

*Examiner*..... PROF. G. P. GIRDWOOD, M.D.

I. What is the difference between an Achromatic Lens and one which is not Achromatic? Explain why the difference exists.

II. Write an account of the chemical action of Light, giving examples.

III. How many litres of Hydrogen Gas at  $0^{\circ}\text{C}$ . would be required to form water with all the Oxygen yielded by 1 lb. (one pound) weight of Potassium Chlorate  $\text{KClO}_3$ , and  $\frac{1}{2}$  pound of Dioxide of Manganese,  $\text{K} = 39 \text{ Cl} = 35.5 \text{ O} = 16$ ?

IV. Give a full account of the chemistry of (a) Phosphuretted Hydrogen (Phosphine), and (b) Ammonia.

V. How would you test for traces of (a) Arsenic, (b) Hydrocyanic Acid, (c) Sulphur, (d) Mercury, (e) Iron? Give equations, where possible.

VI. Describe fully the preparation of each of the halogen elements, and compare the chemical properties of Chlorine with Iodine.

VII. Illustrate changes in organic substances by each of the following processes:—(a) Reduction, (b) Hydration, (c) Dehydration, (d) Oxidation, (e) Polymerization.

VIII. Explain the chemical action that occurs when (a) Milk becomes sour, (b) Nitro-glycerine explodes, (c) Urine becomes ammoniacal, (d) Prussic Acid turns black and loses its odour.

IX. What volume of Chlorine is necessary to convert 2.3 grammes of Ethyl Alcohol into Chloroform?

X. How may the accepted formulae for Water and Ethane be proved?

### THIRD YEAR.

#### PATHOLOGY.

*Examiner*..... WYATT JOHNSTON, M.D.

1. What appearances are to be looked for in making an anatomical examination of a tumor supposed to be malignant? Give instances from specimens demonstrated during the session, stating the microscopical appearances.

2. What is the difference between the action of septic and non-septic thrombi and emboli? Describe the conditions you have seen associated with thrombosis and embolism in the lungs, liver and kidneys.

3. Tuberculosis; its cause, probable modes of infection, and pathological appearances. Under what conditions have you seen tuberculosis of the lungs, kidneys or brain.

4. Write briefly upon the following:—Appendicitis; Fatty Heart Pernicious Anæmia; Pneumonia.