIDS. — Questions.

1. What is the strength of the dilute acids?
2. Give strength of Acetic.
3. Give strength of Hydrochloric.
4. Give strength of Nitric.
5. Give strength of Phosphoric.
6. Give strength of Sulphuric.
7. Give strength of Sulphuric Aromatic.
8. Give strength of Sulphurous.
9. What is the dose of Arsenious and Carbolic acids?
10. What does Oleic and Stearic acids come from?

ACIDS. — Answers.

1. All the dilute acids are 10 % except acetic, 6 %; Prussic, 2 %; and nitrohydrochloric, 4 % HNO_3 and 18 HCl.
2. 36 %.
3. 31.9 %.
4. 68 %.
5. 85 %.

6. 92.5 %.
7. 20 %.
8. 6.4 %.
9. $\frac{1}{80}$ to $\frac{1}{16}$ of a grain of Arsenic and 1 to 3 grains of carbolic acid.
10. Oleic is a by-product in making candles, and stearic is obtained from tallow and other solid fats.

OILS. — Questions.

1. What are the two classes of oils?
3. What is the difference between them?
3. Are volatile oils lighter than water?
4. Are fixed oils lighter than water?
5. Are fixed oils soluble in alcohol?
6. How are volatile oils obtained?
7. Name those obtained by expression.
8. Name those obtained by destructive distillation?
9. What is oil Neroli?
10. What is oil sweet Birch?
11. What is oil Fleebane?
12. What is oil teal or Benne?
13. What is oil Croton?
14. What is oil Etherial?
15. Give dose of Bitter almond oil.
16. Give dose of Volatile Mustard oil.
17. Give dose of Croton oil.
18. Give strength of Phosphoreted oil.
19. How is oil turpentine rectified?

OILS — Answers.

1. Volatile and Fixed oils.
2. Volatile oils evaporate and leave no residue, while most of the fixed oils will not dry, and if they do, form a skin.
3. Yes, with six exceptions; oil of wintergreen, sassafras, cinnamon, allspice, bitter almond, and volatile mustard are heavier.

4. Yes.
5. No, except castor and croton.
6. By distillation, by expression, and destructive distillation.
7. Expressed oil of almond, Bergamont, Orange peel, and Lemon.
8. Oil of cade.
9. Oil orange flowers.
10. Oleum Betulae Volatile.
11. Oleum Erigerontis.
12. Oleum Sesami.
13. Oleum Tiglii.
14. Equal parts of heavy oil of Wine and Ether.
15. $\frac{1}{6}$ to $\frac{1}{2}$ min.
16. $\frac{1}{6}$ to $\frac{1}{2}$ min.
17. $\frac{1}{2}$ to 2 min.
18. It is 1 %.
19. With lime water.

SOLUBILITIES.

SOLUBLE.

All compounds of Na, K, and NH_3 .

All nitrates, acetates, chlorates, Permanganates, Lactates, and Hypophosphites.

All Bromides, Iodides, and Chlorides except those of Hg (?) Ag and Pb.

All sulphates except those of Ba, Ca, and Pb.

INSOLUBLE.

All hydrates, carbonates, phosphates, oxides, Sulphides, Arsenates, Arsenites, Borates, Tanates, and Silicates, except those of Na, K and NH_3 .

Following will be found a list of the most important drugs to know the solubility of in water.

In learning them I suggest that you take a strip of paper and cover up the answers and try to give them from memory and then look to see if you are right.

1 part of — is soluble in — parts water.

| | |
|---------------------------------|--------|
| Acid Benzoic | 500 |
| Acid Boric | 25 |
| Acid Gallic | 100 |
| Acid Salicylic | 450 |
| Acid Tannic | 1 |
| Codeine | 80 |
| Cocaine Hyd. | .48 |
| Creasote | 150 |
| Magnesium Sulphate | 1.5 |
| Corrosive Sublimate | 16 |
| Calomel | insol. |
| Morphine Sulp. | 21 |
| Chlorate of Potassium | 16 |
| Potassium bromide | 1.6 |
| Potassium Bitart. | 200 |
| Quinine Sulp. | 740 |
| Resorcin | .6 |
| Thymol | 1200 |
| Paraldehyde | 8.5 |
| Borax | 16 |
| Sodium Salicylate | .9 |
| Zinc Sulphate | 2.7 |
| Iodides of Mercury | insol. |
| Antipyrine | 1 |
| Sugar of milk | 6 |
| Quinine Bisulphate | 10 |
| Sodium Chloride | 2.8 |

SPECIFIC GRAVITIES.

Be sure you know the following Sp. Grs.

| | |
|-----------------------------|-------|
| Acid Acetic | 1.048 |
| Acid Carbolic | 1.065 |
| Acid Hydrochloric | 1.16 |
| Acid Nitric | 1.42 |
| Acid Sulphuric | 1.83 |

| | |
|----------------------|--------------|
| Glycerin | 1.25 |
| Chloroform | 1.49 |
| Ether | .72 |
| Oleic acid | .90 |
| Alcohol | .819 to .938 |
| Syrup | 1.31 |
| Mercury | 13 |

Drops in a fluid drachm.

| | |
|--------------------------------|---------|
| Acid Carbolic | 111 |
| Ether | 178 |
| Alcohol | 146 |
| Chloroform | 250 |
| Creasote | 122 |
| Fluid Extracts | 120-160 |
| Glycerin | 67 |
| Liquors | 60-80 |
| Oleoresins | 120 |
| Volatile oils | 115-140 |
| Spirit of Chloroform | 150 |
| Syrups | 65 |
| Tinctures and Wines | 110-140 |

ANTIDOTES.

Be sure and have the antidotes for the following on the end of your tongue.

| | |
|---------------------------------|-----------------|
| Mineral acids | Dilute alkalies |
| Carbolic and Creasote | Fixed oils |
| Arsenic | ferric hydrate |
| Oxalic acid | Lime |
| Silver nitrate | Common Salt |
| Opium | Strong Coffee |
| Chloral | Whiskey |
| Mercury salts | White of eggs |
| Alkalies | Dilute acids |

If you want to give a quick emetic give Sulphate of Zinc, and don't stop to weigh it.

Tests for alkaloids.

Morphine + HNO_3 = Blood red.

Morphine + Fe_2Cl_6 = Dark blue.

Quinine + $\text{Cl} + \text{NH}_3$ = Emerald green.

Strychnine + $\text{H}_2\text{SO}_4 + \text{K}_2\text{Cr}_2\text{O}_7$ = purple.

Atropine + $\text{K}_2\text{Cr}_2\text{O}_7$ = green on standing.

Brucine + H_2SO_4 = pink.

Aconitine = Put drop of solution on end of tongue, and if inside of 15 min. you get tingling with numbness it is aconitine.

PLANT DRUGS OF U. S. P.

| U. S. P. NAME | COMMON NAME |
|------------------------|--------------------------------|
| Absinthium | Wormwood |
| Acacia | Gum Arabic |
| Aconitum | Wolfsbane or Monkshood |
| Allium | Garlic |
| Aloe (two) | Barbadoes and Socotrine |
| Althea | Marshmallow |
| Amygdala Amara | Almond Bitter |
| Amygdala Dulcis | Almond Sweet |
| Amylum | Starch |
| Amisum | Anise |
| Anthemis | Roman Chamomile |
| Apocynum | Canadian Hemp |
| Arnica | Mountain tobacco |
| Asclepias | Pleurisy Root or Butterflyweed |
| Aspidium | Male Fern or Filix Mas |
| Aurantii Amari Cortex | Bitter Orange Peel |
| Aurantii Dulcis Cortex | Sweet Orange Peel |
| Balsamum Peruvianum | Balsam Peru |
| Balsamum Tolutanum | Balsam Tolu |
| Belladonna | Deadly Nightshade |
| Benzoinum | Gum benzoin |
| Bryonia | Bryony |
| Buchu | Buchu |

| | |
|---------------------------------|-----------------------------|
| Calamus | Sweet Flag |
| Calendula | Marigold |
| Calumba | Columbo root |
| Cambogia | Gamboge |
| Camphora | Gum Camphor |
| Cannabis Indica | Indian Hemp |
| Cantharis | Spanish Fly |
| Capsicum | Cayenne or African Pepper |
| Cardamomum | Cardamon seed |
| Carum | Caraway seed |
| Caryophyllus | Cloves |
| Cascarilla | Cascarilla Bark |
| Cassia Fistula | Purging Cassia |
| Castanea | Chestnut |
| Catechu | Cutch |
| Caulophyllum | Blue Cohosh or squaw root |
| Cetraria | Iceland Moss |
| Chelidonium | Garden Celandine |
| Chenopodium | American Wormseed |
| Chimaphila | Princess Pine or Pipsissewa |
| Chirata | Bitterstick |
| Chondrus | Irish moss or carragreen |
| Chrysarobinum | From Goa powder |
| Cimicifuga | Black Snakeroot or cohosh |
| Cinchona | Calisaya or Jesuit's Bark |
| Cinnamomum (3) | Chinese, Saigon and Ceylon |
| Coca | Erythoxylon |
| Coccus | Cochineal |
| Colchicum Rad. and Sem. | Meadow Saffron |
| Colocynthis | Bitter Apple and Cucumber |
| Conium | Poison Hemlock |
| Convallaria | Lily of the Valley |
| Copaiba | Balsam Copaiba |
| Coriandrum | Coriander |
| Crocus | True Saffron |
| Cubeba | Cubeb |

| | |
|-----------------------------|---------------------------------|
| Cusso | Brayera or Kousso |
| Cypripedium | Ladies Slipper or Moccasin Root |
| Digitalis | Foxglove |
| Dulcamara | Bittersweet |
| Elastica | India Rubber |
| Elaterinum | Squirting Cucumber |
| Ergota | Ergot of Rye |
| Eriodictyon | Yerba Santa or Bear's Weed |
| Eucalyptus | Fever Tree |
| Euronymus | Wahoo |
| Eupatorium | Boneset or Thoroughwort |
| Fel Bovis | Oxgall |
| Foeniculum | Fennel |
| Frangula | Buckthorn |
| Galla | Nutgall |
| Gelsemium | Yellow Jasmine |
| Gentiana | Gentian |
| Geranium | Cranesbill |
| Glycyrrhiza | Licorice Root |
| Gossypii Rad. Cort. | Cotton Seed Bark |
| Granatum | Pomegranate |
| Grindelia | Gum plant |
| Guiaci Lig. | Ligum Vitae |
| Guarana | Guarana Bread |
| Haematoxylon | Logwood |
| Hamamelis | Witch hazel |
| Hedeoma | Pennyroyal |
| Humulus | Hops |
| Hydrastis | Golden Seal or Yellow Root |
| Hyoseyamus | Henbane |
| Ichthyocolla | Isinglass |
| Iris | Blue Flag |
| Jalapa | Jalap |
| Juglans | Butternut |
| Kamala | Kamala |
| Kino | Kino |

| | |
|------------------------------|-----------------------------------|
| Krameria | Rhatany |
| Lactucarium | Lettice |
| Lappa | Burdock |
| Leptandra | Culver's or Black Root |
| Linum | Flaxseed |
| Lobelia | Emetic Herb or Indian Tobacco |
| Lycopodium | Vegetable Sulphur |
| Macis | Mace |
| Manna | Manna |
| Marrubium | Horehound |
| Mastiche | Mastic |
| Matico | Matico |
| Matricaria | German Chamomile |
| Menispermum | Yellow Parilla or Canada Moonseed |
| Melissa | Lemon Balm |
| Mentha Piperita | Peppermint |
| Mentha Viridis | Spearmint |
| Mezereum | Mezereum |
| Moschus | Musk |
| Myristica | Nutmeg |
| Myrrha | Gum myrrh |
| Nux Vomica | Poison nut |
| Opium | Opium |
| Pareira | Pareira Brava |
| Pepo | Pumpkin seed |
| Physostigma | Calabar or Ordeal Bean |
| Phytolacca Fructus | Poke or Pigeon berry |
| Phytolacca Radix | Poke root |
| Picrotoxinum | Picrotoxin |
| Pilocarpus | Jaborandi |
| Pimenta | Allspice |
| Pix Burgundica | Burgundy Pitch |
| Pix Liquida | Tar |
| Podophyllum | May Apple or Mandrake |
| Prunus Virginiana | Wild Cherry |
| Pulsatilla | Pulsatilla |

| | |
|------------------------------|------------------------|
| Pyrethrum | Pellitory |
| Quassia | Bitter Wood |
| Quercus alba | White Oak |
| Quillaja | Soap Bark |
| Resina | Colophony |
| Rhamnus Purshiana | Cascara Sagrada |
| Rheum | Rhubarb |
| Rhus Glabra | Sumach |
| Rhus Toxicodendron | Poison Ivy |
| Rosa Centifolia | Pale Rose |
| Rosa Gallica | Red Rose |
| Rubus | Blackberry |
| Rubus Idaeus | Raspberry |
| Rumex | Yellow Dock |
| Sabina | Savine Tops |
| Salvia | Sage |
| Sambucus | Elder Flowers |
| Sanguinaria | Bloodroot or Puccoon |
| Santalum Rubrum | Red Saunders |
| Santonica | Levant Wormseed |
| Sarsaparilla | Sarsaparilla |
| Sassafras | Sassafras |
| Sassafras Medulla | Sassafras Pith |
| Scammonium | Scammony |
| Scilla | Squill |
| Scoparius | Broom |
| Scutellaria | Scullcap or Wadweed |
| Senega | Senega |
| Senna | Senna |
| Serpentaria | Virg. Snakeroot |
| Sinapis Alba | White Mustard |
| Spigelia | Pinkroot |
| Staphisagria | Stavesacre |
| Stillingia | Queen's or silver root |
| Strammonium | Thorn apple |
| Stropanthus | Stropanthus |

| | |
|-----------------------------------|--------------------|
| Styrax | Storax |
| Sumbul | Sumbul |
| Tamarindus | Tamarind |
| Tanacetum | Tansy |
| Taraxacum | Dandelion |
| Terebinthina | Turpentine |
| Terebinthina Canadensis | Fir Balsam |
| Tragacanthus | Tragacanth |
| Triticum | Couch or dog grass |
| Ulmus | Elm |
| Uva Ursi | Bearberry |
| Valeriana | Valerian |
| Veratrina | Veratrine |
| Veratrum Viride | American Hellabore |
| Viburnum Opulus | Cramp Bark |
| Viburnum Prunifolium | Black Haw |
| Xanthoxylum | Toothache Tree |
| Xanthoxylum | Prickly Ash |
| Xanthoxylum | Angelica Tree |
| Xanthoxylum | Pepper Wood |
| Xanthoxylum | Tea Ash |
| Zea | Corn Silk |
| Zingiber | Ginger |

UNOFFICIAL DRUGS.

| | |
|----------------------|--------------------------|
| Lactuca | Lettice |
| Dracontium | Skunk Cabbage |
| Cornus | Dogwood |
| Olibanum | Frankinsense |
| Origanum | Sweet Majoram |
| Helonias | False Unicorn |
| Hepatica | Liverwort |
| Aletris | Star Grass |
| Prinos | Black alder or Feverbush |
| Hirudo | Leeches |

| | |
|------------------------|---------------------|
| Galangal | China or India root |
| Azedarack | Pride of India |
| Chinoidine | Extract of Bark |
| Cydonium | Quince Seed |
| Trifolium | Clover |
| Agarie | Touchwood or Spunk |
| Cochlearia | Horse Radish |
| Leonurus | Motherwort |
| Turnera | Damiana |
| Adonis | Bird's Eye |
| Coptis | Gold Thread |
| Petroselinum | Parsley |
| Apium | Celery |
| Geum | Water Avens |
| Satureja | Summer Savory |
| Ruta | Rue |

SYNONYMS.

| | |
|----------------------------|---------------|
| Mountain Tobacco | Arnica |
| Filix Mas | Aspidium |
| Secale Cornutum | Ergot |
| Monkshood | Aconite |
| Butterfly Weed | Asclepias |
| Mountain Balm | Yerba Santa |
| Squaw Root | Caulophyllum |
| Bitter Apple | Colocynthus |
| May Apple | Podophyllum |
| Thorn Apple | Strammonium |
| Love Apple | Tomato |
| Cutch | Catechu |
| Sweet Root | Licorice Root |
| Indian Sage | Eupatorium |
| Bears Weed | Eriodictyon |
| Bitterstick | Chirata |
| Wolfsbane | Aconite |
| Gum Plant | Grindelia |

| | |
|------------------------------|------------------|
| Emetic Weed | Lobelia |
| Vegetable Sulphur | Lycopodium |
| Consumptive's Weed | Eriodictyon |
| Yellow Root | Hydrastis |
| Black Root | Leptandra |
| Pink Root | Spigelia |
| Moccasin Root | Cypripedium |
| Poison Nut | Nux Vomica |
| Dog Grass | Triticum |
| Bitterwood | Quassia |
| Indian Tumeric | Hydrastis |
| Sacred Bark | Cascara |
| Jesuit's Bark | Cinchona |
| Jamestown Weed | Strammonium |
| Indian Paint | Sanguinaria |
| Hoodwort | Scutillaria |
| Silver Leaf | Stillingia |
| Toothache Tree | Xanthoxylon |
| Apple Peru | Strammonium |
| Chitten Bark | Cascara |
| Madweed | Scutillaria |
| Black Snakeroot | Cimicifuga |
| Fish Berry | Picrotoxin |
| Pigeon Berry | Phytolacca Fruit |
| Lactuca | Lettice |
| Deadly Nightshade | Belladonna |
| Bugsbane | Cimicifuga |
| Black Cherry | Belladonna |
| Ice Vine | Pareira |
| Orange root | Hydrastis |
| Prince's Pine | Chimiaphila |
| Pukeweed | Lobelia |
| Queen's Delight | Stillingia |
| Rubywood | Red Saunders |
| Smart Weed | Water pepper |
| Bayberry | Myrcia, Bay |
| American Valerian | Cypripedium |

IDENTIFICATION.

When you try to identify a number of drugs, the following things should be remembered.

Don't taste anything until you have gone over them and told those you are able to, by looks and odor. Then begin and taste. Don't take a whole mouthful, but the smallest amount possible to get a taste. The best way to do is to place a drop on your hand and taste that drop. Then if you don't recognize it, take a larger amount to taste.

Following are a few hints on the plant drugs.

Blue cohosh, spigelia and serpentaria look a good deal alike. They can be recognized this way. Blue cohosh has rather a large root in with it. Serpentaria has a taste, and spigelia has hardly any taste.

The three cinnamons can generally be told this way. The ordinary cinnamon is the cassia. The Ceylon is light brown and curled up. The Saigon is heavy and thick.

Remember that Kamala is a red powder, looks like brick dust. Red Saunders is a red coarse powder, and Logwood is small red chips. Guaiac is a green chip.

Conium and anise look something alike, but conium has no odor. American wormseed has a kerosene-like odor.

You are liable to have most any of the plant drugs to tell, and below is a list of the liquids and salts, that are repeatedly put out to be recognized.

LIQUIDS.

| | |
|-----------------------------------|------------------------|
| Acetic acid dilute | Liquor Amm. Acet. |
| Aromatic sulphuric acid | Liquor Calcis |
| Alcohol | Liquor Plumbi Subacet. |
| Aquae (official) | Chalk Mixture |
| Balsam Copaiba | Brown's Mixture |
| Elixir Aromatic | Mucilage Acacia |
| Fl. Ext. Ergot | Castor Oil |
| Fl. Ext. Dandelion | Glycerin |

| | |
|-------------------------------|----------------------|
| Fl. Ext. Coca | Cotton Seed Oil |
| Fl. Ext. Buchu | Spirits (official) |
| Fl. Ext. Hydrastis | Syrup Orange |
| Chloroform emulsion | Syrup Ipecac |
| Ammonia liniment | Syrup Tar |
| Soap liniment | Syrup Wild Cherry |
| Lime liniment | Syrup Rhubarb |
| Syrup Senega | Tinctures (official) |
| Syrup Tolu | |

SOLIDS.

| | |
|------------------------------|----------------------|
| Acetanilid | Potassium Bitartrate |
| Benzoic acid | Potassium Chlorate |
| Boric acid | Rochelle Salts |
| Citric acid | Potassium Iodide |
| Gallic acid | Potassium Nitrate |
| Tannic acid | Powders (official) |
| Salicylic acid | Sugar of Milk |
| Tartaric acid | Salol |
| Alum | Sodium Bicarb. |
| Ammonium Carb. | Sodium Borate |
| Ammonium Chloride | Sodium Carbonate |
| Chalk | Sodium Chloride |
| Charcoal | Sodium Salicylate |
| Wax | Sodium Sulphate |
| Magnesia | Washed Sulphur |
| Magnesium Sulphate | Precip. Sulphur |
| Lead Acetate. | |
| Iron Sulphate. | |
| Copper Sulphate. | |

The following pages contain over 500 questions, with their answers, that have been asked at Examinations in Pharmacy.

I would suggest that you study the preceding pages before trying to answer the questions. Then let some person pick out 20 of the questions, and have you answer them without any help. By this way you will soon become familiar with the different kinds of questions asked.

QUESTIONS.

1. What is (*a*) Pharmacology; (*b*) Pharmacognosy; (*c*) Posology; (*d*) Toxicology; (*e*) Botany?
2. Define technical terminology and nomenclature, and give the reason for its use in Pharmacy.
3. Name the chemical constituents of plant drugs (12 in all).
4. (*a*) Name the inert constituents of above. (*b*) Name the active medicinal constituents of above.
5. How many fl. oz. in one av. lb. of the following: (*a*) Ether; (*b*) Chloroform; (*c*) Glycerin; (*d*) Oil of Peppermint; (*e*) Water?
6. A solid soluble in water weighs in air 170 grs. and in Ether of Sp. gr. .75 it weighs 135 grs. What is the Sp. gr. of the solid?
7. (*a*) Name one drug that is not to be used until one year old; (*b*) two that are collected from second year's growth; (*c*) two that are no good after one year old.
8. Give an example of a true (*a*) Balsam; (*b*) Resin; (*c*) Oleoresin; (*d*) Gum Resin; (*e*) Gum.
9. What is the approximate equivalent in the metric system of the following: (*a*) $\frac{1}{10}$ gr.; (*b*) 5 gr.; (*c*) 1 fl. oz.; (*d*) 100 min.; (*e*) 1 qt.?
10. What would be the weight in grains of one fl. oz. of each: (*a*) Glycerin; (*b*) Chloroform; (*c*) Alcohol; (*d*) Ether; (*e*) Water.
11. What is the required % of absolute acid in (*a*) Phosphoric dilute; (*b*) Acetic; (*c*) Acetic dilute; (*d*) Sulphuric; (*e*)

Aromatic sulphuric; (*f*) Nitric dilute; (*g*) Hydrocyanic; (*h*) Hydrochloric?

12. What is the menstruum used in making (*a*) Tinct. Aconite; (*b*) Cinch Co.; (*c*) Ammon. Valerinate; (*d*) Ammon. Guaiac; (*e*) Capsici; (*f*) Gent. Co.; (*g*) Sanguinaria; (*h*) Opii Deod.; (*i*) Recent Herbs; (*j*) Aloes?

13. Write chemical formula for (*a*) Sulphuric Acid; (*b*) Iodide Potash; (*c*) Carbolic Acid; (*d*) Epsom Salts; (*e*) Common Salt; (*f*) Water; (*g*) Green Vitrol; (*h*) Alcohol; (*i*) Nitric Acid; (*j*) Caustic Potash.

14. Name source and give some idea of how prepared or obtained: (*a*) Sulphuric Acid; (*b*) Chlorinated Lime; (*c*) Chloroform; (*d*) Acetic Acid.

15. Give official process for making the following syrups: (*a*) Squill; (*b*) Squill Co.; (*c*) Iodide of Iron; (*d*) Tolu; (*e*) Ipecac.

16. Give full Latin title for (*a*) Iron; (*b*) Alum; (*c*) Rochelle Salts; (*d*) Lady's Slipper; (*e*) Blackberry; (*f*) Pleurisy Root; (*g*) Arbor Vitae; (*h*) Cloves; (*i*) Wild Majoram; (*j*) Bearberry.

17. Ammonia. Give chemical formula; chief commercial source; describe it. How much strong would be required to make a quart of official Aqua?

18. What would be the cost of two fluid ounces of a 4 % solution of cocaine, if cocaine cost \$6 per oz.?

19. Give meaning of (*a*) Haustus; (*b*) Cochlear; (*c*) Cibum; (*d*) Parvum; (*e*) Emesis; (*f*) Enema; (*g*) Gutta; (*h*) Recens.

20. What are oleates? Name those official. Give strength of each.

21. Give full botanical name of the plant from which the following are obtained: (*a*) Aconite; (*b*) Garlic; (*c*) Emetin; (*d*) Santonin; (*e*) Brucine; (*f*) Carrageen; (*g*) Guarana; (*h*) oil Bergamont; (*i*) Eserine.

22. Name the maximum adult dose of (*a*) Ext. Cannabis Indica; (*b*) Mercuric Chloride; (*c*) Codeine; (*d*) Spts Chloroform; (*e*) Potass. Acetate; (*f*) Tinct. Aconite; (*g*) Santonin;

(*h*) Iodine; (*i*) Atropia; (*j*) Opium; (*k*) Oil of Gaultheria; (*l*) Antifebrin; (*m*) Digitalis; (*n*) Croton oil; (*o*) Caffeine; (*p*) Arsenic; (*q*) Tinct. Ver. Ver.; (*r*) Salol; (*s*) Spts. Mendererus; (*t*) Fl. Ext. Ergot?

23. What are the ingredients of (*a*) the official soaps? (*b*) Tinct. Aloes; (*c*) Griffith's Mixture; (*d*) Basilicon Ointment; (*e*) Spt. Mendererus; (*f*) Tr. Rhei; (*g*) Lugol's solution?

24. Name the geographical source and what part used (*a*) Cloves; (*b*) Chondrus; (*c*) Catechu; (*d*) Colocynth; (*e*) Aloes; (*f*) Quassia; (*g*) Saffron; (*h*) Santonica; (*i*) Copaiba; (*j*) Nux Vomica.

25. Define and give example of each of the following: (*a*) Halogen; (*b*) Balsam; (*c*) Sudorific; (*d*) Soporific; (*e*) Febri-fuge; (*f*) Disinfectant; (*g*) Liquor.

26. Antidote for; (*a*) Tinct. Aconite; (*b*) Tinct. Iodine; (*c*) Poison Fly-paper; (*d*) Instantaneous Hair Dye.

27. Solubility of (*a*) Arsenious acid; (*b*) Boric acid; (*c*) Gallic acid; (*d*) Salicylic acid; (*e*) Tannic acid; (*f*) Atropine sulphate; (*g*) Chloral; (*h*) Chloroform; (*i*) Potas Bitart; (*j*) Potas Chorate; (*k*) Quinine Sulph.; (*l*) Sugar; (*m*) Strychnine; (*n*) Calomel; (*o*) Mercuric Chlor.; (*p*) Bism. Sulnit.; (*q*) Strychnine Sulphate; (*r*) Codeine?

28. In one pound avoird. how many (*a*) Troy ounces; (*b*) Grammes; (*c*) Hectogrammes?

29. Give name and quantities of each ingredient required to make 4 troy oz. of Dovers powder.

30. Define (*a*) Dessication; (*b*) Colation; (*c*) Comminution; (*d*) Levigation; (*e*) Synthesis?

31. How many drops in a drachm of (*a*) Fluid Extracts; (*b*) oils; (*c*) Tinct.; (*d*) Prussic Acid?

32. Give formula for a 50% emulsion of C. L. O. and state how you would make it.

33. Give dose of (*a*) Corrosive Sublimate; (*b*) Carbolic Acid; (*c*) Salol; (*d*) Menthol; (*e*) Cyanide of Pot.; (*f*) Digitalis.

34. Define; which are animal; (*a*) Sanguis; (*b*) Coccus; (*c*) Lac.

35. Define Vesecant ; (*b*) Emollient ; (*c*) Diuretic (*d*) Drastic ; (*e*) Epispastic.
36. Give the ingredients of (*a*) Brown's Mixture ; (*b*) Chalk Mixt. ; (*c*) Neutral Mix ; (*e*) Dewee's Carminative.
37. What is Specific Gravity.
38. Name 5 Astringents and doses.
39. Name 5 Aperients and doses.
40. Name 5 Analgesics and doses.
41. Give antidote for (*a*) Aconite ; (*b*) Oxalic Acid ; (*c*) Lead salts ; (*d*) Aqua ammonia ; (*e*) Mineral Acids.
42. Name waters made by (*a*) simple solution ; (*b*) passing gas through water ; (*c*) Percolation ; (*d*) Distillation.
43. Jalap : Botanical name, active principle, and medicinal ingredients ?
44. How much Quinine in one ounce of cinchonia bark ; (*b*) What number of grains will 4 fl. oz. of alcohol weigh ?
45. Name active principle of (*a*) Monkshood ; (*b*) Deadly Nightshade ; (*c*) Goldenseal ; (*d*) Guarana ; (*e*) Ipecac.
46. Give name and dose of (*a*) Mercuric Iodide ; (*b*) Mercuric Chloride ; (*c*) Mercuric Oxide.
47. Give name, habitat, and part used of (*a*) Pleurisy Root ; (*b*) Blackberry ; (*c*) Stavesacre ; (*d*) Henbane ; (*e*) Pipsissewa.
48. A man has 100 lbs. Iodide of Potash, he sold $\frac{1}{3}$ of it for \$3.25 per lb. ; $\frac{1}{2}$ of the remainder at 5 cents advance, lost 5 % of what remained and closed it out for \$100. How much did he realize ? and how much per lb. for the last lot ?
49. What is the % of a solution ; (*a*) 1 to 2 ; (*b*) 1 to 5 ; (*c*) 1 to 30 ; (*d*) 1 to 50 ; (*e*) 1 to 2000 ?
50. Give specific antidote for (*a*) Oxalic Acid ; (*b*) Aconite ; (*c*) Belladonna ; (*d*) Digitalis ; (*e*) Cantharides.
51. Give ingredients of the two official Elixirs.
52. What are the equivalents of the following : (*a*) teacupful ; (*b*) 4 wineglassfuls ; (*c*) 5 tablespoonfuls ; (*d*) 6 dessertspoonfuls ; (*e*) 7 teaspoonfuls ?
53. Give the meaning of (*a*) Diaphoretic ; (*b*) Vermicide ; (*c*) Febrifuge ; (*d*) Convulsent ; (*e*) Analgesic ; (*f*) Emollients ; (*g*) Caustic ; (*h*) Drastic.

54. Give English name for (a) Colaturae; (b) Extende; (c) Modicus; (d) O. O. O.; (e) Bis in die; (f) Ut dictum; (g) Ne trades sine nummo; (h) Non repetat.

55. How much KBr in 1 pt. of Elixir of KBr?

56. What is the difference between (a) Fusion and Calcination; (b) Deflagration and Torrefaction; (c) Emulsion and Mixture; (d) Ointment and Cerate? (e) Name a natural Emulsion?

57. Give dose in min. of Tinctures of (a) Aconite; (b) Belladonna; (c) Colchicum; (d) Cantharides; (e) Opii Deod.; (f) Iodine; (g) Physostigma; (h) Capsicum; (i) Hyoscyamus.

58. Give source and dose of (a) Resorcin; (b) Piperin; (c) Leptandrin; (d) Thymol; (e) Aloin; (f) Salol; (g) Guaiacol; (h) Terebene; (i) Eucalyptol.

59. Give % strength of (a) Tinct. Iron; (b) Tr. Iodine; (c) Tr. Verat Vir; (d) Tr. Nux Vomica (e) Tr. Green Soap; (f) Spts. Ether; (g) Fowler's Solution; (h) Donovan's Solution?

60. How much water is required to dissolve 1 oz. of (a) Pot. Chlorate; (b) Pot. Bromide; (c) Pot. Iodide; (d) Calomel; (e) Corrosive Sublimate.

61. What Ointment or Cerates are made (a) by Fusion; (b) by Incorporation; (c) Chemical Reaction? (d) How much Hg. in Mercury Ointment?

62. (a) Give strength of U. S. P. Phosphorus Pills. (b) Give process in detail for making 60 pills.

63. (a) What dose *ous* and *ic* mean when applied to salts? (b) What is a stearopten?

64. (a) What changes take place in Volatile Liniment? (b) What is Soda? (c) What is Terebene?

65. (a) What is the temperature of a sand bath; (b) Oil Bath; (c) Steam Bath?

66. (a) Name the official Preparations of Lime; (b) Prep. Chalk; (c) Precip. Chalk; (d) Name an Inorganic Acid; (e) Name an Organic Acid.

67. 1 lb. of Opium assays 7 % of Alkaloid, 1 lb. of another lot assays 18 % of Alkaloid. How much Opium can you get from above that will assay 14 %?

69. What is the difference between a Cake and a Powdered Sublimate? Give an example of each.

70. What is the relative difference of Guarana and Kola nut as to their Caffeine, and do they differ therapeutically in any particular?

71. Criticise the following:

- (a) ℞ Morph. Sulph. grs. viii
 Syrup Aurantii ʒ ss.
 Aquae qs. ad. ʒ ii
 Sig. ʒ i every two hours until relieved.
- (b) ℞ Antipyrine grs. xii
 Spts. Ether, Nit. ʒ ss.
 Aquae qs. ad. ʒ iv
 Sig. ʒ i t. i. d.

72. What is (a) Rhizome; (b) Petal; (c) Corm; (d) Tuber; (e) Corolla; (f) Leaflet; (g) Calyx; (h) Fibre.

73. Give ingredients of (a) Fowler's Solution; (b) Labarraque's; (c) Lugol's; (d) Elixir Vitriol; (e) Donovan's Solution; (f) Tulley's Powder.

74. Ext. Colocynth Co. is made with 16 parts Ext. Colocy.; 50 pts. Aloes; 6 of Cardamon; 14 Scammony; 10 Alcohol. Write formula giving quantities required to make 1 lb. avoird.

75. I have an av. oz. of Opium containing 10 % Morphine, and I want to mix with it enough Sugar of Milk to produce a mixture containing 1 % Morphine. How many grams of such a mixture can be made from the oz. of Opium and how much Sugar of Milk required?

76. Give the % of the following Spts.: (a) Ammonia; (b) Anise; (c) Glonoin; (d) Bitter Almond; (e) Orange; (f) Camphor; (g) Ether.

77. How often is the U. S. P. revised and by whom is it done?

78. What principle tending to simplify the preparations of medicines was adopted in the last revision?

79. Give Latin for (a) Poison Ivy; (b) Pleurisy; (c) Nutmeg; (d) Wahoo; (e) Saffron; (f) Juglans; (g) Lappa; (h) Brayeria.

80. State how obtained and whether volatile or fixed: (*a*) Oil Orange Fl.; (*b*) Oil Lemon; (*c*) Oil Cajuput; (*d*) Oil Sassafras; (*e*) Croton Oil; (*f*) Castor Oil.

81. State specific antidote for (*a*) Arsenic; (*b*) Strong Acids; (*c*) Phosphorus; (*d*) Silver; (*e*) Lead.

82. Give general course of treatment in case of poisoning.

83. Taken in medicinal dose what is affect (*a*) Chloral; (*b*) Jaborandi; (*c*) Rhubarb; (*d*) Valerian; (*e*) Pink Root?

84. State starting point of Metric System and how the unit of weight, capacity and measure were derived and give equivalents.

85. (*a*) How many avoir. oz. in 1 pt. of Glycerin? (*b*) What is the cost of 425 grains of Zinc. Sulp. at $33\frac{1}{2}$ cents per lb.?

86. (*a*) What is Hydrargyrum? (*b*) Name the official Salts of Mercury and give formula. (*c*) What effect of Pot. Iodide when added to Mercuric Salts?

87. Of what composed: (*a*) Tully's Pd.; (*b*) Seidlitz Pd.; (*c*) Heira Piera; (*d*) Donovan's Sol.; (*e*) Huxham's Tinct.?

88. How would you distinguish between (*a*) Iodide and Bromide of Pot.; (*b*) Epsom Salts and White Vitriol; (*c*) Quinine and Morphine; (*d*) Olive and Cotton Seed Oil; (*e*) Alum and Borax?

89. State difference between (*a*) Ad and Adde; (*b*) Capiat and Cibus; (*c*) Pro and Per.

90. Give % required of (*a*) total Alkaloids in Cuichona; (*b*) Ethyl Nitrite in Nitrous Ether; (*c*) Alcohol in Red Wine.

91. State what acids and bases unite to form (*a*) Sulphate Soda; (*b*) Sulphite of Soda; (*c*) Borate of Soda; (*d*) Sugar of Lead; (*e*) Copperas.

92. From what source and what is the dose (*a*) Antipyrine; (*b*) Acetanilid; (*c*) Phenacetine; (*d*) Sulfonal; (*e*) Aristol; (*f*) Iodol.

93. Petrolatum: Give source how purified and melting point.

94. Give formula for (*a*) Mitigated Caustic; (*b*) Lunar Caustic.

95. Give solubility of the following: (*a*) Boric Acid; (*b*) Tannin; (*c*) Borax; (*d*) Cocaine; (*e*) Cocaine Hdy.; (*f*) Acetanilid (*g*) Antipyrine.

96. What is the active principle of (a) Aconite; (b) Ingluvin; (c) Ipecac; (d) Digitalis; (e) Cochineal; (f) Bellad?

97. What is air? Give its constituents.

98. What are the following and give ingredients; (a) Dewee's Carm.; (b) Brown's Mixt.; (c) Neutral Mixt.; (d) what are expectorants?

99. Give Chemical Formula of (a) Soda Carbonate; (b) Iodide of Soda; (c) Bicarbonate of Soda.

100. (a) Blackberry: what part is used and what for; dose? (b) Poison Ivy: give part used and habitat. (c) Sambucus: what part is used and what for?

101. How much Acetic Acid is required to make 18 av. oz. of dil. acid? How much to make 300 grms.?

102. It is desired to dilute stronger Ammonia Water to 10 per cent., what proportions shall I use?

103. Give technical name for (a) Kermes Mineral; (b) India Rubber; (c) Mitigated Caustic.

104. By what method do you obtain the equivalent of (a) one grain? (b) Having obtained it how would you obtain the equivalent of an av. oz.

105. Give quickest method for making (a) Mucilage of Acacia; (b) Syr. Pruni Virg.; (c) Liq. Calcis; (d) Sol. kali. Chlorate.

106. What is Garbling? Describe drugs so treated either accidentally or intentionally.

107. (a) What is the best preservative of Saccharine Solutions? (b) The quickest method of dissolving Scale Salts of Iron?

108. Name the acids, waters, glycerites and solid extracts that have been added to the U. S. P., 1890.

109. Name all the parts of a flower. Define a complete, perfect and a regular flower. What is a Petiole?

110. Which of the following as a rule are soluble in water: (a) Acetates; (b) Carbonates; (c) Chlorides; (d) Citrates; (e) Cyanides; (f) Hydrates; (g) Oxalates; (h) Nitrates; (i) Tartrates?

111. Give per cent. of (a) Liq. Soda; (b) Liq. Calcis; (c)

Liq. Zinc; (*d*) Liq. Plumbi Subacetat; (*e*) Liq. Sodae Chlorat.; (*f*) Liq. Amm. Acetat.; (*g*) Liq. Pot. Arsen.

112. State maximum dose of (*a*) Aconite; (*b*) Ext. Aconite; (*c*) Ext. Opii; (*d*) Phosp.; (*e*) Salol; (*f*) Iodoform; (*g*) Oxalic Acid; (*h*) Guarana; (*i*) Bromoform.

113. Alkaloids. (*a*) How extracted from drug. (*b*) What acid will ppt. them? (*c*) What elements do they contain? (*d*) When heated with Alkali what do they give off? (*e*) How are they usually combined in the plant?

114. Describe Potassium. (*a*) What used to be the sole source of its Salts? (*b*) From what other source now obtained? (*c*) Give a simple test for Pot. Salts. (*d*) What is Potassa?

115. Name the important principles in (*a*) Hemlock; (*b*) Senna; (*c*) Kino; (*d*) Quillaja; (*e*) Illicum; (*f*) Eucalyptus; (*g*) Buchu; (*h*) Guarana.

116. What volume of Ether will be required to counterpoise 4 fl. oz. of Chloroform of Sp. Gr. 1.49? Give an answer in fl. oz. and fraction in min.

117. Give ingredients of the Confections and how many official?

118. How many av. oz. are represented by the sum of (*a*) 10 dekagrams; (*b*) $1\frac{1}{2}$ kilos.; (*c*) 25 decigrams; (*d*) 3 Troy oz.; (*e*) $5\frac{184}{1000}$ grains?

119. How make Red Ppt. Ointment?

120. Give meaning of (*a*) Antiseptic; (*b*) Aperient; (*c*) Epispatic; (*d*) Somnifacient; (*e*) Hemostatic; (*f*) Sialogogue; (*g*) Taenicide.

121. What is the difference between Alkaloids and Glucosides?

122. Aloes: what is it; source; how obtained; habitat and official preparations.

123. For what poison would you give (*a*) Sodium Chloride; (*b*) Chalk; (*c*) Epsom Salts; (*d*) Coffee; (*e*) Soapsuds; (*f*) Olive Oil; (*g*) Whiskey; (*h*) Vinegar?

124. What is Bromoform, give dose? How much Iodine in Iodide of Pot.?

125. (a) What is the term perfoliate? (b) What is Queen of the Meadow and give botanical name?

126. Describe (a) Cerate; (b) Ointment; (c) Fusion; (d) Incorporation. (e) Name 4 Cerates and Ointments made by fusion; (f) 2 by incorporation; (g) 1 by chemical reaction.

127. If a bottle full of water weighs 31 oz. av. and the same bottle filled with oil sp. gr. .91 weighs 29 oz. 245 grains av., how many avoird. oz. will the bottle hold, and what is the weight of the bottle?

128. If moist Opium containing $10\frac{1}{2}$ per cent. Morphine loses 30 per cent. of its weight by drying, how much per cent. of Morphine will it contain when dry?

129. In making ointments by fusion, what precaution do you take? What rule should be observed in making ointments?

130. Give name of 3 or 4 excipients used in making U. S. P. pills.

131. Write six formulae for pills, stating which excipient you would use and why. There must be at least 3 diff. excip. used.

132. Name official masses, and how is Massa Copaiba made.

133. Translate into English the following: (a) Ter; (b) tussis; (c) Rept; (d) Sine; (e) rec; (f) pondus; (g) bibe.

134. What are the proteid compounds, and where are they found?

135. Name two or more products from animal substances giving name of animal and medicinal use.

136. What are alkaloids? Give Latin and English termination of all alkaloids?

137. (a) What are Glucosides? (b) Give symbol of Glucose. (c) What are Resins? (d) What are Alkalies? (e) What are Synthetic Compounds?

138. Name the official (a) Gums; (b) Oleo-resins; (c) Stearoptins; (d) Gum Resins; (e) Balsams?

139. Give common name of (a) Hirudo; (b) Inula; (c) Scoparius; (d) Hydrarg; (e) Viburnum Opulus; (f) Matricaria; (g) Hydr. Per. Chl.; (h) Hyd. Sub. Chl.; (i) Hyd. Sub. Sulph. Flava.

140. Give the formula for Dover's Powder. Amt. of each article required in making 1 av. lb.; 1 kilo. and 250 grms.

141. Oil of Wintergreen: Give botanical name of plant from which obtained. What acid is obtained from it? What is its sp. gr.?

142. What tinctures are made with Aromatic Spts. Ammon. as a menstruum?

143. Resorcin: How obtained? Give medicinal properties. Has it any medicinal relation to Carbolic Acid.

144. Eucalyptus Globulus: Give common name; habitat; part used; active principles; medicinal properties. Give dose and name two official preparations.

145. What is the unit of Linear measure, and how obtained?

146. Cinchona Bark: Give botanical name; parts employed; medicinal properties. Name three of its Alkaloids. Which has the most Quinine, the Yellow or Red?

147. Mention the drugs that form a natural emulsion when triturated with water, and how does this differ from one containing an oil?

148. Write a formula in which one ounce of Oleum Ricini enters into a 4 oz. Emulsion.

149. What is Pyroxylin? Name official prep. into which it enters.

150. What proportion or per cent. of water is required to hold crystals of Carbolic Acid in solution? What would you give for antidote of it?

151. Give symbol of 10 of the elements.

152. Why does Lime Water become cloudy on exposure to air; also Goulard's Ext.? What is the ppt. formed in each case?

153. What adulterations would you expect to find in the following drugs and what test would you apply for each: (a) Ulmus Powd.; (b) Taraxicum; (c) Olive Oil; (d) Powd. Acacia; (e) Bismuth Sub. nit.?

154. Mention a product of (a) Torrefaction; (b) Carbonization; (c) Sublimation.

155. What is Chloroform chemically?
156. What is used, and how much of each, to make (a) 1 lb. av. of Dover's Powd.; (b) 20 fl. oz. Ess. Peppermint; (c) 500 cc. Paregoric?
157. (a) What is the substance in drugs which gives the astringent property? (b) How make Epsom Salts; (c) Sal Prunelle; (d) Sal Tartar?
158. If a man comes into your store and wants 1 lb. of Potash, what would you give him?
159. How make (a) Syr. Squills; (b) Syr. Ipecac; (c) Syr. Senega; (d) Tinct. Opii Camph.; (e) Syr. Wild Cherry; (f) Syr. Tolu?
160. Give Latin name for (a) Brown's Mixt.; (b) Black Draught; (c) Turlington's Balsam; (e) James' Powder?
161. Give formula for U. S. P. Pill Cathartic Comp. No. 50. How many min. in a pint?
162. What are Pills, and how many kinds are official? Essential requirements for a good pill mass.
163. What fluid ext. is made with Water of Ammonia? Object in using it?
164. Cerates are made of 30 parts white wax and 70 parts lard; what quantities required to make 1 lb. av.?
165. What does Glycerin come from, and what is it good for in Pharmacy?
166. Name 5 U. S. P. syrups made from fluid ext.
167. Into what prep. do (a) Stearic Acid, (b) Bellad Leaves, (c) Barium Dioxide enter into?
168. The dose of a substance is $\frac{1}{200}$ of a grain? How many doses in $\frac{1}{24}$ of a grain?
169. Give solubility of (a) Arsenious Acid; (b) Boric Acid; (c) Gallic Acid; (d) Salicylic Acid; (e) Pot. Chlorate; (f) Atropia; (g) Atropia Sulp.; (h) Chloral; (i) Chloroform.
170. Official titles and parts used of (a) Yerba Santa; (b) Allspice; (c) Male Fern; (d) Raspberry; (e) Elecampagne; (f) Bitter Sweet.
171. Give meaning (a) Gravimetric; (b) Isomeric; (c) Prismatic; (d) Exsiccated; (e) Inspissated.

172. What will be the action of Nitric Acid on cotton?

173. What is filtration and when is a plain and when a plaited filter best used?

174. (a) Should you wet the filter before using? (b) Is white or gray filter paper best to use for acids and strong alkalies? (c) Why?

175. Give U. S. P. method of obtaining Aqua Destillata?

176. (a) How many inches in a meter; (b) ounces in a liter; (c) c.c. in 100 ounces; (d) grains in a troy ounce?

177. Name the ingredients of (a) Basilicon Ointment; (b) Glycerin Suppositories; (c) Aromatic Elixir; (d) Black Draught.

178. Give U. S. P. title and how made: (a) Lunar Caustic; (b) Bitter Almond Water; (c) Syrup Almond; (d) Warming Plaster.

179. What part of the following are official (a) Rhus Glabra; (b) Rhus Tox; (c) Stram.; (d) Santonica; (e) Pimenta; (f) Pareira Brava; (g) Matico; (h) Lycopodium?

180. What is a repellent and an absorbant? Is Lycopodium an absorbant?

181. Give chemical formula for (a) Aqua Fortis; (b) Alcohol; (c) Hydrogen Peroxide; (d) Sal Tartar; (e) Soda Bicarb; (f) Glauber Salts; (g) Salt Peter.

182. 32 oz. of liquid weighs 44 oz. (av.), what is its Sp. Gr.

183. If 500 grams of Ether, Sp. gr. .72, cost \$1.25, how much will a liter cost?

184. Give ordinary dose of the following in both Troy and Metric; (a) Iodine; (b) Digitalis; (c) Atropine; (d) Camphor; (e) Asafoetida; (f) Iodoform; (g) Catechu.

185. How many organic drugs in U. S. P.?

186. Anise: Give botanical name, habitat, part used, and active principle. What prep. does it enter into?

187. How many official waters made (a) by percolation; (b) by distillation?

188. What will be the cost of Cocaine in 2 ounces of a 5 per cent. solution, if Cocaine is worth \$6.50 per ounce?

189. Write name for Bi, Ag, O, Cu, Br, As, I, P, H, Fe, Pb.

190. (a) State unit of length in metric syst. (b) State unit of capacity in metric syst. (c) State unite of weight in metric syst.

191. Give metric equiv. of $\frac{1}{1000}$, $\frac{1}{500}$, $\frac{1}{50}$, $\frac{1}{10}$, $\frac{1}{2}$, 1, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{8}$ of a grain.

192. Give rules for converting grains into grams, and decigm. into grains.

193. Define (a) Rhizome; (b) Petal; (c) Rootlet; (d) Corm; (e) Calyx; (f) Bulb.

194. Give botanical name for (a) Pipsissewa; (b) Inula; (c) Queen of the Meadow; (d) Cloves; (e) Cranesbill; (f) Quassia; (g) Black Cohosh.

195. What is the active principle and how is Cod Liver Oil obtained?

196. What is (a) Armoracea Root; (b) Avena Sativa; (c) Cranesbill; (d) Marrubium?

197. Give antidote for Tartar Emetic, and how much is in Wine of Antimony, and Syr. Scillae Comp.?

199. What precautions do you take in making prep. of Wild Cherry?

200. How much Phosphorus in Spt. and Oil of Phop.?

201. Give active principle of (a) Ipecac; (b) Hydrastis; (c) Bearberry; (d) Bayberry.

202. What is the other name for Aromatic Sulphuric Acid, and how much acid in it?

203. What part official of (a) Rhus Tox; (b) Digitalis; (c) Marsupium; (d) Armoracea; (e) Eucalyptus; (f) Ipecac; (g) Ura Ursi?

204. Name five prep. containing Mercury (metal) and how much in each one?

205. (a) What is Plaster of Paris? (b) What is Whiting? (c) How is Precip. Chalk made?

206. What is Chloric Ether and how does it differ from 1880?

207. How is Fowler's Solution made; per cent. and dose? How much Arsenic in 20 gtt. and how many drops in one ounce?

208. Give ingredients of (a) Brown's Mixt.; (b) Tully's Pd.; (c) Ammoniac Mixt.; (d) Mixt. Asafoetida?

209. Where is (a) Suet obtained from; (b) Lard; (c) Icthyocolla?

210. How many avoird. oz. in 2 pts. of (a) Ether; (b) Chloroform; (c) Syrup.; (d) Glycerin; (e) water?

211. What are the following: (a) Phenol; (b) Eserine; (c) Emetine; (d) Narcotine?

212. $7\frac{1}{2}$ is 5 per cent. of what number?

213. If a lot of goods bill for \$160, and you get 2, 5 and 10 off, what do they cost you?

214. What is (a) Fever Few; (b) Black Haw; (c) Cramp Bark; (d) Blue Cohosh; (e) Yellow Parilla?

215. What prep. is Phosphorus in and how much in each?

216. Tell what you know about Pepsin and Pancreatin?

217. (a) Where is Salicin obtained from? (b) What is Hiera Piera; (c) Royal Water; (d) Elixir Salutis.

218. (a) Give formula for three Official Pills. (b) Name three astringents; (c) 3 Antipyretics; (d) 3 Carminatives that are official.

219. Give chemical formula for (a) Boric Acid; (b) Oxalic Acid; (c) Muriatic Acid; (d) Sulphuric Acid.

220. (a) What is the difference between Borax and Boric Acid? (b) In what Fld. Extracts is Acetic Acid?

221. How would you make Citrine Ointment?

222. How much morphine in (a) Paregoric; (b) Tully's Pd.; (c) Tinct. Opii; (d) Wine of Opium; (e) Black Drop?

223. Name the important alkaloid in the following: (a) Opium; (b) Nux Vomica; (c) Aconite; (d) Coffee; (e) Coca; (f) Ipecac; (g) Physostigma; (h) Digitalis; (i) Santonica.

234. Write the formula for Lugol's Solution. How many grs. of Iodine in 10 min. of it?

235. Write the formula for Magendie's Solution. What per cent. of Morph. Sulph. in 10 min.?

236. Name two Volatile Oils prep. by fermentation, and are they heavier or lighter than water?

237. Define Synthesis, both direct and indirect.

238. Define Analysis, both direct and indirect.

239. What is qualitative and quantitative analysis, and give example of each.

240. What is Chemistry, Physics, and Chemism? What is a reagent?

241. What is chemical decomposition and double decomposition?

242. Name some official preparation made by (a) Simple Solution; (b) Chemical Solution; (c) Calcination; (d) Fusion; (e) Precipitation.

243. Name official prep. made by or from insects, and give five from animal kingdom?

244. Oil of Wintergreen, give chemical constituents, specific gravity, and what acid obtained from it. Dose and use in medicine?

245. Name 10 drugs requiring red labels when dispensed.

246. Give name, official, and exact formula of (a) Volatile; (b) Chloroform; (c) Soap; (d) Belladonna; (e) Camphor, and (f) Turpentine Liniments?

247. Give correct Latin title in full of (a) Almond Mixture; (b) Basham's Mixture; (c) Brown's Mixt.; (d) Neutral Mixt.

248. A bottle sometimes holds 1000 grs. avoird. of water, how many fl. oz. of the following will it hold: (a) Ether; (b) Alcohol; (c) Castor Oil; (d) Sulphuric Acid; (e) Syrup; (f) Glycerin.

249. If you have 4 oz. of Potassium Iodide, how much water will it take to make a 50 per cent. solution?

250. If you buy a lb. of Glycerin, how much Carbolic Acid will it take to make a 50 per cent. Sol. of Acid?

251. Give the active principle and part used of (a) Monks-hood; (b) Mandrake; (c) Foxglove; (d) Guarana; (e) Deadly-nightshade.

252. What is an inorganic substance and an organic one? Give examples.

253. What is the best antidote for (a) Oxalic Acid; (b) Arsenic; (c) Silver Nitrate; (d) Tartar Emetic?

254. What is commercial source of (a) Oxalic Acid; (b)

Gallic Acid; (c) Citric Acid; (d) Lactic Acid; (e) Carbolic Acid?

255. Give some official prep. made by (a) destructive distillation; (b) fractional distillation; (c) sublimation.

256. What are the three shapes for Suppositories, with weight of each?

257. What Suppository is official, and tell how it is made?

258. Give habitat, therapeutic use, and part used of (a) Ipecac; (b) Senna; (c) Guarana; (d) Cochineal.

259. What is the U. S. P. name for (a) Calomel; (b) Gamboge; (c) Cochineal; (d) Red Saunders; (e) Resin Guaiac; (f) Nutmeg?

260. Write the Latin for (a) leaf; (b) berry; (c) fruit; (d) bark; (e) juice; (f) root stalk; (g) pith.

261. How would you tell Mucilage of Sassafras Pith from Mucilage of Acacia?

262. Which is it cheaper to make, Tinct. of Opium or the deodorized Tincture of Opium.

272. Castor oil: what is its source; where does the most of it come from; and how is it obtained?

273. What is Croton Oil adulterated with, and why couldn't they use Cotton Seed Oil?

274. When you buy Ergot, do you take anything they give you?

275. Define the following: (a) deliquescent; (b) efflorescent; (c) hygroscopic; (d) translucent; (e) transparent.

276. What is the per cent. of Strychnine in Iron and Strychnine Citrate?

277. Phenacetine costs \$1 per ounce. What will be your profit on two dozen 10 gr. powders at 10 cents each, if you count cost of putting them up 25 cents?

278. What is the strength of the following Acids: (a) Hydrochloric; (b) Dilute Hydrocyanic; (c) Nitric; (d) Sulphuric; (e) Phosphoric?

279. Write the full U. S. P. name for (a) Subchloride; (b) Perchloride of Mercury; (c) Poke Berry; (d) Sassafras Pith; (e) Blue Mass.

280. What is the amount of Opium in (a) Paregoric; (b) Sydnham's Laudanum; (c) Black Drop; (d) Pill of Opium; (e) Troche of Licorice and Opium?

281. What is a Sponge? Where do they come from? Are they vegetable or animal; and what kinds do you keep in your store; and give commercial value.

282. A doctor wrote for Morphina Sulphate, 20 min. What would you put up?

283. A doctor wrote for Antimony 2 fl. drachms. What would you put up?

284. If you had a prescription handed to you, and it called for 5 grs. of Arsenious Acid to be made into 10 pills, what would you do with it?

285. How would you dissolve one ounce of Iodine in four ounces of water, and how much would there be in 10 min. of the solution? What per cent.?

286. Give the technical name of the following: (a) May Apple; (b) Bitter Apple; (c) Moccasin Root; (d) Foxglove; (e) Indian Tobacco.

287. What is (a) bichloride; (b) perchloride; (c) deutochloride; (d) subchlorid; (e) Mercuric chloride; (f) Protochloride; (g) and Mercurous Chloride of Mercury?

288. How much Morphine in 1 teaspoonful of (a) Paregoric; (b) Laudanum; (c) Black Drop; (d) Fluid Extract of Opium; (e) Pill of Opium.

289. What is (a) a Sudorific; (b) a Mydriatic; (c) a Myotic; (d) Antacid; (e) Carminative.

290. In what natural order do the following belong (a) Opium; (b) Cinchona; (c) Coca; (d) Oil of Peppermint; (e) Turpentine; (f) Camphor?

291. Give an example of each: (a) Organic Acid; (b) Inorganic Acid; (c) Stearopten; (d) Volatile Oil; (e) Fixed Oil.

292. Give solubility of (a) Quinine Sulphate; (b) Bisulphate of Quinine; (c) Resorcin; (d) Antipyrine; (e) Boric Acid.

293. How would you tell (a) Calomel from corrosive sublimate; (b) Quinine from Morphine?

294. Translate the following: (*a*) Gutta; (*b*) Haus; (*c*) Crast; (*d*) Coq. S. A.; (*e*) Penicil cam.; (*f*) T. i. d.; (*g*) Pyxis; (*h*) Statim; (*i*) Tussis; (*j*) P. P. A.

295. Give the chemical formula for (*a*) Nitric Acid; (*b*) Potassium Nitrate; (*c*) Potassium Iodide; (*d*) Epsom Salts; (*e*) Sulphate of Iron.

296. What would you do if a person should take an overdose of Morphine?

297. What is the strength of the following tinctures: (*a*) Iodine; (*b*) Lactucarium; (*c*) Nux Vomica; (*d*) Aconite; (*e*) Myrrh; (*f*) Hydrastis; (*g*) Belladonna; (*h*) Opium?

298. If you didn't have any Red Iodide of Mercury, how would you make it?

299. Phenacetine costs \$1 per ounce. How many 10 gr. powders and how many 15 gr. powders can you make from it?

ORAL QUESTIONS.

300. Strength or Spts. Phosphorus?
301. Strength of Wine of Antimony?
302. Strength of Spts. Chloroform?
303. Common name of Spts. Ammon.?
304. What is Plummer's Pill?
305. What tinct. is made from extract?
306. What tinct. is made from Fl. extract?
307. What is Red Oil?
308. Amount of P. in Elixir Phosp.?
309. How tell Calomel from Corr. Sublim.?
310. What is Basilicon Ointment?
311. What is Glyconin?
312. What is Picrotoxin?
313. What is Kerme's Mineral?
314. What is Turpetlis Mineral?
315. What is Ethiops Mineral?
316. What is Lunar Caustic?
317. What is Mitigated?

318. What is Liver of Sulphur ?
319. What is Vegetable Sulphur ?
320. What is per cent. of Hg. in Massae ?
321. What is per cent. of Hg. in Emplastrum ?
322. What is per cent. of Hg. in Ointment ?
323. What is Easton's Syrup ?
324. What is Oil Origanum ?
325. What is Gunja ?
326. What is Cutch ?
327. What is Love Apple ?
328. What is Wood Soap ?
329. What is Saccharum Saturni ?
330. What is Huxham's Tinct. ?
331. What is Sal Diurectic ?
332. What is Solution of Salt ?
333. What is Secale Cornutum ?
334. What is Milkman's Liniment ?
335. What is Vermilion ?
336. What is Calamine ?
337. What is Carmine ?
338. How tell Phenol from Creosote ?
339. What is Burst Pulver ?
340. What is Green Powder ?
341. What is German Powder ?
342. What is a Mordant ?
343. What is Etherial Oil ?
344. What is test for Gac. Acetic Acid ?
345. Source of Ethyl Alcohol ?
346. Source of Methyl Alcohol ?
347. Source of Amylic Alcohol ?
348. What is Methylated Spirits ?
349. What is Dolomite ?
350. What is Pyroligneus Acid ?
351. What is Elixir Pro ?
352. What is Elixir Salutis ?
353. What is Oil of Smoke ?

354. What is Dobell's Solution ?
355. What is Sal Amarum ?
356. How is Tannin obtained ?
357. How is Camphor obtained ?
358. How is Aloes obtained ?
369. How is Kino obtained ?
370. How is Copaiba obtained ?
371. How is Catechu obtained ?
372. What is Verdagris ?
373. Difference between the Mass and Pill of Ferri Carbonatis ?
375. What is Friar's Balsam ?
376. If they asked you what a certain Balsam was, and you never heard of it before, what would you call it ?
380. How is Ether made ?
381. How is Chloroform made ?
382. How increase solubility of Lime ?
383. How increase solubility of Tar ?
384. How much Prussic Acid in Bitter Alm. ?
385. How much Prussic Acid in Pruni Virg. ?
386. What is Pearlash ?
387. What is Salts of Wormwood ?
388. What Oleoresins exude from tree ?
389. What Resins come from the root ?
390. How much of Alkaloids in Ext. Nux ?
391. How much of Alkaloids in Ext. Opium ?
392. What is source of Boric Acid ?
393. What is source of Borax ?
394. What is source of Epsom Salts ?
395. What is Cassia Lanciolata ?
396. What is Fraxinus Ornus ?
397. What is Barley Sugar ?
398. What is Butter of Antimony ?
399. What is Source of Spermaciti ?
400. What is Source of Glycerin ?
401. What Salt of Arsenic is official ?

402. How is Chloral made?
403. How is Iodoform made?
404. How is Menthol made?
405. What is Methyl Salicylate?
406. What is Salicylate of Phenol?
407. What is Resorcin?
408. What is Thymol?
409. How is Amyl Nitrite obtained?
410. What is Paraldehyde?
411. What is Oil Fleabane?
412. How many Petrolatums official?
413. Of the following which are soluble in water: Salol, Sulfonal, Resorcin, Phenacetine, Acetanilid, Antipyrine, Iodol, Saccharin, Aristol, Urethane?
414. Name incompatibilities of Chloral.
415. Why is Benzine used in making mustard paper?
416. Benzine is used in making what Tincture?
417. What Tinct. has Acetic Acid in it?
418. What is dose of Phosphoreted Oil?
419. What does Lycopodium contain?
420. Meaning of Bin, Proto, Ducto?
421. What Tinct. are made by putting dry powder in Percolator?
422. What Tinct. are Macerated seven days?
423. What Tinct. are made by digestion?
424. What is Sydnham's Laudanum?
425. What is McMunn's Elixir?
426. How make Carron Oil.
427. Why is Nitric Acid sometimes Yellow?
428. R̄ Hirudo No. II; what would you put up?
429. What is Acetum Saturni?
430. What is Goulard's Cerate?
431. Source of Acetic Acid?
432. Difference between Sulphate and Bisulphate of Quinine.
433. How would you make a solution of Iodine in water?
434. How much Cocaine in a cup of Hot Chocolate?

435. What is best solvent for Resins ?
436. What is best solvent for Rubber ?
437. What is Radical Vinegar ?
438. How make Boric Acid ?
439. What is test for Iodine ?
440. What is Rhamnus Catharticus ?
441. How make Castile Soap ?
442. What is a Stearoptin ?
443. Name the Haloids.
444. Source of Creasote ?
445. What is Norwood's Tincture ?
446. What is Spt. of Sea Salt ?
447. What is Lupulin taken from ?
448. Difference between Chalk and Lime ?
449. What is Pot. Carb. put in Syrup. of Rhubarb for ?
450. What is Salts of Lemon ?
451. What is Trinitrin ?
452. What is a Pyxis ?
453. What is Shop Saffron ?
454. What is Chili Saltpeter ?
455. What is Sparteine.
456. What Syrup has Acetic Acid in it ?
457. What Syrup has Ammonia in it ?
458. How is Honey clarified ?
459. What is a true Balsam ?
460. Per cent. of Morphine in Opium ?
461. Name two Fluid Ext. having water as a Menstruum ?
462. What is Gregory's Pd. ?
463. What is Lady Webster's Dinner Pill ?
464. What is Strengthening Plaster ?
465. Difference between Red and Yellow Iodide of Mercury ?
467. Difference between Bi and Sub Chloride of Mercury ?
468. Strength of Solution of Morphine ?
469. Strength of Solution of Strychnine ?
470. What is Trinitrine ?
471. What would you dispense for Persulphate of Iron ?

472. What is American Valerian?
473. What does Lamella mean?
474. Why is Mucilage of Sassafras Pith official?
475. What off. prep. does Lard Oil enter into?
476. What off. prep. does Gamboge enter into?
477. What off. prep. does Stearic Acid enter into?
478. What is Protochloride of Mercury?
479. What is Deutochloride of Mercury?
480. What is Red Precipitate?
481. What is White Precipitate?
482. What is Blue Vitrol?
483. What is Green Vitrol?
484. What is White Vitrol?
485. What is Symplocapus Foetidus?
486. What is Bleaching Powder?
487. What is Trooper's Ointment?
488. What does one liter of Hydrogen weigh?
489. What is an element?
490. What is an atom?
491. What is a molecule?
492. Strength of Syrup of Hydriodic Acid?
493. What is liquid diffusion?
494. What is Bitter Salt?
495. How would you make a pill containing Strychnine Sulphate $\frac{1}{100}$ gr.?
496. What is May Apple?
497. What is the difference between Sulphate and Bisulphate of Quinine?
498. Why is Ammonia used in making prep. of Senega?
499. What is Glycerin miscible with?
500. Does one lb. of water measure more or less than a pint?
501. What is the best solvent for Resins?
502. What is Protochloride of Hg.?
503. What is Biniiodide of Hg.?
504. What is the fluid extract of Opium?

ANSWERS.

1. (a) The science of the nature and action of drugs. (b) Science of drugs and their preparations. (c) The science of dosage. (d) A treatise on poisons. (e) The science of plants, their birth, life and death.

2. The U. S. P. uses the Latin language for its official names and these have a definite ending. As Latin is a dead language, the ending and names will always be the same. Then there will be no confusion, and all prescriptions should be written alike.

3. C., H., O., N., I., Br., Cl., Na., K., Ca., Mg. and S.

4. (a) Cellulin, Pectin, Protoplasm and Chlorophyll; (b) volatile and fixed oils, neutral principles, alkaloids, glucosides, acids, tannin, gum, resin, sugar and starch.

5. (a) $7000 \div (456 \times .72) = 21.4$ fl. oz.;

(b) $7000 \div (456 \times 1.5) = 10.2$ fl. oz.

(c) $7000 \div (456 \times 1.25) = 12.5$ fl. oz.

(d) $7000 \div (456 \times .90) = 17$ fl. oz.

(e) $7000 \div 456 = 15.3$ fl. oz. in 1 lb. av.

6. $170 - 135 = 30$; $75 : 1 :: 30 : x$; $x = 40$, or what it losses in water; $170 \div 40 = 4.25$ Sp. Gr. Ans.

7. (a) Frangula; (b) Digitalis and Henbane; (c) Ergot and Pulsatilla.

8. (a) Tolu; (b) Colophony; (c) Turpentine; (d) Myrrh; (e) Acacia.

9. (a) .0065 grms.; (b) .325 grms.; (c) about 30 c.c.; (d) 6.2 c.c.; (e) 960 c.c.

10. (a) 560 grs.; (b) 684 grs.; (c) 373.9 grs.; (d) 326.3 grs.; (e) 456 grs.

11. (a) 10 per cent.; (b) 36 per cent.; (c) 6 per cent.; (d) 92 per cent.; (e) 20 per cent.; (f) 10 per cent.; (g) 2 per cent.; (h) 31 per cent.

12. (a) 70 alcohol and 30 water; (b) 75 of glycerin and water, each, and 850 alcohol; (c) Spt. Amm. Arom.; (d) Spts. Amm. Arom.; (e) alcohol 95 and water 5; (f) 60 alcohol and 40

water; (*g*) 60 alcohol, 40 water and 2 acetic acid; (*h*) 20 alcohol and water qs.; (*i*) Alcohol.

13. (*a*) H_2SO_4 ; (*b*) KI; (*c*) $\text{C}_6\text{H}_5\text{OH}$; (*d*) MgSO_4 ; (*e*) NaCl; (*f*) H_2O ; (*g*) FeSO_4 ; (*h*) $\text{C}_2\text{H}_5\text{OH}$; (*i*) HNO_3 ; (*j*) KOH.

14. (*a*) Made by running SO_2 , H_2O , and N_2O_4 gases into leaden chambers. (*b*) Made by subjecting $\text{Ca}(\text{OH})_2$ to the action of chlorine gas. (*c*) Acting on alcohol with calcium hypochlorite. (*d*) Made by the destructive distillation of wood.

15. Read the process for making these syrups in the U. S. P.

16. (*a*) Ferrum; (*b*) Alumen; (*c*) Potassii et sodii tartras; (*d*) Cypripedium; (*e*) Rubus; (*f*) Asclepias; (*g*) Guaiaci lignum; (*h*) Caryophyllus; (*i*) Origanum; (*j*) Uva Ursi.

17. NH_3 . It is obtained from gas liquor by the action of calcium hydrate. It is a peculiar gaseous substance composed of nitrogen and hydrogen. $28:10::32:x=11.4$. Take 11.4 oz. of the stronger and add water up to 32 oz.

18. $456 \times 2 = 912 \times 4\% = 36.48 \times .013 = 47$ cents. Ans.

19. (*a*) A draught; (*b*) a spoonful; (*c*) food; (*d*) small; (*e*) vomiting; (*f*) rectal inject of medicine or food; (*g*) drop; (*h*) fresh.

20. Solution of Metallic Salts or Alkalioids in Oleic Acid. Oleate of Mercury 20 per cent., Oleate of Zinc 5 per cent., Oleate of Veratrine 2 per cent.

21. (*a*) Aconitum Napellus; (*b*) Allium Sativum; (*c*) Cephaelic Ipecacuanha; (*d*) Aretemisia; (*e*) Strychnos Nux Vomica; (*f*) Chondrus Crispus; (*g*) Paullinia Cupana; (*h*) Citrus Bergamia; (*i*) Physostigma Venenosum.

22. (*a*) 1 gr.; (*b*) $\frac{1}{8}$ gr.; (*c*) 2 gr.; (*d*) 60 min.; (*e*) 60 grs.; (*f*) 2 min.; (*g*) 3 grs.; (*h*) 1 gr.; (*i*) $\frac{1}{100}$ gr.; (*j*) 2 grs.; (*k*) 20 min.; (*l*) 15 grs.; (*m*) 3 grs.; (*n*) 2 min.; (*o*) 3 grs. (*p*) $\frac{1}{16}$ gr.; (*q*) 10 min.; (*r*) 15 grs.; (*s*) 1 oz.; (*t*) 4 drachms.

23. (*a*) An Oil and an Alkali; (*b*) Aloes and Licorice; (*c*) Ferrous Sulphate, Myrrh, Sugar, Pot. Carb. and Spt. Lavender; (*d*) Resin, Yellow Wax and Lard; (*e*) Ammonium Carbonate and dil. Acetic Acid; (*f*) Rheum Cardamon and Glycerin; (*g*) Iodine and Iodide of Potash.

24. (a) West Indies, unexpanded flower heads; (b) from the sea coast; (c) extract from wood, India; (d) Turkey, Fruit; (e) juice of leaves, Africa; (f) Wood, West Indies; (g) Stigmas, Asia; (h) unexpanded flower heads, Europe; (i) Oleoresin, South Am.; (j) Seed, India.

25. (a) Name given to I, Br. or Cl.; (b) An oleoresinous vegetable product, Tolu; (c) produces sweating; (d) agent causing sleep; (e) agent that lessens fever; (f) agent destroying germs; (g) solution of non-volatile substance in water.

26. (a) Whiskey and emetics; (b) starch; (c) white of eggs; (d) common salt.

27. (a) 194; (b) 25; (c) 100; (d) 450; (e) 1; (f) .4; (g) very sol.; (h) 200; (i) 200; (j) 16; (k) 740; (l) .5; (m) 6700; (n) in. sol.; (o) 16; (p) in. sol.; (q) 50; (r) 80.

28. (a) 14.4 oz.; (b) 480 grms.; (c) 4.8 hec. grms.

29. 192 grs. of Opium, 192 grs. of Ipecac and 1536 grs. of sugar of milk.

30. (a) Drying medicinal substances; (b) straining; (c) tearing drugs to pieces; (d) making a substance into a powder after they have been made into a paste with water or other liquid; (e) building up a compound for its elements.

31. (a) 120 to 160; (b) vol. 115 to 140, and fix. 77 to 100; (c) 110-140; (d) 60.

32. 1 oz. of oil; 2 drachms of acacia and water to make 2 oz., flavor with oil wintergreen. Place pd. acacia in dry mortar, add oil and trituate, add 90 min. of water and trituate again, add rest of water gradually.

33. (a) $\frac{1}{16}$ to $\frac{1}{8}$ gr.; (b) 1 to 3 gr.; (c) 5 to 15 gr.; (d) 1 to 5 gr.; (e) $\frac{1}{16}$ to $\frac{1}{8}$ gr.; (f) 1 to 3 grs.

34. (a) Blood; (b) cochineal; (c) milk. They are all animal.

35. (a) Produces a blister; (b) softens tissues; (c) causes secretion of urine; (d) powerful cathartic; (e) blisters.

36. See U. S. P. neutral mixture is Mixt. of Pot. Citrate 9 per cent. in U. S. P., 1880. Dewee's Carminative is Mixt. of Magnesia and Asafoetida of U. S. P., 1880.

37. It is "the comparative weight of bodies of equal bulk."

38. Tannic Acid, 3 to 10 grs.; Gallic Acid, 5 to 30 grs.; Sugar of Lead, 1 to 5 grs.; Nitrate of Silver, $\frac{1}{8}$ to $\frac{1}{2}$ gr.; Zinc Sulphate, 1 to 3 gr.

39. Castor Oil, teaspoonful; Rochelle Salts, 2 drachms.; Eff. Cit. Mag., $\frac{1}{2}$ oz.; Magnesium Sulph., 2 drachms.; Syrup Rhei, teaspoonful.

40. Opium, 1 to 3 grs.; Chloral, 10 to 40 grs.; Chloroform, 1 to 5 min.; Ether, 20 to 60 min.; Morphine Sulphate, $\frac{1}{8}$ to $\frac{1}{2}$ gr.

41. (a) Whiskey and Emetics; (b) Lime; (c) Magnesium Sulphate; (d) Vinegar; (e) Alkalie such as Borax.

42. (a) Bitter Almond, Chloroform and Creasote; (b) Ammonia; Chlorine and Peroxide of Hydrogen; (c) Anise, Camphor, Cinnamon, Fennel, Peppermint, Spearmint; (d) Orange flower (2), Rose (2), and distilled water.

43. Ipomoea Jalapa; contains resin, sugar, starch and gum.

44. (a) 12 grs.; (b) $456 \times 4 \times .82 = 1495.68$.

45. (a) Aconitin; (b) Atropin; (c) Hydrastin; (d) Caffeine; (e) Emetin.

46. (a) Red Iodide, $\frac{1}{16}$ to $\frac{1}{8}$ gr.; (b) Corrosive Sublimate, $\frac{1}{16}$ to $\frac{1}{8}$ gr.; (c) Red Precipitate.

47. (a) Asclepias, U. S., the root; (b) Rubus, U. S., bark of the root; (c) Staphisagria, Europe, the seed; (d) Hyoscyamus, Europe, leaves and flowering tops of second year's growth; (e) Chimaphila, U. S., the leaves.

48. \$318.31 and \$3.16. Ans.

49. (a) 50 per cent.; (b) 20 per cent.; (c) $3\frac{1}{2}$ per cent.; (d) 2 per cent.; (e) .05 per cent.

50. (a) Lime; (b) whiskey with emetics; (c) coffee; (d) coffee and brandy; (e) fixed oil and emetics.

51. Comp. spts. of orange and syrup are in Aromatic Elixir. Spts. phosp., oil of anise, glycerin and aromatic elixir are in Elixir of Phosphorus.

52. (a) 4 oz.; (b) 8 oz.; (c) 20 drachms; (d) 12 drachms; (e) 7 drachms.

53. (a) Causes sweating; (b) kills worms; (c) reduces fever; (d) causes spasms; (e) kills pain; (f) softens the skin; (g) burns the flesh; (h) powerful cathartic.

54. (a) To be strained; (b) spread; (c) middle-sized; (d) best olive oil; (e) twice a day; (f) as directed; (g) do not deliver without the money; (h) do not repeat.

55. 1280 grs.

56. (a) In fusion we heat to get a liquid and in calcination we only drive off the moisture or gas. (b) Torrefaction is roasting a substance, while deflagration is heating with a substance that will give off oxygen. (c) In an emulsion the substance is held suspended by a gum, while in a mixture it is not. (d) Ointment is made with yellow wax, while Cerate has white wax and has higher melting point. (e) Milk.

57. (a) 1 to 3 min.; (b) 5 to 15; (c) 10 to 60; (d) 3 to 10; (e) 5 to 15; (f) 2 to 6; (g) 5 to 10; (h) 10 to 30; (i) 10 to 60.

58. (a) A Diatomic Phenol, 3 to 10 grs.; (b) from Black Pepper, 1 to 10 grs.; (c) from Culvers Root, 2 to 4 grs.; (d) Oil of Thyme, $\frac{1}{2}$ to 2 grs.; (e) from Aloes, $\frac{1}{4}$ to 2 grs.; (f) from Phenol, 5 to 15 grs.; (g) from Creasote, $\frac{1}{2}$ to 2 grs.; (h) from Turpentine, 2 to 10 min.; (i) from Eucalyptus, 5 to 30 min.

59. (a) 13 per cent.; (b) 7 per cent.; (c) 40 per cent.; (d) 2 per cent. ext.; (e) 65 per cent.; (f) 32.5 per cent.; (g) 1 per cent.; (h) 1 per cent. each.

60. (a) 16 dr.; (b) 1.6 dr.; (c) .75 dr.; (d) insol.; (e) 16 dr.

61. Carbolic Acid, Cold Cream, Diachylon, Tar and Zinc Ointments (5) are made by fusion, the rest are made by incorporation, except Citrine Ointment which is made by chemical reaction. Blue Ointment has 50 per cent. Hg.

62. (a) $\frac{1}{100}$ gr.; (b) see U. S. P.

63. (a) The ous salts are the lower ones, that is from the element with the lowest valency. The ic salts are from the higher. (b) The solid part of a volatile oil.

64. (a) Saponification takes place; (b) Sodium Hydrate, NaOH; (c) a liquid consisting chiefly of Pinene.

65. (a) Any temp.; (b) 500° F.; (c) 100° C.

66. (a) Lime Water, Syrup of Lime and Potassa with Lime;

(*b*) Mercury with Chalk, comp. Chalk Powder and Chalk Troches; (*c*) none; (*d*) Sulphuric Acid; (*e*) Benzoic Acid.

67. 25 $\frac{1}{4}$ oz.

69. A cake is where the temperature of the receiver is higher, and the one that gives a powder quite cold. Camphor-cake, sulphur-powder.

70. Guarana contains more caffeine. They do not differ therapeutically.

71. (*a*) Too much Morphine in it. (*b*) Antipyrine is incompatible with Spts. Ether Nitros.

72. (*a*) A rootstock; (*b*) a leaf of the Corolla; (*c*) a solid bulb; (*d*) thickened part of an underground stem; (*e*) leaves of the flower; (*f*) one leaf of a compound one; (*g*) the outer leaves of a flower; (*h*) minute string.

73. See U. S. P.

74. 2 $\frac{1}{8}$ oz. Ext. Col.; 8 $\frac{3}{8}$ oz. Aloes; 1 oz. Cardamon; 2 $\frac{3}{8}$ oz. Scammony; and 1 $\frac{1}{8}$ oz. Alcohol.

75. .280 grm. and .252 grm. of Sugar of Milk must be added.

76. (*a*) 10 per cent.; (*b*) 10 per cent.; (*c*) 1 per cent.; (*d*) 1 per cent.; (*e*) 5 per cent.; (*f*) 10 per cent.; (*g*) 32.5 per cent.

77. Once in ten years, by a committee composed of the leading physicians and pharmacists.

78. Metric system was adopted.

79. (*a*) Rhus Toxicodendron; (*b*) Asclepias; (*c*) Myristica; (*d*) Euonymus; (*e*) Crocus; (*f*) Juglans; (*g*) Lappa; (*h*) Cusso.

80. (*a*) Volatile, from orange flowers by distill.; (*b*) vol., from lemon peel by expression; (*c*) vol., distilled from the leaves; (*d*) vol., distill.; (*e*) fixed, expressed from seed; (*f*) fixed, exp. from the seed.

81. (*a*) Ferric Hydrate; (*b*) Alkalies; (*c*) quick emetic and old Oil Turpentine; (*d*) salt; (*e*) Mag. Sulphate.

82. Find out if possible what poison has been taken, then treat accordingly. Give an emetic and send for doctor.

83. (*a*) Hypnotic; (*b*) diaphoretic; (*c*) laxative; (*d*) sedative; (*e*) anthelmintic.

84. $\frac{1}{40}$ millionth of the circumference of the earth from pole to pole equals one meter. 1 cubic centimeter of water at 4° C. weighs 1 gram; 1000 cubic cent. equal 1 liter; 1 meter equals 39 in.; 1 grm. equals 15 gr.; 1 liter equals 2.11 pints.

85. (a) $456 \times 16 = 7296 \times 1.25 = 9120 \div 437.5 = 20.8$.
Ans. (b) $(33\frac{1}{3} \div 7000) \times 425 = \$.02$. Ans.

86. (a) A metal; (b) Mercuric Chloride equals HgCl_2 ; Mercurous Chloride equals HgCl ; Yellow Iodide equals HgI ; Red Iodide equals HgI_2 ; Red and Yellow Oxide equals HgO ; Yellow Subsulphate equals $\text{Hg}(\text{HgO})_2\text{SO}_4$.

87. See U. S. P. Hieria Picra is Aloes and Canella.

88. (a) The Iodide gives a red precipitate with Mercuric Chloride; (b) H_2S gives a ppt. with Zinc; (c) solubility and Nitric Acid on Morphine gives red color; (d) 1 pt. Goulard's sol. and 3 pts. oil, with Olive Oil you will get an emulsion, with cotton seed it separates, this will detect as low as 10 per cent. adulteration; (e) taste.

89. (a) Ad means up to, while adde means add; (b) capiat means let him take, while cibus is food; (c) pro means for, and per means by.

90. (a) 5 per cent.; (b) 11 times its volume; (c) 10 per cent.

91. (a) Carbonate of Soda and Sulphuric Acid; (b) Carbonate of Soda and Sulphurous Acid; (c) Sodium Carbonate and Boric Acid; (d) Lead Oxide and Acetic Acid; (e) Iron and Sulphuric Acid.

92. The first four are coal tar products with dose of 5 to 15 grs. Aristol has 46 per cent., Iodine and Iodol has 89 per cent.

93. Obtained from oil wells, and purified by melting and straining. Melts at 40° C.

94. (a) Silver Nitrate 1 part, and Pot. Nitrate 2 parts; (b) Silver Nitrate with 5 per cent. Silver Chloride.

95. (a) 25; (b) 1; (c) 16; (d) 700; (e) .48; 200; (f) (g) 1.

96. (a) Aconitin; (b) Cathartin; (c) Emetin; (d) Digitalin; (e) coloring matter; (f) Atropin.

97. A mechanical mixture of oxygen and nitrogen.

98. See U. S. P. (*d*) Expectorants are agents promoting secretion of bronchial mucus.

99. (*a*) Na_2CO_3 ; (*b*) NaI ; (*c*) NaHCO_3 .

100. (*a*) Bark of the root, used in diarrhea, dose is 20 to 30 grs.; (*b*) the leaves; habitat is U. S.; (*c*) the flowers. It is a stimulant and carminative.

101. $(18 \times 6) \div 36 = 3$ oz. of Acetic Acid and dilute with water to 18 oz.; and 15 grms. of acid and dilute to 300 grms.

102. 28 is to 10 as the amt. of dilute required is to the amt. of strong to be used.

103. (*a*) Antimonium Sulphuratum; (*b*) *Elastica*; (*c*) Argenti Nitras Dilutus.

104. (*a*) 65 milligrams equals 1 grain, 28.4 grms. equals 1 av. oz. or $437\frac{1}{2}$ grs.

105. These preparations should be made by the U. S. P. methods, and no other.

106. It is picking out the good pieces of a drug. Most of the powdered drugs you buy are garbled, and here the good pieces are not powdered. Roots and barks are the parts most treated in this way.

107. (*a*) Formalin or Borax are the best. (*b*) Putting the salt into warm water and shaking.

108. Diluted orange flower and rose waters, Aqua Chloriformi and Aqua Hydrogenii Dioxidi; Glycerites of Carbolic and Tannic Acids; Boroglycerin and Hydrastis; dilute hypophosphorus and stearic acids; and extracts of Cimicifugae, Jalapae, and Ura Ursi.

109. Calyx, Corolla, Stamens and Pistils. A complete flower is one having all the parts present. A perfect when it has both stamens and pistils, and regular when all the parts of each set are alike in shape and size. A petiole is a leaf-stalk.

110. See the page on Solubilities.

111. (*a*) 5 per cent.; (*b*) Saturated; (*c*) 50 per cent.; (*d*) 25 per cent.; (*e*) 2.6 per cent.; (*f*) 7 per cent.; (*g*) 1 per cent.

112. (*a*) $\frac{1}{2}$ to 2 grs.; (*b*) $\frac{1}{10}$ to $\frac{1}{4}$ gr.; (*c*) $\frac{1}{4}$ to 1 gr.; (*d*) $\frac{1}{100}$ to $\frac{1}{20}$ gr.; (*e*) 5 to 15 grs.; (*f*) $\frac{1}{2}$ to 3 grs.; (*g*) $\frac{1}{4}$ to 1 gr.; (*h*) 10 to 60 grs.; (*i*) 1 to 5 min.

113. They are extracted by some solvent like ether, chloroform or benzine. Tannic acid precip. them. They contain C. H. N. O. They exist as amides, composed of C. H. N. O., and amines which have no oxygen.

114. Potassium is a metallic, white color and softer than wax. It has great affinity for oxygen and when put on water takes fire. (a) From wood ashes; (b) from Strassfurt mines in Germany; (c) colors a bunsen flame violet; (d) KOH.

115. (a) Conine, volatile and fixed oils; (b) Cathartic Acid and Sennacrol; (c) Kinotannic Acid and Kinoin; (d) Saponin; (e) Volatile oil and Saponin; (f) Volatile oil and Tannin; (g) Volatile oil; (h) Caffeine and Tannin.

116. $456 \times 4 = 1824 \times 15 = 2736 \div (456 \times .75) = 8$ fl. oz. Ans.

117. Conf. Rose equals R. rose, sugar, clar., honey, and rose water; Senna equals senna, ol. coriander, cas. fist., tam., prune, fig, sugar and water.

118. (a) $100 \div 28$; (b) $1500 \div 28$; (c) $2.5 \div 28$; (d) $(480 \times 3) \div 437\frac{1}{2} = 3.2$; (e) $\frac{51884}{10000} \div 437\frac{1}{2}$.

119. Rub the salt up with a little oil first, then add ointment gradually.

120. (a) Preventing putrifaction; (b) mild laxative; (c) blister; (d) causes sleep; (e) arresting hemorrhage; (f) causes flow of saliva; (g) kills tape worms.

121. Alkaloids are vegetable alkalies while glucosides are bodies which when decomposed yields glucose and another body peculiar to itself.

122. It is the inspissated juice of the leaves of Aloe vera and Perryi. Obtained by cutting the leaves near the base and collecting the juice. Comes from Africa. Purified Aloes and the extract are official.

123. (a) Silver; (b) Oxalic Acid; (c) Lead; (d) Opium; (e) strong acids; (f) Phenol; (g) Aconite; (h) Alkalies.

124. CHBr_3 . Made by the action of Bromine on Alcohol. One atom in each molecule.

125. (a) Has the appearance of passing through the leaf; (b) Spirea Ulmaria, other name is Meadow-sweet.

126. (*a*) Has white wax; (*b*) has yellow wax; (*c*) heating a substance to liquify it; (*d*) mixing two things with a spatula; (*e*) all the cerates are made by fusion. Ointments of Tar, Carbolic Acid, Cold Cream and Zinc are made by fusion, and Iodine and Sulphur by incorporation. Citrine Ointment is made by chemical reaction.

127. It will hold 16 oz. and the bottle weighs 15 oz.

128. $10 \div 70 = 14.2\%$.

129. Use a moderate heat. See that they are well mixed and contain no lumps.

130. Soap, Confection of Rose, Castor Oil and water.

131. Soap is best for Opium, Aloes and Asafoetida Pills because they are resinous drugs. Cocoa butter or Petrolatum should be used with oxidizable substances.

132. Mass of Mercury and Copaiba and Ferrous Carbonate. Moisten Magnesia with water, then incorp. the Copaiba and heat for half an hour.

133. (*a*) Three times; (*b*) a cough; (*c*) repeat; (*d*) without; (*e*) take; (*f*) weight; (*g*) drink.

134. Albuminous compounds, and obtained from animals.

135. Lard from *Sus Scrofa.*, and wax from *Apis Mellifica.*

136. The active principle of the drug that contains them. Latin end in *ina* and English in *ine*.

137. (*a*) They are substances found in plants, which when they are decomposed yield Glucose. (*b*) Equals $C_6H_{12}O_6$. (*c*) They are vegetable exudates insol. in water. (*d*) They unite with an acid to form a salt. (*e*) They are built up from their elements.

138 (*a*) Acacia and Tragacanth; (*b*) Copaiba and Turpentine and six that are extracted with Ether; (*c*) Camphor, Menthol, Thymol, and Eucalyptol; (*d*) Ammonia, Asafoetida, Myrrh and Gamboge; (*e*) Tolu, Peru and Storax.

139. (*a*) Leech; (*b*) Elecampagne; (*c*) Broom; (*d*) Mercury; (*e*) Cramp Bark; (*f*) German Chamomile; (*g*) Corrosive Sublimate; (*h*) Calomel; (*i*) Turpeth's Mineral.

140. 1 part Opium, 1 part Ipecac and 8 parts sugar of milk; 1.6 oz. each of Opium and Ipecac and 12.8 oz. of sugar of milk

to make 1 lb. av.; 125 grms. each of Opium and Ipecac and 1000 grms. of milk to make 1 kilo. and 250 grms. of Dover's Powder.

141. Gaultheria Procumbens; Salicylic Acid; Sp. Gr. .90 to .92.

142. Ammoniated tinctures of Valerian and Guaiac.

143. Prepared by fusing Sodium Benzol Disulphonate with Caustic Soda. It is an antiseptic and antipyretic. Physiologically it is allied to Carbolic Acid.

144. Eucalyptus or Australian fever tree; the leaf is used and contains Volatile Oil, Tannin and Resin. It is a Febrifuge, and Antiseptic. Eucalyptol 5 to 30 min. and Fluid ext. same dose.

145. A Yard. It is the length of a Pendulum vibrating seconds in a latitude of London, in a vacuum, temperature 62° F.

146. The bark of Cinchona Calisaya and Officinalis and other Hybrids of Cinchona, Quinine, Quinidine, and Cinchonine. The yellow has most Quinine.

147. Ammoniac and Asafoetida. The one containing oil has some viscid substance to hold it in suspension.

148. 1 oz. of oil, 2 dr. of acacia, 3 gtt. of oil of Gaultheria and water to make 4 oz.

149. Soluble gun cotton. Used in making Collodions.

150. 1 in 15. Olive Oil.

151. Na, K, Mg, Ca, Zn, Fe, Co, Ni, Ag, Pb.

152. They absorb Carbon Dioxide from the air and a Carbonate is formed.

153. (a) Ulmus is not adulterated; (b) Chicory; (c) cotton seed oil; (d) starch, use iodine test, blue color; (e) arsenic is in subnitrate of Bismuth, use Marsh's test. yellow ppt.

154. (a) Coffee; (b) Charcoal; (c) Camphor.

155. Trichlor-methane, CHCl_3 .

156. (a) Opium and Ipecac 1.6 oz. each, and sugar of milk 12.8 oz.; (b) 2 oz. of oil and 18 oz. alcohol and 1 oz. of herb; (c) Opium, Benzoic acid and camphor 2 grms. each; oil Anise 2 c.c., Glycerin 20 c.c., and Dil. Alcohol to make 500 c.c.

157. (a) Tannin; (b) heat manganese dioxide and charcoal together and treat the residue with sulphuric acid. Heat to

redness, filter and crystallize; (c) fusing saltpeter and putting it in moulds; (d) dissolve pearlash in water, filter and evaporating.

158. A commercial lye.

159. Look these up in U. S. P., they are important.

160. (a) *Mistura Glycyerhizae Composita*; (b) *Infusum Sennae Compositum*; (c) *Tinctura Benzoini Composita*; (d) *Pulvis Antimonialis*.

161. Ext. colocynth comp., 4 grms.; calomel, 3 grms.; ext. jalap, 1.5 grms.; gamboge, .75 grms.; water q. s.; 7680 min. in Wine pint and 9600 min. in Imperial pint.

162. They are small, round, solid bodies containing a medicinal substance. It should be adhesive, firm and plastic. 15 are official.

163. Fluid extract of Sennega to hold the senegin in solution and in Licorice to hold the glycyrrhizin up.

164. 4.8 oz. of wax and 11.2 oz. of lard.

165. By product in manuf. of soaps. Is used as a solvent.

166. Ipecac, Rhubarb, Rose, Blackberry and Hive syrups are made from fluid extracts.

167. (a) Glycerin suppositories; (b) Alcoholic extract and tincture; (c) Peroxide of hydrogen.

168. Eight doses.

169. (a) 80; (b) 25; (c) 100; (d) 450; (e) 16; (f) 130; (g) .4; (h) very sol.; (i) 200.

170. (a) *Eriodictyon*, the leaves; (b) *Pimenta*, the nearly ripe fruit; (c) *Aspidium*, Rhizome; (d) *Rubus Idaeus*, the fruit; (e) *Inula*, root; (f) *Dulcamara*, the young branches.

171. (a) Making an analysis by weight; (b) have same chemical composition; (c) having the shape of a prism; (d) drying a substance to get a fixed part; (e) thickened.

172. Forms gun cotton.

173. Separating a solid from a liquid by passing through a filter paper. If a substance filters quite fast, use a plain; if the precipitate is heavy and gelatinous, use a plaited one.

174. Always wet the paper with the menstruum used; it hastens filtration. White, because the gray contains impurities which acid and alkalies act on.

175. Take 1000 c.c. of water, place in a still, and distill. Throw away the first 100 c.c., and collect the next 800 c.c.

176. (a) 39.3 in.; (b) 33 oz.; (c) 3000 c.c.; (d) 480 gr.

177. (a) Resin, Yellow Wax and Lard; (b) Glycerin, Stearic Acid and Soda Carbonate; (c) Sulphuric Acid, Tinct. Ginger, Oil Cinnamon and Alcohol; (d) Senna, Manna, Mag. Sulphate and Fennel. Hot and cold water.

178. (a) Argenti Nitras Fusus, made with Hydrochloric Acid and Silver Nitrate; (b) Aqua Amygdalae Amarae, made by dissolving the oil in water by agitation and filtering; (c) Syrupus Amygdalae. See U. S. P. for process. (d) Emplastrum Picis Cantharidatum. Made by fusion.

179. (a) Fruit; (b) fresh leaves; (c) seed and leaves; (d) unexpanded flower heads; (e) nearly ripe fruit; (f) root; (g) leaves; (h) spores.

180. Repellant throws or keeps something away from it, while an absorbant takes it in. Lycopodium is a repellant due to the fixed oil it contains. 47 per cent.

181. (a) HNO_3 ; (b) $\text{C}_2\text{H}_5\text{OH}$; (c) H_2O_2 ; (d) K_2CO_3 ; (e) NaHCO_3 ; (f) Na_2SO_4 ; (g) KNO_3 .

182. $456 \times 32 = 14592$; $437.5 \times 44 = 19140$. $19140 \div 14592 = 1.31$ Sp. Gr. Ans.

183. 1 liter of Ether weighs 720 grms. $(\$1.25 \div 500) \times 720 = \1.80 . Ans.

184. (a) $\frac{1}{4}$ to 1 gr., or .016 to .065 gm.; (b) $\frac{1}{2}$ to 3 grs., or 0.33 to .19 gm.; (c) $\frac{1}{100}$ to $\frac{1}{10}$ gr. or .0006 to .001 gm.; (d) 1 to 10 grs. or .065 to .65 gm.; (e) 5 to 15 grs. or .32 to .97 gm.; (f) $\frac{1}{2}$ to 3 grs. or .032 to .19 gm.; (g) 10 to 30 grs. or .65 to 2 grms.

185. A large number.

186. The fruit of Pimpinella Anisum, Western Asia. Contains Volatile Oil. Is in sweet Tincture of Rhubarb.

187. (a) 6; (b) 5.

188. $\$6.50 \div 437.5 = .015$. $456 \times 2 \times .05 = 45.6$. $45.6 \times \$.015 = 68$ cents. Ans.

189. Bismuth, Silver, Oxygen, Copper, Bromine, Arsenic, Iodine, Phosphorus, Hydrogen, Iron, Lead.

190. (a) Meter; (b) liter; (c) gram.
191. .000065, .00013, .0013, .0065, .032, .065, .011, .016, .008 grams.
192. Divide by 15.4 to change grains to grams. Change decigrams to grams, and multiply by 15.4 to change to grains.
193. (a) Thickened underground stem; (b) part of a flower; (c) root-branches; (d) a solid bulb; (e) outer part of a flower; (f) a leaf bud with fleshy scales.
194. (a) *Chimaphila Umbellata*; (b) *Imula Helenium*; (c) *Spirae Ulmaria*; (d) *Eugenia Aromatica*; (e) *Geranium Maculatum*; (f) *Picraena Excelsia*; (g) *Cimicifuga Racemosa*.
195. Iodine. Cods' livers are heated in wooden tanks by low pressure steam, and the oil is drained off.
196. (a) Horse radish; (b) common oat? (c) *Geranium*; (d) Horehound.
197. Tannin. .4 per cent. in wine and .2 per cent. in syrup.
199. Do not use heat and keep well covered.
200. .12 per cent. in Spts. and 1 per cent. in oil.
201. (a) Emetin; (b) Hydrastin; (c) Tannin; (d) Eugenol.
202. Elixir of Vitrol; 20 per cent.
203. (a) Fresh leaves; (b) leaves of second years growth; (c) Kino, juice; (d) root; (e) leaves; (f) root; (g) leaves.
204. Mass, 33 per cent.; ointment, 50 per cent.; plasters, 30 per cent.; plaster with Ammoniac, 18 per cent.; Mercury and chalk, 38 per cent.
205. (a) Calcium sulphate; (b) calcium carbonate; (c) calcium chloride is mixed with sodium carbonate.
206. Spirit of Chloroform, it is 6 per cent. by volume now, and in 1880 it was 10 per cent. by weight, so that there is hardly any difference between the two.
207. 1 per cent. Dose is 3 to 10 min., .19 grs. in 20 gtt. and 440 drops in 1 ounce.
208. See U. S. P.
209. (a) Internal fat of the abdomen of *Ovis Aries*; (b) same from *Sus Scrofa*; (c) The swimming bladder of *Acipenser Huso*.

210. (a) $456 \times 32 \times .72 = 10506.24 \div 437.5 = 24$ oz.
 (b) $456 \times 32 \times 1.5 = 21888. \div 437.5 = 50$ oz.
 (c) $456 \times 32 \times 1.31 = 19115.52 \div 437.5 = 43.6$ oz.
 (d) $456 \times 32 \times 1.25 = 18240. \div 437.5 = 41.6$ oz.
 (e) $456 \times 32 \times 1 = 14592. \div 437.5 = 33.3$ oz.
211. (a) Carbohc Acid; (b) Alkaloid from Physostigma venenosum; (c) active principle of Ipecac; (d) Alkaloid of Opium.
212. $7\frac{1}{2} \div .05 = 150$.
213. $\$160 \times .98 = 156.88 \times .95 = 149.036 \times .90 = \134.32
 Ans.
214. (a) Pyrethrum Pathenium; (b) Viburum Prunifolium; (c) Viburum Opulus; (d) Caulophyllum; (e) Menisperum Canadensis.
215. Spirits, .12 per cent.; oil, 1 per cent.; elixir, $\frac{1}{15}$ gr. to drachm; pill, $\frac{1}{100}$ gr.
216. Pepsin is a ferment obtained from the stomach of pigs. Pancreatin comes from the pancreas of hogs. Pepsin is capable of digesting not less than 3000 times its own weight of coagulated albumen.
217. (a) From the willow; (b) mixture of Aloes and Canella (c) Nitrohydrochloric acid; (d) Tinct. Senna, Br.
218. (a) Aloes soap and water, Asafoetida soap and water, Opium soap and water; (b) Tannic acid, sugar of lead and zinc sulphate; (c) Acetanilid, Cinchona, and antipyrine; (d) Asafoetida, allspice, and Asclepias.
219. (a) H_3BO_3 ; (b) $H_2C_2O_4$; (c) HCl; (d) H_2SO_4 .
220. (a) One is an acid and the other is a salt of that acid; (b) Ergot, Conium, Sanguinaria and Nux Vomica.
221. Heat the lard oil to $100^\circ C.$, add 70 grms. nitric acid, heat for about one hour. Then let cool to $40^\circ C.$, and add the solution of $Hg(NO_3)_2$.
222. (a) .052 per cent.; (b) 1 gr. in 60; (c) 1.3 per cent. in the liquid prep. except paregoric.
223. (a) Morphine; (b) Strychnine; (c) Aconitine; (d) Caffeine; (e) Cocaine; (f) Emetin; (g) Eserine; (h) Digitalin; (i) Santonin.

234. Iodine 5 per cent., Iodide of Potas. 10 per cent. and water to make 100 grms.; $10 \times .05 = .5$ grs. Ans.

235. Morphine Sulphate 16 grs. and water 1 oz. $16 \div 456 = .03\frac{8}{9}$ or $3\frac{8}{9}$ per cent. in any amt. of the solution.

236. Oils of bitter almond and volatile oil of mustard. They are heavier than water, being two of the exceptions.

237. Synthesis is the building up of a compound from its elements. It is direct when the component parts enter directly together and indirect when other things are formed before getting the final product.

238. Analysis is the breaking up of a substance into the things that compose it. It is direct when we get the things immediately and indirect when some other substance is formed before getting at the constituents.

239. Qualitative analysis is finding out what there is in an unknown substance. Example: Donovan's Solution contains mercuric and arsenic iodide. Quantitative analysis is finding out how much of a substance is in an unknown thing. Example: Donovan's Solution contains 1 per cent. each of arsenic and mercuric iodide.

240. Chemistry is the study of molecular and atomic structure of bodies. Physics is the science of inorganic matter and its forces. Chemism is the chemical attraction one body has for another.

241. When a substance acts on another so as to break it up into different things it is called chemical decomposition. Double decomposition is where two different substances are mixed together so as to make two new things. Example: $\text{AgNO}_3 + \text{NaCl} = \text{AgCl} + \text{NaNO}_3$.

242. (a) Chlorine and Creasote water; (b) Peroxide of Hydrogen, Liquor Ammonium Acetatis; (c) Magnesia; (d) Ointment of Tar and Cold Cream; (e) Precip. Carb. Calcium.

243. Honey, wax, tinct. and cerate of Cantharides are made by or from insects. Suet, lard, spermaciti, lanoline and pepsin are of animal origin.

244. Contains chiefly Methyl Salicylate. Sp. Gr. .90 to .92. Salicylic Acid is obtained from it. Dose is 5 to 10 min., and is a stimulant and antiseptic, and used as a flavor.

245. Corrosive Sublimate, Oxalic Acid, Silver Nitrate, Carbolic Acid, Laudanum, Tinct. Aconite, Tinct. Arnica, Arsenic, Red Precipitate and strong acids.

246. See U. S. P.

247. Emulsum Amygdalae; (b) Liquor Ferri et Ammonii Acetatis; (c) Mixture Glycyrrhizae Composita; (d) Liquor Potassii Citratis.

248. $1000 \div 456 = 2.1$ fl. oz.; so it will hold 2.1 fl. oz. of any liquid. It will hold the same volume, but different weight.

249. Add water until it weighs 8 oz.

250. 8 oz.

251. (a) Root, Aconitine; (b) root, resin; (c) leaves, Digitaline; (d) dried paste, Caffeine; (e) leaves and root, Atropine.

252. An organic substance is an organized substance and contains Carbon. Example: Benzine. An organic is not organized and generally has no Carbon. Example: Common salt.

253 (a) Lime; (b) Ferric Hydrate; (c) NaCl; (d) Tannin.

254. (a) From sawdust; (b) nut galls; (c) lemon juice; (d) cow's milk; (e) heavy oil of coal tar.

255. (a) Oil of Cade; (b) Benzin; (c) Camphor.

256. Urethral 1 grm., Rectal 1 grm., and Vaginal 3 grms.

257. Glycerin Supp. See U. S. P. for method of making.

258. (a) India; the root is used as an expectorant and an emetic. (b) India; the leaflets are used as a cathartic. (c) S. A.; the dried paste is used as a tonic and nervine. (d) Mexico; it is used for coloring.

259. (a) Hydrargyri Chloridum Mite; (b) Campogia; (c) Coccus; (d) Santalum Rubrum; (e) Guaiacum Resina; (f) Myristica.

260. (a) Folium; (b) Bacca; (c) Fructus; (d) Cortex; (e) Succus; (f) Rhizoma; (g) Medulla.

261. Alcohol precipitates Acacia and doesn't the pith.

262. The deodorized is the cheaper, because it has less Alcohol and the Ether is recovered by distill.

272. From Ricini Communis. Obtained from Michigan. Obtained by cold expression.

273. Castor Oil. Cotton Seed Oil is insoluble in Alcohol.

274. No. Do not buy it if it breaks with a sharp fracture, and it should have a pinkish tinge.

275. (a) Deliquescent salt is one that liquifies; (b) efflorescent when it forms a white powder on surface by losing water; (c) hygroscopic is when it absorbs water from air, but not enough to liquify.

276. 1 %.

277. \$1.65.

278. (a) 31.8 %; (b) 2 %; (c) 68 %; (d) 92 %; (e) 85 %.

279. (a) Hydrargyri Chloridum Mite; (b) Hydrargyri Chloridum Corrosivum; (c) Phytolaccae Fuctus; (d) Sassafras Medulla; (e) Massa Hydrargyri.

280. (a) .4 %; (b) 10 %; (c) 10 %; (d) 1 gr.; (e) $\frac{1}{2}$ gr.

281. Spongia officinalis. Their chief source is from the Mediterranean and Red seas. It is a polymorphous animal. The best sponge is the Medit., worth about \$1. per lb.; Sheep wool, from 50 cents to 80 cents; Cup sponges, about 25 cents; and Reef sponges are the cheapest, worth 10 to 15 cents a piece.

282. Solution of Morphine; 1 gr. to 1 oz. of H_2O .

283. Wine of Antimony.

284. Would not put it up.

285. Dissolve 2 oz. of KI in the water and then the iodine. $(160 \div 480) \times 10 = 3.5$ grs. in 10 min.; $120 \div 456 = 26$ per cent.

286. (a) Podophyllum; (b) Coloyntus; (c) Cypripedium; (d) Digitalis; (e) Lobelia.

287. (a) Cor. Sub.; (b) Cor. Sub.; (c) Cor. Sub.; (d) Calomel; (e) Cor. Sub.; (f) Calomel; (g) Calomel.

288. (a) .034 gr.; (b) .84 gr.; (c) .84 gr.; (d) .84 gr. (e) .14 gr.

289. (a) Produces sweating; (b) dilates the pupil of eye; (c) contracts pupil of eye; (d) used to neutralize acid in stomach; (e) medicines expelling gas in alimentary canal.

290. (a) Papaveraceae; (b) Rubiaceae; (c) Lineae; (d) Labiaceae; (e) Coniferae; (f) Laurineae.

291. (a) Citric acid; (b) Sulphuric acid; (c) Camphor; (d) Oil of Peppermint; (e) Linseed Oil.

292. (a) 740; (b) 10; (c) .6; (d) 1; (e) 25.

293. (a) Lime water gives black precipitate with calomel and yellow with other. (b) Morphine is soluble and is turned red by nitric acid.

294. (a) Drop; (b) a draught; (c) to-morrow; (d) boil according to art; (e) camel hair pencil; (f) three times a day; (g) a pill box; (h) immediately; (i) a cough; (j) the bottle having been first skaken.

295. (a) HNO_3 ; (b) KNO_3 ; (c) KI; (d) MgSO_4 ; (e) FeSO_4 .

296. Give an emetic first. Sulphate of Zinc is best one. Keep person in motion and give strong coffee. Send for a doctor.

297. (a) 7 per cent.; (b) 50 per cent.; (c) 2 per cent. of ext.; (d) 35 per cent.; (e) 20 per cent.; (f) 20 per cent.; (g) 15 per cent.; (h) 10 per cent.

298. Add a sol. of KI to a solution of a mercuric salt.

299. 43 of the 10 grs., and 29 of the 15 grs.

ORAL ANSWERS.

300. .12 per cent.

301. .4 per cent.

302. 6 per cent. by volume.

303. Ammoniated alcohol.

304. Antimonial pill comp.

305. Nux Vomica.

306. Ipecac and Opium.

307. Crude Oleic Acid.

308. $\frac{1}{85}$ of gr. to teaspoonful.

309. Lime water gives black ppt; other yellow.

310. Resin Cerate.

311. Glycerite of Vitelli.

312. Neutral principle from seed of Anamirata Paniculata.
313. Sulphurated Antimony.
314. Yellow Subsulphate of Mercury.
315. Black Sulphuret of Mercury.
316. Fused Silver Nitrate.
317. Dilute Silver Nitrate
318. Sulphureted Potash.
319. Lycopodium.
320. 33 per cent.
321. 30 per cent.
322. 50 per cent.
323. Syrup Iron Quinine et Strychnine Phosphate.
324. Oil Thyme.
325. Hemp.
326. Catechu.
327. Tomato.
328. Quillaja.
329. Acetate of Lead.
330. Tinct. Cinchona Comp.
331. Acetate of Potassium.
332. Hydrochloric Acid.
333. Ergot.
334. Ammonia Liniment.
335. Levigated Sulphide of Mercury.
336. Impure Carbonate of Zinc.
337. Obtained from Cochineal.
338. Glycerin makes Creasote turbid, other does'nt.
339. Comp. Licorice Powder.
340. Comp. Licorice Powder.
341. Comp. Licorice Powder.
342. A substance used to fix a color.
343. Heavy Oil of Wine et stronger Ether aa.
344. Dissolves Oil Cloves.
345. From Whiskey.
346. From Wood.
347. From Starch and Sugar.

348. Ethyl with 10 per cent. Methyl Alcohol.
 349. Double Carbonate of Mg and Ca.
 350. Crude Acetic Acid.
 351. Tinct. Aloes and Myrrh.
 352. Tinct. Senna.
 353. Creasote.
 354. Comp. Solution of Borax, N. F.
 355. Magnesium Sulphate.
 356. Extracted with water.
 357. By sublimation.
 358. Incising the leaves.
 369. Incising the trunk.
 370. Exudes and is collected in cups.
 371. A decoction is made of the wood.
 372. Acetate of Copper.
 373. Mass has Na_2CO_3 ; Pill has K_2CO_3 .
 375. Tinct. Benzoin Comp.
 376. Tinct. Benzoin Comp.
 380. Made by acting on Alcohol with Sulphuric Acid at temp.
 130° C.
 381. Made by acting on Alcohol with Calcium Hypochlorite.
 382. By addition of sugar.
 383. By addition of sugar.
 384. None until after it is moistened.
 385. None until after it is moistened.
 386. Impure Potassium Carbonate.
 387. Carbonate of Potassium.
 388. Turpentine and Copaiba.
 389. Mandrake, Jalap and Scammony.
 390. 15 per cent.
 391. 18 per cent.
 392. Made from borax.
 393. Mined in U. S.
 394. Mined in U. S.
 395. Senna.
 396. Manna.

397. Sugar heated to 185° C. and cooled.
398. Chloride of Antimony.
399. Head of sperm whale.
400. By product in manuf. of Soaps.
401. Iodide of Arsenic.
402. Action of Chlorine on Alcohol.
403. $KI + K_2CO_3 + \text{Alcohol}$.
404. Stearopten of Oil of Peppermint.
405. Artificial Oil of Wintergreen.
406. Salol.
407. Diatomic phenol.
408. Stearoptin of Oil of Thymé.
409. Nitric Acid on amyl Alcohol.
410. Polymeric form of Aldehyde.
411. Oleum Erigerontis.
412. Three.
413. Resorcin, Antipyrine and Urethane; the rest are sparingly soluble.
414. With Iodides, Chlorides and Bromides in alcoholic solutions.
415. To take out the fixed Oil.
416. Tinct. Lactucarium.
417. Sanguinaria.
418. 1 to 5 min.
419. Spores of Lycopodium Clavatum.
420. Bin and duto mean double or higher; Proto means lower or single.
421. Arnica and Catechu Comp.
422. Asaf; Benzoin; 2 Guaiacs, Musk, Myrrh.
423. Benzoin comp. and Stropanthus.
424. Wine of Opium.
425. Deod. tinct. of Opium.
426. Linseed Oil et Lime Water aa.
427. Due to impurities (Pb.).
428. Two Leeches.
429. Liq. Plumbi Subacetas.

430. Cerate of Liq. Plumbi Subacet.
431. Destructive distillation of Wood.
432. Bisulphate has 13 per cent. less Quinine and is more soluble.
433. Use twice amount of Iodide of Pot. with the Iodine.
434. None. Cocaine comes from Coca Erythoxylon and chocolate from Theobroma Cacao. (Don't get caught on this question.)
435. Alcohol.
436. Carbon Bisulphide.
437. Glacial Acetic Acid.
438. Act on Borax with Hydrochloric Acid.
439. Gives blue color with starch.
440. Buckthorn.
441. Made from Olive Oil and Soda.
442. The solid part of a Volatile Oil.
443. Chlorine, Bromine and Iodine.
444. From Beech Wood.
445. Tinct. Veratrum Viridi.
446. Hydrochloric Acid.
447. From the Strobiles of Hops.
448. Lime is Chalk with the Carbondioxide driven off.
449. To Neutralize Chrysophanic Acid.
450. Oxalate of Potassium.
451. Spirits Glonoini.
452. A Pill Box.
453. Cathamus Tinctoria.
454. Sodium Nitrate.
455. Alkaloid from Broom.
456. Syrup Ipecac.
457. Syrup Senega.
458. Agitating with Paper Pulp and Straining.
459. One containing Cynamie or Benzoic Acid.
460. 9 to 13 per cent.
461. Triticum and Castanea.
462. Comp. Rhubarb Powder.
463. Pill Aloes and Mastiche.

464. Iron Plaster.
465. Red is more poisonous because it has twice as much Iodine.
467. Subchloride is insoluble in water and not poisonous.
468. 1 gr. to ounce of water.
469. 1 per cent.
470. Spts. Nitro-glycerin.
471. Subsulphate of Iron.
472. Cypropidium.
473. Thin or flat scale.
474. To put with alcoholic mixtures.
475. Citrine Ointment.
477. Glycerin supp.
478. Calomel.
479. Corrosive Sublimate.
480. Red Oxide of Hg.
481. Ammoniated Hg.
482. Sulphate of Copper.
483. Sulphate of Iron.
484. Sulphate of Zinc.
485. Skunk's cabbage.
486. Calcium Hypochlorite.
487. Ointment of Hg.
488. One litter of H weighs 76 m. m. at 0° C.
489. An element is a substance which can not, by any known means, be split up into two or more other kinds of substances.
490. An atom is the smallest substance that can enter into chemical action.
491. A molecule is the smallest substance that can exist alone.
492. 1 per cent.
493. The act of two liquids mixing together of their own accord.
494. Magnesium Sulphate.
495. Use starch and glucose, and be careful to get the Strychnine evenly divided.
496. Podophyllum.
497. Bisulphate contains 13 per cent less Quinine and is more soluble because it has more of the acid radical SO_4 .

- 498. To hold up the Senegin.
- 499. Water and Alcohol.
- 500. Less.
- 501. Alcohol.
- 502. Calomel.
- 503. Red Iodide. It has twice as much Iodine as the yellow ;
and is more poisonons for this reason.
- 504. Deodorized Tinct. of Opium.

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