



(University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

(MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2017/2018 ACADEMIC YEAR

SECOND YEAR FIRST SEMESTER EXAMINATIONS

FOR THE DEGREE

OF

BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES

COURSE CODE: BML 216

COURSE TITLE: BIOSAFETY AND BIOSECURITY

EXAM: MAIN EXAM

DATE:

TIME:

INSTRUCTIONS TO CANDIDATES

This paper is divided into three sections, A, B and C, carrying respectively: Multiple Choice Questions (MCQ), short answered Questions (SAQs) and Long Answer (LAQs).

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating.

This paper consists of 4 printed pages. Please Turn Over.

Section A: Answer ALL Questions in this Section [20 Marks]

1. When working with infectious biological material the best place to perform the work would be:
 - A. In a Biological Safety Cabinet
 - B. On the laboratory bench
 - C. On a clean bench, wearing a dust mask
 - D. In a Fume Hood
2. Who is responsible for providing training that is specific to the bioresearch being performed?
 - A. The lab manager or Principal Investigator
 - B. The lab personnel who is performing the work
 - C. The Department where you work
 - D. EH&
3. Biosafety is working safely with biological material or organisms with potential to cause disease in:
 - A. Animals
 - B. Plants
 - C. Humans
 - D. All the above
4. Which of the following procedures could generate aerosols?
 - A. Cell sorters
 - B. Pipetting
 - C. Sonicating tissue culture cells
 - D. All of the above
5. Is it okay to wear sandals in the lab as long as you also wear socks?
 - A. True
 - B. False
6. *Cryptococcus neoformans* would be handled at which Risk Group?
 - A. Risk Group 1
 - B. Risk Group 2
 - C. Risk Group 3
 - D. None of the above
7. The acronym *HEPA* (as in HEPA Filter) stands for:
 - A. High-Efficiency Particulate Air
 - B. High-Energy Particles in Air
 - C. High-Evaluation Protection
 - D. Hepatitis A
8. Which class of biosafety cabinet is the most common and used for working with biological materials or organisms:
 - A. Class I
 - B. Class II
 - C. Class III
 - D. Class IV

9. The minimum required personal protective equipment for Risk Group 2 work in the lab is:
 - A. Lab coat, 1 pair of gloves, eye protection
 - B. Tyvek suit, 2 pairs of gloves, head covering, respirator
 - C. Lab coat, 1 pair of gloves, eye protection, respirator
 - D. None of the above
10. Infectious agent and biological material must be disinfected chemically or by autoclave before final disposal in medical waste bin
 - A. False
 - B. True
11. For research that requires Biosafety Level 2 containment, Biological Safety Cabinets must be certified by the Investigator:
 - A. Daily
 - B. Monthly
 - C. Annually
 - D. Never, it's someone else's problem
12. What is the most common exposure route for laboratory acquired infections (LAIs)?
 - A. Percutaneous
 - B. Aerosol
 - C. Aerosol
 - D. Cutaneous
13. The Institutional Biosafety Committee (IBC) is accountable to which entity regarding research involving recombinant DNA (rDNA)?
 - A. Centers for Disease Control (CDC)
 - B. Animal and Plant Health Inspection Service (APHIS)
 - C. National Institutes of Health Office of Biotechnology Activities (NIH OBA)
 - D. United States Department of Agriculture (USDA)
14. Which of the following is NOT a BSL2 agent?
 - A. Lentiviral vector
 - B. SPF mouse
 - C. Rhesus macaque
 - D. Human cells, fluids and tissues
15. Eating and drinking is permitted in BSL1 laboratories.
 - A. True
 - B. False
16. A risk assessment can ensure protection of _____.
 - A. Personnel
 - B. The environment
 - C. The community
 - D. Your experiments
 - E. All of the above
17. Eye and face protection should be worn for anticipated _____.
 - A. Aerosolization
 - B. Splashes and sprays
 - C. Neither
 - D. Both

18. Which of the following is NOT an example of a safety sharp?
- Syringe with protective shield
 - Syringe with retractable needle
 - Syringe with retractable needle
 - Glass vacutainers
19. Biological waste boxes should be sealed and placed in hallway for pickup when they exceed 25 lbs. or are _____.
- ½ full
 - 2/3 full
 - ¾ full
 - Completely full
20. You think you may have had an exposure, but are unsure. You check your glove for punctures and find that it is broken. You should assume:
- An exposure has occurred
 - No exposure has occurred
 - You can continue working; you're probably fine
 - No blood, no harm

Section B: Answer ALL Questions in this Section [40 Marks]

21. Describe how to evaluate biological hazards [6 Marks]
22. Describe the role and responsibilities of biorisk management advisor/officer [6 Marks]
23. Write short notes on: [6 Marks]
- Cartagena Protocol
 - WHO classification of risk groups
24. State the criteria for assigning the biosafety levels [6 Marks]
25. List and explain the type of materials that require inactivation prior to disposal [6 Marks]
26. State the key concepts in biosecurity [6 Marks]
27. Identify the key factors in developing a successful biorisk management system [4 Marks]

Section C: Answer ANY TWO Questions from this Section [40 Marks]

28. Describe in detail the decontamination and disposal of a biomedical specimen in the laboratory [20 Marks]
29. Discuss the biosafety issues/concerns in biotechnology [20 Marks]
30. Describe detailed steps in risk assessment of a named biohazard in a biomedical lab [20 Marks]