(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

UNIVERSITY EXAMINATIONS

2019/2020 ACADEMIC YEAR

MAIN EXAMINATIONS

MAIN CAMPUS

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

DATE: **TIME:**

INSTRUCTIONS TO CANDIDATES

SECTION A: ANSWER ALL QUESTIONS (MCQs)	20 MARKS
SECTION B: ANSWER ALL QUESTIONS	40 MARKS
SECTION C: ANSWER ALL QUESTIONS	60 MARKS

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 (MCQs) [20 MARKS]

1. One of the roles of a biorisk management officer is to
   A. Ensure sufficient resources are provided to safely work with biological agents
   B. Discipline employees who refuse to wear protective equipment and follow safety practices
   C. Conduct background checks on employees to ensure they are suitable for working with biological agents
   D. Provide guidance on the development of biorisk management procedures
2. PPE is
   A. Personal Protective Enhancement
   B. Protective Physical Equipment
   C. Personal Protective Equipment
   D. Possible Protective Equipment
3. How should biological materials that need to be transported from the lab to another location be handled?
   A. Sealed in a secondary, shatterproof container
   B. Wear gloves and transport carefully in your hands
   C. In the pocket of a lab coat
   D. Cells in cell culture flasks and dishes are fine for transport
4. It is okay to wear sandals in the lab as long as you also wear socks
   A. True
   B. False
5. Pipet tips and microcentrifuge tubes can be stored in the biological safety cabinet.
   A. False
   B. True
6. Which agency is responsible for regulating disinfectants?
   A. Environmental Protection Agency(EPA)
   B. Food and Drug Administration(FDA)
   C. National Institutes of Health(NIH)
   D. World Health Organisation(WHO)
7. Which of the following practices should be utilized when working in a biological safety cabinet?
   A. Do not store any items in the BSC
   B. Disinfect the surface of the BSC before and after work
   C. Disinfect all equipment which go and come out of the BSC
   D. All the above
8. You can find all the safety information for your facility's chemical products by viewing the MSDS sheets.
   A. True
   B. False
9. Which of the following practices are allowed in the laboratory?
   A. Applying cosmetics
   B. Handling contact lenses
   C. Eating and drinking
   D. None of the above

10. Which of the following would you not expect to find in a Biosafety Level 1 Lab?
    A. Non-pathogenic Escherichia coli
    B. West Nile Virus
    C. Canine Hepatitis
    D. S.cerevisiae
11. Intellectual Property Rights (IPR) is a process which protects the use of information and ideas that are of.
    A. Ethical value
    B. Commercial value
    C. Social value
    D. Moral value
12. Which of the following can be patented
    A. .Machine
    B. Process
    C. .Composition of matte
    D. All of the above
13. Biosafety principles guide the conditions for _____; that is, the methods and equipment for safe manipulation of infectious agents in a laboratory.
    A. Access
    B. Containment
    C. Physical protection
    D. All the above
14. Both biosafety and biosecurity measures seek to minimize risk. When conducting research on pathogenic agents for peaceful purposes, it is necessary to establish what constitutes a(n) _____ level of risk.
    A. Acceptable
    B. Intolerable
    C. High
    D. None of the above
15. Which of the following would be relatively easy for terrorists to acquire?
    A. agar and growth media
    B. equipment to grow and process pathogens for dispersal
    C. contaminate food or beverages with pathogens or toxins
    D. disperse an aerosolized virus
16. Which of the following is considered a very worrisome bioweapon because it is easy to acquire, easy to work with, and highly toxic?
    A. Anthrax
    B. Botulinum toxin
    C. Ricin
    D. All of the above
17. The desire to maintain a safe laboratory environment for all begins with _____?
    A. prevention
    B. ubiquity
    C. microbiology
    D. accidents

18. Which of the following type(s) of Personal Protective Equipment (PPE) is frequently used?
    A. Safety glasses
    B. Lab Coats
    C. Face Shields
    D. Gloves
    E. All of the above
19. Good work practices include,
    A. smelling and tasting chemicals
    B. not washing hands before and after lab
    C. confining long hair and loose clothing
    D. using damaged equipment and glassware
20. What is the name of the procedure performed under sterile conditions to eliminate contamination in hopes to obtain a pure culture of one type of microorganism?
    A. sterilization technique
    B. aseptic technique
    C. disinfectant technique
    D. pathogen technique

SECTION B: SHORT ANSWER QUESTIONS [40 MARKS]

21. Describe briefly key highlights of Kenya's Biosafety law. [5 marks]
22. Differentiate between bioethics and biosecurity. [5 Marks]
23. Distinguish between risk assessment and risk management. [5 Marks]
24. Describe any five elements of Good Laboratory Practices (GLP). [5 Marks]
25. State the relationship between Biosecurity and Biosafety? [5 Marks]
26. Explain the factors that modify Biosafety and Biosecurity risks. [5 Marks]
27. Distinguish between the following terms [5 Marks]
    a) Precautionary principle and Biosafety guidelines
    b) Biosafety risk groups and Biosafety levels.
28. Describe the classification of infective microorganisms according to the risk groups. [5 marks]

SECTION C: ESSAY QUESTIONS [60 MARKS]

29. Discuss in details the principles of the Cartagena Protocol on Biosafety and the SPS agreements. [20 marks]
30. Discuss two international conventions relevant to biosafety and show how Kenya's commitment to these conventions could impact on healthcare development. [20 marks]
31. Discuss the principles of biosafety [20Marks]