

Section II.—3. Strong sulphuric acid is heated with the following bodies: copper, nitrate of sodium, oxalic acid, chloride of sodium, charcoal. Explain and give the formulæ for the changes, if any, which occur. 4. How would you prepare the carbonate and oxide of magnesium from the sulphate? Describe the properties of these bodies, and state in what respects they differ from the corresponding calcium compounds. 5. How is pure iodide of potassium prepared? What are its properties? Calculate the weight of iodine contained in ten pounds of this salt. (K=39; I=127.)

Section III.—6. Give the formula of urea and the percentage amount of nitrogen which it contains. What takes place when an alkaline solution of hypobromite of sodium is added to a solution of urea, and how may the method be employed in estimating the amount of urea in the urine? 7. In what respects do the vegetable alkaloids bear a resemblance to ammonia? How can quinine be extracted from cinchona-bark, and morphine from opium? 8. How can you obtain (a) ethylene (olefiant gas) and (b) ether by the action of sulphuric acid on alcohol? Give the formula and properties of each of these bodies.

PART II.—Materia Medica and Pharmacy.—1. What is an anæsthetic? Distinguish between local and general anæsthetics, and give examples of each. By what methods and in what forms are these agents employed? 2. Describe the physical properties of permanganate of potassium. State the strength of its official solution, and give an account of its actions. 3. Enumerate and classify the purgatives with which you are acquainted, and state in what form and dose you would administer calomel, sulphur, colocynth, senna, and jalap. 4. In what forms and in what doses is sulphate of iron employed medicinally? Describe its action when administered internally. 5. What is an emulsion, and how does it differ from a solution? Give examples of drugs which may be administered in the form of an emulsion, with the method of preparation required in each case. 6. Give an account of the origin of opium, and enumerate its more important active principles. Give the composition and strength of the official compound powders containing opium.

(First Examination.)

PART III.—Elementary Physiology.—1. *Fidæ voce* on microscopical sections. 2. What do you understand by the terms (1) crassamentum, (2) buffy coat, (3) liquor sanguinis, (4) serum of blood? 3. Describe the mechanism of quiet and forced inspiration. 4. Contrast the phenomena of contraction in voluntary and involuntary muscle-fibres. 5. Mention the chief constituents of bread, and describe how each of them is acted upon by the various digestive juices. 6. Explain the effects of stimulating (a) a motor nerve, (b) a sensory nerve, (c) a nerve of special sense.

(Second Examination.)

Physiology.—1. What is understood by the expression "blood pressure?" Explain the conditions which lead to variations in the normal blood pressure in arteries and veins. 2. Describe the changes which the proteid constituents of food undergo in the various parts of the alimentary canal. 3. How do the lymphatics commence? Where is the lymph derived? Mention the circumstances which influence its flow. 4. Describe a lobule of the liver, and an individual liver cell. 5. Describe the functions of the vagus as a cardiac nerve. 6. State the evidence in favour of the localisation of motor centres in the cerebral cortex. Where are the centres connected with the movements of the right arm supposed to be situated?

(Second Examination.)

Anatomy.—1. Describe the upper end of the femur (head, neck, and trochanters), giving muscular and ligamentous attachments. 2. Give the nerve supply and actions of the following muscles: (a) buccinator, (b) teres major, (c) first dorsal interosseous of hand; (d) tensor fasciæ femoris, (e) adductor longus, (f) gastrocnemius. 3. Describe the fornix. 4. Give the course and relations of the brachial artery, and enumerate its branches. 5. Describe the position and relations of the right kidney. 6. Give the relations of the internal and external popliteal nerves, and enumerate their branches.

Surgical Anatomy and the Principles and Practice of Surgery.—1. Mention the situation of the various groups of lymphatic glands found in the pelvis and lower extremity; and state the sources from which they receive lymphatic vessels. 2. Mention the relative positions of the several structures in immediate relation with the shoulder-joint; and describe the operation of excision of the head of the humerus. 3. Describe the symptoms and the structural changes of carbuncle in the different stages of the disease. Give the treatment, local and general, which you would adopt. 4. Describe the after-treatment of a case of tracheotomy. Mention the complications which may arise, and how you would meet them. 5. Describe the constitutional and local effects which may follow severe burns, and give their appropriate treatment. 6. What fluid swellings may present themselves in the popliteal space? Give their differential diagnosis and state briefly the treatment appropriate to each.

ROYAL COLLEGE OF PHYSICIANS OF LONDON. EXAMINATION FOR THE LICENCE.

(Third Part or Final.)

THE following were the questions at the examinations in October, 1888:

Principles and Practice of Surgery.—1. What kind of cancer is usually found affecting the rectum? What symptoms may be produced by it? How should the disease be treated? 2. Describe a case of glaucoma, giving the pathology, the symptoms, and the treatment. 3. Give the symptoms by which you would distinguish the following tumours of the breast:—(a) Simple cyst; (b) adenoma; (c) serocystic sarcoma; (d) scirrhous cancer. How would you treat these tumours? 4. Describe in detail the treatment which it may be necessary to adopt in case of pyæmia. 5. Describe a case of Colles's fracture. Give in detail the treatment which may be required. 6. How would you treat the following cases?—(a) Punctured wound of the femoral artery; (b) punctured wound of the femoral vein; (c) punctured wound of both artery and vein.

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