

Vacancies in the Senate are filled by means of a convocation of electors, consisting of the Fellows of the Senate for the time being, Professors, Public Teachers and Examiners in the Schools of the University, Principals of Incorporated Colleges within the University, Superior Officers, declared to be such by By-law, Masters and Doctors in any Faculty, and Bachelors of three years standing.

There are four Faculties in the University, viz., Arts, Law, Medicine and Science.

In the Faculty of Arts two Degrees are given—namely, Bachelor of Arts and Master of Arts. The curriculum of study for the Degree of B.A. extends over a period of three years during which students are required to attend lectures and pass examinations. The subjects of study are the English, Latin, Greek, French and German Languages, Ancient History, Mental Philosophy and Logic, Mathematics (pure and mixed), Chemistry, Physics, Geology and Palæontology, Biology, Physiology, &c.

In the Faculty of Law the Degrees of LL.B. and LL.D. are given. The curriculum of study for the Degree of LL.B. extends over five years, of which the first three are in Arts.

In the Faculty of Medicine three Degrees are granted, viz., Bachelor of Medicine, Doctor of Medicine, and Master of Surgery. The course of study for the Degrees of M.B. and Ch.M. extends over a period of five years.

The University of Sydney is recognised as one of the Institutions from which the University of London is authorised to receive certificates for Degrees in Medicine. The University of Edinburgh accepts certificate of attendance on Medical Classes in this University to the extent of three years of professional study, and the Royal College of Surgeons extends a similar recognition to attendance on the classes of the whole course, in the case of *Graduates* in Medicine who present themselves for examination for the Diploma of Member of the College.

The Matriculation Certificate of this University is also recognised by the General Council of Medical Education and Registration of the United Kingdom of Great Britain and Ireland, as indicating proficiency on the part of candidates in the subjects for which they hold such Certificates.

In the Faculty of Science the Degrees of Bachelor of Science and Doctor of Science are given, and Degrees are given in the three branches of Engineering, viz., Civil Engineering, Mechanical

# FACULTY OF MEDICINE.

## FIRST PROFESSIONAL EXAMINATION

### INORGANIC CHEMISTRY.

TIME, THREE HOURS.

1. What is the usual molecular volume of elements in the gaseous state? Mention the exceptions, and give examples of variation in the molecular volume of elements.
2. How many cubic centimetres of hydrogen would be evolved from 10 grammes of zinc, acted upon by dilute sulphuric acid at 755 mm. and 21° C.  
 $H = 1.$     $S = 32.$     $O = 16.$     $Zn = 65.$
3. How are mercurous and mercuric chlorides prepared; how would you detect the latter in the former; why is an admixture of the two undesirable?
4. Why are the elements N, P, As, and Sb classed together?
5. How would you examine for arsenic in a case of suspected poisoning?
6. What are the elements essential to animal and vegetable life; mention some of the principal inorganic compounds found in animal and vegetable organisms.
7. What are the principal chemical changes accompanying animal and vegetable respiration?
8. What are the principal salts and impurities found in natural waters; how can certain of the latter be removed.

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### CARBON COMPOUNDS.

TIME, THREE HOURS.

1. How would you explain the constitution of the Fatty and Aromatic Hydro-carbons?
2. What is the difference in the action of chlorine on the paraffins and the olefines?



3. How is glycerin prepared? What are its chief properties and uses?
  4. Give the general formulæ of the principal groups of Carbon Compounds.
  5. What are the terpenes; how are they classified, and what is their relationship to the camphors?
  6. Give the names and formulæ of some of the principal derivatives of toluene, and state whether the substitution is in the central or lateral chain.
  7. Give a brief account of the nitro-derivatives of cellulose, their preparation, properties and uses.
  8. Give an outline account of the sugars, glucoses and starches.
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## PRACTICAL CHEMISTRY.

PASS—THREE HOURS.

HONOURS—FOUR HOURS.

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ZOOLOGY.

TIME, THREE HOURS.

1. Describe *Amœba*, and discuss the following statement—"The higher animals, we learn from morphological studies, may be regarded as groups of *Amœbæ* peculiarly associated together."
2. Describe the modes of reproduction and the reproductive organs, when such are specially developed, in *Vorticella*, *Hydra*, *Lumbricus*, and *Asterina*.
3. Describe the organs of circulation, respiration, and excretion in the Lobster (*Palinurus*).
4. Explain, with a sketch, the arrangement of parts in the fore-brain of Vertebrates in general. How is it developed in the embryo? Mention the special features exhibited respectively by the fore-brains of a Teleostean, a Frog, and a Mammal.
5. Describe the heart, and the course of the circulation, in an Elasmobranch.

6. Give an account, with diagrams, of the pectoral arch and skeleton of the typical pentadactyle fore-limb of the air breathing *Vertebrata*. Describe the special modifications exhibited by those parts in one of the *Mammalia Carnivora*, such as the Cat.
  7. Give a general account of the order *Cheiroptera*.
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## PRACTICAL EXAMINATION.

TIME, THREE HOURS.

## BOTANY.

TIME, THREE HOURS.

1. Give an account of the structure and life-history of one of the parasitic Fungi, such as the Rust Fungus.
  2. Give a general account of the Conjugate Algae. Mention two of the members of the order, and give a brief account of their special features, with a sketch of one of them.
  3. Explain, with a sketch, how the various systems of tissues in the Vascular plants are developed. Give a special account of the tissues of the epidermal system.
  4. Describe minutely the structure of a typical leaf of one of the Phanerogams, with a sketch of a vertical section.
  5. Give a detailed account of the functions discharged by the leaves in the economy of the higher plants. How is the destructive effect of excessive sunlight on the chlorophyll counteracted?
  6. Describe, with a sketch, the structure of a grain of wheat or maize and the phenomena attending its germination.
  7. State briefly the distinguishing characteristics of the divisions and more important subdivisions of the *Angiospermia*.
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## PRACTICAL EXAMINATION.

TIME, THREE HOURS.



## SECOND PROFESSIONAL EXAMINATION.

## ANATOMY.

TIME, THREE HOURS.

*Not more than four questions may be chosen by the candidate, and No. 6 must be one of the four.*

1. Describe fully the atlas vertebra with its articulations and ligaments.
2. Give an accurate account of the distribution of the external plantar nerve and compare it with the corresponding nerve in the hand.
3. Give a complete description of the arch of the aorta, including its relations.
4. The urinary bladder—give an account of its (a) position, (b) connections, (c) relations.
5. State clearly the various steps in a dissection undertaken to display the prostrate gland from below. Name the structures encountered and state their relations.
6. Give a sketch of the development of the encephalon.

## PHYSIOLOGY.

TIME, THREE HOURS.

*Any five, but not more than five, questions may be selected by the candidate.*

1. Describe (with a diagram) the minute anatomy of an intestinal villus.
2. Describe (with a diagram) the minute structure of mammalian heart muscle. State briefly the peculiar features of a cardiac muscular contraction (in the frog) as compared with that of a skeletal muscle.
3. Draw a diagram representing a normal blood pressure curve, and showing accurately the relation to it of the inspiratory and expiratory phases of respiration. What are the physical conditions within the chest which cause the blood-pressure curve to be influenced by the movements of respiration?

4. The flow of urine into the tubuli uriniferi is partly a process of simple filtration and partly a true secretion by the renal epithelium. What arguments can you adduce in support of this statement ?
5. Describe the course of the circulation in the fœtus in utero. To what immediate events does the ligature of the umbilical cord give rise ?
6. The ear. Give a complete account of the physiology of the membrana tympani and of the auditory ossicles.

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### GENERAL PATHOLOGY.

TIME, THREE HOURS.

1. Give an account of the formation of granulations and blood vessels in a healing wound, and explain the influence of the granulations upon the process.
2. State briefly the important factors that determine cerebral hæmorrhage, and the usual seats of such hæmorrhage, and describe the immediate and remote structural changes that may occur in and beyond the hæmorrhagic area.
3. Give an account of the pathological changes and pathogenesis of Progressive Pernicious Anæmia. Contrast this disease with Chlorosis from a pathological point of view.
4. Give an account of hyaline degeneration.
5. Give an account of the method by which Koch proved that a specific bacillus was the essential cause of Tuberculosis. In what respect does this method fail to apply in the investigations bearing upon the bacillary nature of the cause of Typhoid Fever. State the arguments that may be adduced in favor of the view that a specific known organism is the cause of Typhoid Fever. What are the distinctive characters of this organism ?
6. Give an account of the lesions of Congenital Syphilis.

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### SPECIAL PATHOLOGY.

TIME, THREE HOURS.

1. Describe the structural changes that characterise albuminoid disease of the kidney. Briefly explain the nature and effects of the albuminoid change ; and mention the various methods by which the albuminoid change can be detected.



2. Give an account of the structural changes that occur in the lung in the early stages of a tubercular formation.
  3. Describe the structure, and state the nature, of the various forms of Cancer of the Liver.
  4. Give a full description of the lesions that may be present in cases of gastro-enteritis in children.
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Special question for prize—

Give a full account of the pathological anatomy and pathology of chronic spinal muscular atrophy (Progressive Muscular Atrophy.)

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## MATERIA MEDICA.

TIME, THREE HOURS.

1. In prescriptions the following combinations have been sometimes directed—Carbonate of ammonia with syrup of squills ; sulphate of strychnine with bromide of potassium ; preparations of belladonna with caustic potash ; nitrate of silver in pills with vegetable extracts and with bread crumbs respectively. Explain shortly your opinion as to the results.
2. Explain the advantages and disadvantages of administering remedies by the mouth.
3. How may substances act as diuretics? Give examples of each kind. Write out fully in Latin a prescription for a dropsy of (say) cardiac origin : directions for use to be in English.
4. Mention the chief methods of reducing temperature by means of cold water. Give the general indications which would determine which to employ.
5. Indian hemp : state the genus and species of this plant, the part used, the preparations from it, their active principles and the doses given (approximately).  
Compare it shortly with opium as a sedative

## THIRD PROFESSIONAL EXAMINATION.

## MEDICINE.

TIME, THREE HOURS.

1. Describe fully the various affections of the kidney usually included under the term "Bright's Disease," mentioning the anatomical structure in which each originates, its manner of onset, course, and usual termination.
2. Describe a case of smallpox modified by vaccination, and give an account of the various forms which smallpox may assume.

Also state the points upon which you would chiefly rely in forming a differential diagnosis between mild smallpox and severe chickenpox.

3. Describe a typical case of scarlet fever, stating the complications which are liable to occur in its course.
4. What are the predisposing and exciting causes of acute croupous pneumonia.

What are the physical signs characteristic of the recognised stages of the disease, and what antiphlogistic, local, and symptomatic remedies would you adopt in the treatment of it.

5. Give the symptoms and physical signs of cirrhosis of the liver.

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SURGERY.

TIME, THREE HOURS.

1. Mention the causes which may produce extravasations of urine into the perineum. State the direction it takes, and the reason for that direction.

What are the local and constitutional symptoms which attend it, and what treatment would you adopt?

2. What are the local and general effects of putrefaction in wounds?

Describe briefly the local and general infectious processes which may occur in wounds.



3. Describe the usual appearances in a typical case of scirrhus cancer of mamma. What are the symptoms? What are the microscopical appearances of a section of the excised gland?
  4. What are the various steps of the operation of ligature of the subclavian artery in the third part of its course?
  5. How would you perform the operation of excision of the wrist?
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## MIDWIFERY.

TIME, THREE HOURS.

1. What conditions may render the operation of turning necessary? Describe the operation, and mention the accidents which may occur during its performance.
  2. Assuming the "puerperal state" to commence at the termination of the third stage of labour, how should it be managed? What are the more important ailments incidental to this condition, and how would you treat them?
  3. Enumerate the different forms of dystocia.
  4. State (*a*) the causes of puerperal septicæmia, (*b*) how such causes may be rendered innocuous, and (*c*) if already in active operation, how may their evil effects be counteracted?
  5. If called to see a woman in the latter months of pregnancy, complaining of defective locomotion (from anasarca), headache, defective vision, &c., to what would you attribute the symptoms and how would you manage the case?
  6. Describe (briefly) a case of (what is called) accidental hæmorrhage. How would you diagnose and treat such a case?
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## MEDICAL JURISPRUDENCE AND PUBLIC HEALTH.

TIME, THREE HOURS.

1. Suppose you are called to see a man found dead, before the body has been in any way disturbed, state what appearances would satisfy whether he had died from natural causes, or from poison or violence; and if from the latter, what immediate measures you would recommend should be taken.

2. Describe the various forms adopted for bringing on criminal abortion, and the symptoms you would look for in each if consulted within six hours of the abortion taking place.
3. Suppose you are sent for to inspect the body of a man recently dead, and find that his throat is cut. Describe the indications which would enable you to give evidence at the coroner's inquest whether the wound was inflicted by himself or another person.
4. If you are summoned to see a child suffering from Scarlet Fever occurring in a family where there are other children who reside in a house three or four stories high, state what measures you would adopt to prevent the disease spreading.
5. What character of water is most calculated to dissolve lead from lead pipes or a lead cistern ?
6. What poisons cause sudden death ?
7. In addition to trapping a house drain, ventilation is necessary. Why ?
8. When the proportion of  $\text{CO}_2$  in the atmosphere exceeds .06 per cent. it becomes injurious. How may anything beyond this per centage be easily ascertained ?
9. What reliance can be placed on the guaiacum test for blood ?
10. A humerus, radius and ulna, with the bones of the wrist and hand are found. How would you proceed to find, approximately, the height of the person to whom they belonged ?

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## PSYCHOLOGICAL MEDICINE.

TIME, THREE HOURS.

*The first and any other three questions (but not more than four altogether) must be attempted, and the certificate must be criticised and corrected.*

1. What are the questions you would especially ask, and what means would you take to ascertain a man's Testamentary Capacity? What would lead you to suppose him to possess this capacity, although his mind might not be sound on all points?
2. Mention the varieties of Mania or Mental Exaltation. Describe the symptoms, physical, sensory, and mental, and the course and treatment of Acute Mania.



3. State the difference between Insanity and Idiocy and Imbecility. Describe the characteristics of Scrofulous or Kalmuc Idiocy. Mention the possibilities of improvement by teaching of the various forms of Idiocy.
  4. What treatment would you adopt in a case of Acute Dilirious Mania? With what other diseases may it be confounded? Give the differential diagnosis.
  5. Give brief definitions of—Insane delusion, Hallucination, Jacksonian Epilepsy, Mental Stupor, Mania *è potu*, Cretinism, and Hypochondriasis.
  6. Give the chief symptoms in a case of Adolescent Insanity. Describe the treatment of this form of Mental Disease, and mention the grounds on which you would conclude that complete recovery had taken place.  
Criticise and correct the accompanying faulty certificate.
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## FACULTY OF SCIENCE.

### DEPARTMENT OF ENGINEERING— SECOND YEAR EXAMINATION.

#### GEOLOGY.

The same paper as that set in the Third Year of Arts.

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#### MATHEMATICS.

The same papers as those set in the Second Year of Arts.

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#### PHYSICS I.

TIME, THREE HOURS.

1. Give some account of the researches that have been made on the compressibility of gases at different pressures.