Please note: At the entrance examination a student is randomly given 2 questions from the topics below. It's an **open-book examination**, you can use all the materials that might help but please note that plagiarism and direct copypasting are not acceptable..

I. EPIDEMIOLOGICAL METHODS

1. How do epidemiologists study the spread of diseases?
2. What epidemiological designs do you know? Describe its main characteristics.
3. How do we measure disease occurrence?
4. What measures of association do you know?
5. What are exposures and outcomes in epidemiological research?
6. What stands behind "ecological studies" in epidemiology? Describe its main characteristics, advantages and disadvantages.

RECOMMENDED READING

1. Cox, D.R. The design of empirical studies: towards a unified view. Eur J Epidemiol 31, 217–228 (2016). https://doi.org/10.1007/s10654-016-0135-9
2. D Coggon, Geoffrey Rose DM, DJP Barker, Epidemiology for the uninitiated, fourth edition.
3. Leon Gordis. Epidemiology 5th Edition. Elsevier.
4. Isabel dos Santos Silva. Cancer Epidemiology: Principles and Methods. IARC. 1999 .

II. BIOSTATISTICS

1. Explain the difference between population and sample. Can we make inferences about population analyzing samples?
2. Types of variables in biomedical research – numerical (discrete and continuous), categorical, and ordinal. Please give an example of each variable.
3. Explain the difference between sample mean and median. Which one is robust to outliers?
4. Define sample variance and standard deviation. What do they mean?
5. What is type I and type II error in biomedical research?
6. What is a p-value? What is a confidence interval?

RECOMMENDED READING

1. Stanton Glantz, Primer of Biostatistics, Seventh Edition (Primer of Biostatistics (Glantz) 7th Edition
2. T D V Swinscow. Statistics at Square One. Ninth Edition Revised by M J Campbell, University of Southampton Copyright BMJ Publishing Group 1997.
3. Douglas G. Altman. Practical statistics for medical research. Chapman and Hall, London, 1991.
4. Bernard Rosner. Fundamentals of Biostatistics, 8th ed., Boston: Brooks/Cole, 2011
5. Statistics How To: https://www.statisticshowto.com/statistics-basics/

III. PRINCIPLES OF EVIDENCE-BASED MEDICINE

1. What is evidence-based medicine? What stands for "evidence" in contemporary medicine?
2. What are the fundamental principles of systematic reviews and meta-analyses?
3. Describe the hierarchy of evidence.
4. What is a clinical trial? What ethical concerns need to be taken into consideration?
5. What is a randomized trial? Why do we need randomization in clinical trials?

RECOMMENDED READING

1. David A Grimes, Kenneth F Schulz, Jan 05, 2002, An overview of clinical research: the lay of the land
   https://doi.org/10.1016/S0140-6736(02)07283-5
2. Kenneth F Schulz, David A Grimes. Blinding in randomized trials: hiding who got what February 23, 2002,
   doi.org/10.1016/S0140-6736(02)07816-9
3. Trisha Greenhalgh. How to Read a Paper: The Basics of Evidence-based Medicine and Healthcare
   6th Edition. 2019.

IV. EPIDEMIOLOGY OF INFECTIOUS AND NON-COMMUNICABLE DISEASES

1. What are the differences between infectious and non-communicable diseases? How do they affect society?
2. How do infectious diseases spread? What determines the health impact epidemics produce?
3. What are the most common diseases around the world? What are the most common causes of death around the world?
4. What are the cancer trends around the world?

RECOMMENDED READING

1. HKUx's Epidemics-Origins, Spread, Control, and Communication.
2. Kenrad E Nelson, Carolyn Masters Williams. Infectious disease epidemiology: theory and practice, Second Edition, 2007.
3. WHO Noncommunicable diseases and mental health.
4. World Health Organization Noncommunicable diseases country profiles, 2018.

V. GLOBAL ISSUES OF PUBLIC HEALTH

1. What diseases will become the challenges for healthcare professionals in the future?
2. Do you think whether randomized trials are always ethically justified or not?
3. Why do public health professionals use biostatistical methods in research?
4. Describe the current state of epidemiological research in your country. What are the main characteristics?
5. What communication challenges in the field of health sciences are currently prevalent in the world? How can public health professionals help to solve them?
6. How can public health professionals help to fight inequality and discrimination in the healthcare sector?
7. Which public health problems in your opinion deserve more funding and why?
8. What characteristics of the pharmaceutical industry functioning influence public health?
9. Based on the COVID-19 pandemic experience, which steps would you propose as a first action plan to minimize the consequences in a resembling situation?