



(University of Choice)
**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2023/2024 ACADEMIC YEAR**

SECOND YEAR FIRST TRIMESTER EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN CLINICAL MEDICINE, SURGERY AND COMMUNITY
HEALTH**

COURSE CODE: HCM 231

COURSE TITLE: ENVIRONMENTAL AND OCCUPATIONAL HEALTH

DATE: 4th December 2023 TIME: 2:00pm – 4:00pm

INSTRUCTIONS TO CANDIDATES

Answer all questions

Section A: Multiple choice questions (MCQ) (20 Marks)

Section B: Short answer questions (SAQ) (40Marks)

Section C: Long answer questions (LAQ) (40Marks)

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 4 Printed Pages. Please Turn Over. 

SECTION A: Multiple Choice Questions (20Marks)

1. During industrial treatment of water, flocculation refers to ____
 - a) Adding Aluminum sulphate to the water to neutralize negative charges on suspended particles
 - b) Screening of entrance to water treatment facility
 - c) Settling of larger particles in water to the bottom
 - d) Binding together of suspended particles to make them larger
2. Which of the following is not a key element in transmission of nosocomial infections?
 - a) Source of infecting organisms
 - b) A susceptible host
 - c) Mode of transmission for the micro-organism
 - d) Environment
3. Which of the following term can refer to a chemical substance that has ability to ignite a combustible material?
 - a) Corrosive
 - b) Oxidizing
 - c) Highly flammable
 - d) Very toxic
4. Organochlorines
 - a) Have steady chemical structures, hence they accumulate and persist in the environment
 - b) Contain a phosphate group, thus their action is irreversible
 - c) Inhibit the acetylcholinesterase enzyme
 - d) Are widely used in Kenya
5. From the following identify a water-based disease.
 - a) Diphyllbothriasis
 - b) Cholera
 - c) Trachoma
 - d) Onchocerciasis
6. Concerning the transmission of hospital infections, which of the following statements is true?
 - a) Contact transmission of infections is less frequent in a hospital setting
 - b) Airborne and droplet transmission are one and the same
 - c) Without observing infection prevention measures, administering medication may serve to transmit hospital infections to multiple patients
 - d) Vector borne transmission of is not possible in a well-maintained health facility
7. Ergonomic occupational hazards
 - a) Include low financial incentives
 - b) Are associated with improperly designed tools and work procedures
 - c) Are mainly caused by exposure to certain chemicals at a work place
 - d) Are very difficult to be fixed

8. Which heavy metal is associated with cognitive disorders among children?
 - a) Lead
 - b) Mercury
 - c) Chromium
 - d) Arsenic

9. Which of the following vectors falls in to the group of Crustacean?
 - a) Water fleas
 - b) Mosquitoes
 - c) Lice
 - d) Ticks

10. Regarding Aflatoxin, which of the following statements is TRUE?
 - a) Aflatoxin are toxic metabolites of bacteria *Aspergillus*
 - b) Aflatoxin G₁, which is a potent carcinogen is exclusively produced by *Aspergillus flavus*
 - c) Aflatoxin M₁, which occur in animal products is hydroxylated metabolite of Aflatoxin B₁
 - d) Aflatoxins are typically prevented during when drying grains

11. Why do polycyclic aromatic hydrocarbons produce pleasant smell when burning?
 - a) They are formed when organic matter is incompletely burned
 - b) They are degraded by microorganisms
 - c) They contain fused benzene rings in their structure
 - d) They are polychlorinated biphenyls

12. What is the meaning of macro-environment?
 - a) Close and immediate surrounding the organism
 - b) Physical, biological or psychosocial conditions external to the organism
 - c) Microorganisms surrounding the human being
 - d) Environment that has no impact on the well-being of an organism

13. One of the following initiatives is most likely to reduce needlestick injuries in health care facilities
 - a) Procuring many sharps containers
 - b) Avoidance of unnecessary injections
 - c) Construction of an incinerator in each health facility to destroy used needles
 - d) All of the above

14. Which of the following is not an element of standard precautions for nosocomial infections?
 - a) Contact precautions
 - b) Hand hygiene
 - c) Personal protective equipment
 - d) Care of patients' equipment

15. What is biomagnification?
 - a) Increase in the magnitude and availability of chemical element
 - b) Increase in the concentration of chemical elements along the food chain
 - c) Persistence of chemical elements in the environment

- d) All of the above
16. Which of the following statements is TRUE?
- a) Regardless of the type, untreated plague is always fatal
 - b) Transmission of plague is mainly through a bite from an infected rodent
 - c) Elimination of rodents using chemical approach is the mainstay of prevention and control of plague
 - d) Plague is still endemic in some countries
17. All the following statements describe heavy metals except?
- a) Heavy metals occur naturally in environment
 - b) Health problems associated with heavy metals are not known
 - c) Heavy metals are widely used both at industrial and individual level
 - d) Heavy metals have a density at least five times greater than that of water
18. Eutrophication is a type of water pollution caused by
- a) Deforestation leading to soil erosion and increasing siltation in water bodies
 - b) Excessive use of fertilizer which enriches water bodies with nutrients leading algal bloom
 - c) Discharging untreated sewage to the environment leading to increased microbial content in water bodies
 - d) Oil spills leading to decreased oxygen content in water bodies
19. Concerning workers' rights, one of the following statements is not true
- a) Protection of workers' rights is a responsibility of the employer
 - b) Workers can demand for a decent working environment
 - c) Employer-employee conflicts can only be addressed in a court of law
 - d) Enhancing personal skill is the responsibility of the worker
20. Which of the following infectious diseases is transmitted by lice?
- a) Plague
 - b) Malaria
 - c) West Nile Hemorrhagic disease
 - d) Typhus



Section B: Short Answer Questions (SAQs)**(40marks)**

1. What are the main causes of biomagnification? **(5 Marks)**
2. With examples, outline main ways through which vectors transmit pathogenic micro-organisms to the hosts **(5 Marks)**
3. Name the main transmission-based precautions that can help reduce the spread of infections in health care facilities **(5 Marks)**
4. What are the main sources of environmental toxicity **(5 Marks)**
5. Outline the waste management hierarchy **(5 Marks)**
6. Briefly explain key characteristics of rodents that can be used to control them **(5Marks)**
7. What are the three types of interaction in the working environment? **(5 Marks)**
8. Define the following terms **(5 Marks)**
 - a) Environmental health
 - b) Vectors
 - c) Occupational health and Safety

Section C: Long Answer Questions (40Marks)

1.
 - a) Briefly describe the basic elements in an occupational setting **(8 Marks)**
 - b) Discuss measures that can be used for preventing and controlling biological occupational hazards **(12 Marks)**
2. Water contamination produces significant illnesses, which are major causes of morbidity and mortality, particularly in developing nations. Many of these illnesses are easily avoidable with proper water treatment. Discuss various strategies for achieving domestic water treatment **(20 Marks)**

