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University of Glasgow

PROFESSIONAL EXAMINATIONS

FOR DEGREES IN

MEDICINE AND SURGERY

1910–11

Glasgow
Published for the University by
James MacLehose and Sons
1911

Sixpence nett

Tuesday, 28th March, 1911. 9 *to* 11 *a.m.*

University of Glasgow.

Examination for First M.B.

BOTANY.

1. Explain the essential features in Carbon-assimilation (Photosynthesis) in plants.

2. Give an account of the life-history of *Fucus*, and describe in detail the process of its fertilisation.

3. Make a drawing of the transverse section of a root of a Dicotyledon. Name the several tissues and suggest their function.

4. Give a brief account of the main types of structure of the ovary in Flowering Plants. Describe three examples, and in each case relate the structure of the ovary to that of the fruit derived from it.

5. What do you know of the occurrence, structure, reproduction and economic importance of Bacteria.

(*Only* FOUR *questions to be attempted.*)

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27th March, 1911.

{1st Prof.—Two hours.
{1st B.Sc. and M.A.—Three hours.

University of Glasgow.

ZOOLOGY.

Candidates are reminded to bring their dissecting instruments to the Oral Examination.

Candidates in MEDICINE *are expected to attempt* FOUR *(not more) questions out of the* NINE. *Candidates in* SCIENCE *and in* ARTS *are expected to attempt* FOUR *questions in* SECTION A *and* TWO *in* SECTION B.

Candidates should illustrate their answers by diagrammatic sketches wherever possible.

A.

1. Describe very shortly the structure of the medusa of *Obelia*, making diagrams to illustrate your answer. State shortly the life history without giving details of the various stages.

2. Make a carefully labelled diagram (no written description) to illustrate the life history of the malarial parasite (*Plasmodium*).

3. Make a diagram of and describe the pharynx of *Amphioxus*, indicating the function of the various parts.

4. Construct a table showing the stages in the life history of the following parasites, together with the hosts in which each stage occurs:

   Taenia saginata, *T. solium*, *T. echinococcus*, *Bothriocephalus latus*, *Filaria medinensis*.

5. Describe the brain of *Scyllium*, and make a drawing, with the parts named, of a dorsal view and of a longitudinal section of it.

6. Indicate the more important resemblances and differences between the following Phyla: Annelida, Arthropoda, Mollusca.

[OVER.

B.

7. Discuss the affinities of the phylum Echinodermata.

8. Describe the life history of *Doliolum*.

8. Write a general account of the nuclear phenomena of meiosis.

Tuesday, 28th March, 1911. 12 *noon to* 2 *p.m.*

University of Glasgow.

First Professional Examination for Degrees in Medicine.

PHYSICS.

Note.—Four, *and not more than* four, *of the following questions to be attempted.*

1. Define *work, potential energy, kinetic energy, one horse-power.*

   A man weighing 140 pounds walks a distance of 4 miles on the level in one hour. He takes steps 3 feet in length, and raises and lowers his body through a vertical distance of 2 inches at each step. Find the whole work performed by him in the hour against gravity, and his average rate of working in horse-power.

2. State the principle of Archimedes. How would you determine the specific gravity of a specimen of a material soluble in water?

   A cylindrical vessel contains water at 0° C., the depth of the water in the vessel being h. Floating in the water is a piece of ice. If the ice melts while the temperature remains at 0° C., will any alteration take place in the depth h of the water? Give reasons for your answer.

3. Give a brief account of the experiments which proved that heat is a form of energy.

   One kilogramme of ice at 0° C. is melted to water at 0° C. in four minutes by the uniform application of work. Find the energy communicated to the ice in ergs, and the rate of working in ergs per second. [Joule's equivalent $= 4{\cdot}2 \times 10^7$ ergs per calorie.]

[over.

4. What do you understand by the principal axis and principal focus of a concave spherical mirror? Construct a diagram showing the formation by such a mirror of the image of an illuminated object (say an arrow) situated on the principal axis.

   Describe, with the aid of sketches, the optical system of (1) a simple telescope, (2) the simplest form of compound microscope.

5. Two coils of wire are placed close together with their axes in line. One of the coils is connected up to a galvanometer, and the other to a cell and key. Explain the behaviour of the galvanometer when (1) the circuit is completed by pressing down the key, (2) when the circuit is broken.

   An insulated wire is wound uniformly from end to end round a cylindrical rod of soft iron. On joining up a voltaic cell to the ends of the wire it is found that no spark results, but on breaking the circuit a considerable spark passes. Explain these effects.

6. What apparatus is necessary for the production of the Röntgen rays? Give a short account of any properties of the rays with which you may be acquainted; explain how the rays could be used to determine exactly the position of a small metallic body contained within a wooden box.

Monday, 27th March, 1911. *Time—2 to 4 p.m.*

University of Glasgow.

First Professional Examination for M.B.

CHEMISTRY.

(*Answer* FOUR *questions.*)

1. An aqueous solution of 20 grammes of sodium carbonate is added to a solution containing 10 grammes of hydrochloric acid; state what happens, and calculate the quantities of the salts in the resulting solution. Illustrate by means of a sketch the method of collecting a sample of the gas which is evolved, and give an account of its properties.

2. Write a short account of the properties of iodine, and state the method of preparing (*a*) hydriodic acid, and (*b*) iodoform.

3. Represent by equations the action of (*a*) heat on lead nitrate, (*b*) sulphuric acid on copper, (*c*) nitric acid on ferrous sulphate, (*d*) hydrochloric acid on manganese dioxide, and (*e*) sulphuric acid on ethyl alcohol.

4. How would you prepare mercuric chloride, and mercurous chloride from metallic mercury? State the properties of the two salts, and the methods of distinguishing them from one another.

5. How is acetic acid prepared from the products of the distillation of wood? Give the structural formula of acetic acid, and explain its relationship to ethyl alcohol.

28*th March*, 1911. 9 *to* 11 *a.m.*

University of Glasgow.

Second Professional Examination.

ANATOMY.

(Four *questions only to be answered. Of these, questions* 1, 2, *and* 3 *must be attempted.*)

1. Describe the form and relations of the urinary bladder in the male. Give an account of its development.

2. Describe the position, relations, and structure of the œsophagus.

3. Describe the course, relations, and distribution of the median nerve from the elbow downwards.

4. Describe the crystalline lens and its connections.

Or as an alternative to 4,

4A. Give an account of the cavum tympani, describing in detail its boundaries and communications, and enumerate the structures contained in it.

Tuesday, 28th March, 1911. *Time—Two hours.*

University of Glasgow.

Degrees of M.B. and Ch.B.

PHYSIOLOGY.

(*The first* TWO *questions are to be answered in one Examination Book, the last* TWO *in the other.*)

1. Make a diagram of the Cardiac Cycle, and mark upon it the time of—

   (1) The cardiac impulse.

   (2) The heart sounds.

   (3) The flow of blood from (*a*) auricles to ventricles, (*b*) ventricles to arteries.

   (4) The opening and closing of the valves.

2. (*a*) Describe the structure of the motor areas of the Cortex Cerebri. (*b*) How do they act? (*c*) Where are they situated? (*d*) Trace the course of the fibres through which they act upon the muscles.

   (When possible illustrate your answer by diagrams.)

3. Give the chemical formula for urea. How is the amount of urea excreted from the body influenced by the amount and composition of the diet?

4. Give an account of the processes by which the oxygen of inspired air reaches and is taken up by the fibres of a living muscle.

29th and 30th March, 1911.

University of Glasgow

Degrees of M.B. and Ch.B.

PRACTICAL PHYSIOLOGY.

A.—Histology. *Time—One hour.*

1. Carry out the procedure indicated on the card at the place allotted to you.

2. Identify the specimens beside the card, and answer the questions on the card.

B.—Chemistry. *Time—One hour.*

Carry out the chemical investigations indicated on the card at the place allotted to you.

C.—General. *Time—One hour.*

Prepare and demonstrate to the Examiners the experiment or experiments allotted to you.

Monday, 27th March, 1911. 9 *to* 11 *a.m.*

University of Glasgow.

Second Professional Examination.

MATERIA MEDICA AND THERAPEUTICS.

Professors Wild and Stockman.

1. Give an account of the expectorant action of *Tartar Emetic*, *Potassium Iodide*, *Ammonium Carbonate*, and *Ipecacuanha*. State the preparation and dose you would prescribe in each case.

2. Mention four drugs used to check diarrhoea. How do they severally act and in what forms and doses are they given?

3. Describe the action and uses of Sodium Bicarbonate

4. How do you explain the remedial actions of *Arsenic* in chronic skin diseases, of *Potassium Bromide* in epilepsy, of *Magnesium Sulphate* in dysentery, of *Quinine* in malaria, of *Potassium Iodide* in lead poisoning?

5. Describe the therapeutical uses of the *Thyroid Gland*.

Tuesday, 28th March, 1911. 12 *noon to* 2 *p.m.*

University of Glasgow.

Third Professional Examination.

PATHOLOGY.

1. Give an account of thrombosis, and discuss the factors concerned in its production. What is the structure of thrombi and what secondary changes may occur in them?

2. What evidence is there that diabetes mellitus is connected with disease of the pancreas? Discuss the causation of diabetic coma.

3. Give an account of the post-mortem appearances which may be present in a case of infective (ulcerative) endocarditis. Describe the characters of one of the micro-organisms commonly met with in this condition, and state what means might be taken to establish a diagnosis during life.

4. Describe the characters of the blood in pernicious anaemia, and contrast them with those met with in chlorosis and in secondary anaemia.

5. Under what conditions does spontaneous cerebral haemorrhage occur? State the commonest sites and describe the effects which may follow.

Not more than FOUR *questions to be answered.*

29*th March*, 1911. *Time allowed—Two hours.*

University of Glasgow.

Examination for Degrees in Medicine.

MEDICAL JURISPRUDENCE.

N.B—Four *questions* only *to be answered, which must include* No. 5.

1. What external and internal appearances in the body of a child one year old would indicate death by Throttling twenty-four hours before the autopsy?

2. During a riot a man is found insensible with a scalp wound and fractured skull, from which he dies in a few hours. Discuss the signs which would point respectively to (*a*) a fall against a kerbstone, or (*b*) a blow with a truncheon, as the cause of injury.

3. A coloured stain on a white cotton handkerchief may be due to (*a*) iron-mould, (*b*) aniline dye, or (*c*) fruit-juice. Describe fully how you would prove that (*a*) and (*b*) were absent, and that the stain was, in fact, due to (*c*).

4. Assuming that you are called by the police to examine an unconscious adult, discuss the differential diagnosis between Acute Alcoholism, Middle Meningeal Haemorrhage, and Diabetic Coma.

5. In what ways may poisoning by Ammonia occur? Describe the effects, immediate and later, produced by Caustic Ammonia, and give a careful account of the treatment. How would you test for Ammonia (*a*) in the contents of the stomach, and (*b*) in a phial? Mention the post-mortem appearances to be expected in a fatal case.

29*th March*, 1911. *Time allowed—Two hours.*

University of Glasgow.

Examination for Degrees in Medicine.

PUBLIC HEALTH.

N.B.—Four *questions* only *to be answered, which must include* No. 5.

1. What changes occur in the air of a badly-ventilated room after some hours' occupation? State which of these changes acts most inimically on the occupants. Give reasons for your answer. Illustrate the effects of defective or foul air in various occupations. What general preventive measures ought to be taken?

2. What constituents in waters are likely to produce harmful effects on the users? How do these operate? How may they be prevented, or, if present, removed?

3. Smallpox breaks out in a navvy camp in a rural district. What measures ought to be taken with reference (1) to those attacked, (2) to those who have been in contact, (3) to prevention of spread of disease, and (4) to disinfection of (*a*) the dead, (*b*) the room occupied, and (*c*) the contents?

4. Enumerate the causes of dampness in dwelling-houses. What are the evidences of dampness? What are the likely effects upon occupants? Describe briefly the appropriate remedy for each cause.

5. Describe in some detail a method of disinfecting a room with a preparation of Formalin or Formaldehyde.

24th March, 1911. 2 *to* 4 *p.m.*

University of Glasgow.

Final Professional Examination.

SURGERY.

1. Describe the process of healing in a septic wound of the soft tissues.

2. Mention the principal forms of enlargement of the prostate. What symptoms and dangers does the condition give rise to?

3. Mention the principal complications of middle ear disease with their distinguishing symptoms.

4. What are the typical forms of sarcoma of the long bones? Distinguish them structurally, clinically, and as to prognosis.

5. Describe the varieties of torticollis, and give the treatment of each.

(Four *questions to be answered, including No.* 1.)

University of Glasgow.

Degree of M.B.

PRACTICE OF MEDICINE.

1. Detail the symptoms of an attack of *Acute Rheumatism*; what complications would you fear; how would you recognise their occurrence; and what treatment would you recommend in an uncomplicated case?

2. What are the most common causes of *Acute Generalized Peritonitis*; what symptoms would you expect in such a condition, and what treatment would you adopt?

3. What are your views as to the aetiology of *Locomotor Ataxia*; and on what symptoms and signs in an *early stage* of the disease would you depend for a diagnosis?

4. Discuss the origin and treatment of *haemoptysis in Phthisis Pulmonalis.*

5. A man, aged 50, of robust build but somewhat cachectic looking, suffers from dyspnoea on exertion, but has occasional paroxysms even when quiescent; on questioning he admits occasional palpitation and sense of thoracic oppression, and that his vision has become impaired of late. On examination the apex impulse of his heart is found in the 6th interspace outside the nipple line, but the cardiac action is of normal rate, regular, and the sounds without murmur. The urine is abundant, clear, of low specific gravity, but non-albuminous, or with only occasional traces.

   Discuss this case, and fill in the picture with the other details which you think may establish your diagnosis.

FOUR *questions to be answered, of which* NUMBER 5 MUST BE ONE.

25th March, 1911. *Time—Two hours.*

University of Glasgow.

Final Professional Examination.

OBSTETRICS AND GYNAECOLOGY.

1. What signs and symptoms would indicate that the second stage of labour had been unduly protracted? How would you determine the cause of the delay?

2. State what measures you would adopt, to keep a midwifery case as far as possible aseptic during pregnancy, labour, and the puerperium.

3. Describe the varieties of Placenta Praevia, and detail the treatment of such cases, from the first symptoms till the end of the second stage of labour.

4. What are the causes of Subinvolution of the Uterus? How is the diagnosis determined? Give the treatment which may be required.

5. What are the varieties of Dysmenorrhoea? Describe the treatment of each form.