



*(University of Choice)*

**UNIVERSITY EXAMINATIONS**  
**2018/2019 ACADEMIC YEAR**  
**FIRST YEAR, SECOND TRIMESTER EXAMINATIONS**  
**FOR THE DIPLOMA**  
**OF**  
**DIPLOMA OF MEDICAL BIOTECHNOLOGY/LABORATORY SCIENCES**  
**COURSE CODE: BBD 126**  
**COURSE TITLE: FUNDAMENTALS OF BIOSAFETY AND**  
**BIOSECURITY**  
**MAIN EXAMINATION**

**DATE: 24<sup>TH</sup> MAY 2019**

**TIME: 8.00 - 10.00 AM**

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**INSTRUCTIONS TO CANDIDATES**

This paper is divided into three sections; **A**, **B** and **C**, carrying respectively: Multiple Choice Questions (**MCQs**), Short Answer Questions (**SAQs**) and Long Answer Questions (**LAQs**).  
**ANSWER ALL QUESTIONS.**

**TIME: 2 HOURS**

MMUST observes **ZERO** tolerance to examination cheating

This Paper Consists of 6 Printed Pages. Please Turn Over.

## SECTION A: MCQ (20 Marks)

1. Medical waste is disposed off in the following ways apart from

- a) Incineration
- b) Sanitary landfill
- c) Safe burial practices
- d) Burning

2. When waste is being transported from one place to another either on or off site the following should be observed EXCEPT

- a) Keep safety boxes upright
- b) Be sure of transport schedule
- c) Waste should be moved on undesignated trolley or wheel barrow
- d) After transport have vehicle surfaces cleaned

3. Medical waste must be stored in a safe and secure place while ensuring the precautions below EXCEPT

- a) Keep boxes in a secure location away from medical supplies and out of reach
- b) Weigh the waste before storage
- c) Keep wet safety boxes
- d) Store safety boxes no more than as stipulated by facility guidelines

4. The following minor and major radiation spill precautions are applied EXCEPT

- a) Calling the supervisor
- b) Radiation may spread through movement of victim involved or clean up
- c) Prevent spread by confining movement of victim till monitored and found contamination free
- d) Minor radiation spill is one which laboratory staff is capable of handling safely without assistance

5. The following statements are true about minor and major chemical spills, which one is FALSE?

- a) BSL 2 or BSL 3 containment is applicable
- b) All laboratories should have a spill kit with instructions and appropriate items

c) Spill should be done by knowledgeable people

d) A minor chemical spill can be handled by a laboratory staff without assistance

6. In case of a biological spill outside a biosafety cabinet which is dangerous due to potential infectious aerosols, reduction of risk to exposed personnel is achieved through:

a) Re entering laboratory during decontamination

b) Holding breath and leaving laboratory immediately

c) Cleaning up spill for 10 minutes

d) Wearing short sleeved and front fastening jump suit

7. Prior to administering first aid one should observe the following EXCEPT

a) Cover any cuts and grazes on skin with water proof dressing

b) Wear suitable disposable gloves

c) Wash hands before commencing the procedure

d) use appropriate safety gadgets if mouth to mouth resuscitation is required

8. Killing of microbes on inanimate objects using disinfectants is achieved in 3 ways during decontamination EXCEPT

a) Chemical high level disinfection and sterilization

b) Chemical low level disinfection

c) House keeping

d) Temperature :121 degrees Celsius, Pressure :106kPa

9. Destruction of all microbes including bacteria endospores in sterilization is achieved through three methods apart from?

a) vacuuming

b) Autoclaving

c) Electric oven

d) Chemical use

10. A laboratory worker can get exposed to any of the hazards through the routes below EXCEPT

a) Ocular invasion

b) Inhalation

c) Ingestion

d) Sweating

11. Which of the statements below is FALSE about personal laboratory safety rules to be observed?

a) Protective clothing worn for all laboratory procedures

b) Open shoes never to be worn in the laboratory

c) Use of fire extinguishers is not important

d) Protective clothing /equipment never to be worn or used outside the laboratory

12. Which of these statements below BEST describes Cleaning?

a) Killing microorganisms on inanimate objects using disinfectants

b) Removal of visible dirt and stains

c) Destruction of all microorganisms including bacteria endospores

d) Chemical use disinfection

13. All the below are Bio-containment levels that provide precautions against microorganisms that would generate pathogens by isolating them in an enclosed facility, Physical controls are four as stated below EXCEPT

a) Biosafety level 2

b) Biosafety level 3

c) Biosafety level 1

d) Biosafety level 5

14. The following are biosafety hazards and risks groups (RG) EXCEPT

a) 4

b) 5

c) 3

d) 2

15. The responsibility of biosafety and biosecurity is NOT vested in

- a) National biosafety/biosecurity unit
- b) County government
- c) Health facility leadership and laboratory management
- d) Laboratory workers

16. Biological hazards are categorized into risk groups according to the danger they pose to individuals and community. The factors to consider include all the listed EXCEPT

- a) Adherence to proper safety and security measures
- b) Risk group of an agent
- c) Mode of transmission
- d) Experience of laboratory staff

17. The following are containment measures EXCEPT

- a) Opportunities for testing, research and experimenting
- b) Safe handling of specimen in the laboratory
- c) Care and use of laboratory equipment
- d) Appropriate use of biosafety cabinets

18. Bio hazards in the laboratory can lead to ?

- a) Improvement of working area
- b) Laboratory acquired infections
- c) Retraining of personnel
- d) Transfer of personnel

19. Biosecurity is properly described as

- a) Insecurity measures to prevent safety release of microbes
- b) Insecurity measures to prevent safety release of microbes
- c) Measures designed to prevent loss, diversion release of pathogens
- d) Toxins handling and pathogens principles and practices

20. Biosafety is best defined as

- a) intentional exposure to pathogens and toxins
- b) Toxins handling and pathogens principles and practices
- c) Insecurity measures to prevent safety release of microbes
- d) Practices that are meant to prevent exposure to hazards

**SECTION B: Short answer questions (60 marks)**

1. What is risk assessment in biosafety and biosecurity? (6 marks)
2. Outline bio containment and biosafety levels (BSL) in the laboratory (6 marks)
3. Describe medical laboratory cleaning (5 marks)
4. Write notes about decontamination of used instruments and other items in the medical laboratory (10 marks)
5. List the contents of a laboratory first aid box (10 marks)
6. Tabulate medical laboratory wastes and their management principles (8 marks)
7. Show how you would respond in case of the following emergencies
  - i) Fire (3 marks)
  - ii) Clothing on fire (3 marks)
  - iii) Biological spill (6 marks)
  - iv) Hazardous material splashes in eye (3 marks)

**SECTION C: ESSAY QUESTIONS (40 marks)**

1. Give a detailed account of good microbiological safety practices (20 marks)
2. Tabulate and elaborate on waste management with emphasis on waste segregation (20 marks)