Annex A

Programmes associated with the questions on the admission test to the single-cycle English language Master's Degree programme in Medicine and Surgery and in Dentistry and Dental Prosthodontics

Admission to the programme requires general knowledge, with particular regard to the literary, historical, philosophical, social and institutional fields, as well as the ability to analyse written texts of various kinds, and with logical/mathematical reasoning.

Furthermore, the knowledge and skills required are linked to the type of instruction promoted by the educational institutions that organise educational and instructional activities consistent with the Ministerial Programmes, especially in view of the State Examinations, and that also involve the scientific disciplines of Biology, Chemistry, Physics and Mathematics.

General knowledge and logical reasoning

Assessment of the ability to properly use the English language and to complete a line of reasoning logically, in a manner that is consistent with the premises, which are expressed in symbolic or verbal form using multiple choice questions, even formulated in short sentences, discarding the incorrect, arbitrary or less likely conclusions.

The questions will focus upon scientific or narrative essays by classical or contemporary authors, or texts on current events that have appeared in newspapers or general or specialised magazines; they will also focus upon cases or problems, even of an abstract nature, whose solutions require different forms of logical reasoning to be adopted.

The scope of this evaluation is completed by a series of general knowledge questions, on topics addressed during the course of one's studies.

Biology

The Chemistry of Living Things.

The biological importance of weak interactions.

The organic molecules present in organisms and their functions. The role of
enzymes.
The cell as the basis of life.
Bioenergetics.

Chemistry
The constitution of matter: the aggregate states of matter; heterogeneous and homogeneous systems; compounds and elements. Ideal gas laws
The structure of the atom: elementary particles; atomic number and mass number,
isotopes, electronic structure of the atoms of the various elements.
The periodic system of the elements: groups and periods; transition elements.
Periodic properties of the elements: atomic radius, ionization potential, electron affinity, metallic character. Relationships between electronic structure, location in the periodic system, and element properties.
Fundamentals of inorganic chemistry: nomenclature and main properties of inorganic compounds: oxides, hydroxides, acids, salts.
Chemical reactions and stoichiometry: atomic and molecular mass, Avogadro's number, the mole concept and its application, basic stoichiometric calculations, balancing simple reactions, the different types of chemical reactions.
Solutions: solvent properties of water, solubility, the main ways of expressing the concentration of solutions.
Equilibria in aqueous solutions.
Elements of chemical kinetics and catalysis.
Oxidation and reduction: oxidation number, oxidizing and reducing concept.
Balancing simple reactions.

Physics
Measures: direct and indirect measures, fundamental and derived quantities, physical dimensions of magnitudes, knowledge of the metric system and the CGS, Technical (or Practical) (ST) and International (SI) Unit of Measure Systems (names and relationships between fundamental and derived units), multiples and submultiples (names and values).
Kinematics: kinematic variables, various motions with particular regard to uniform rectilinear and uniformly accelerated motion; uniform circular motion; harmonic
motion (for all motions: definition and relationships between the associated kinematic variables).


Mathematics


Functions: basic notions of functions and their graphical representations (domain, codomain, sign, maxima and minima, growth and decay, etc.). Elementary functions: algebraic with whole number and fractions, exponential, logarithmic, trigonometric. Composite functions and inverse functions. Trigonometric equations and inequalities.

Probability and statistics: distributions of frequencies depending on the type of characteristic and main graphical representations. The concept of random experiment and event. Probability and frequency.