



**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

**MAIN CAMPUS
MAIN EXAMINATIONS**

**UNIVERSITY EXAMINATIONS
2018/2019 ACADEMIC YEAR**

FOURTH YEAR SECOND SEMESTER EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN MEDICAL BIOTECHNOLOGY**

COURSE CODE: BMB 425

COURSE TITLE: BIOPOLICIES

DATE: 28TH MAY 2019

TIME: 8.00 -10.00 AM

INSTRUCTIONS TO CANDIDATES

Answer ALL questions in section A and B

In section C, answer question 2 as a compulsory question and any other ONE

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over.

**SECTION A (MULTIPLE ANSWER QUESTIONS, 20 MARKS)**

1. Intellectual Property Rights (IPR) it 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

2. Which of the following is (are) included in Geographical Indications of Goods
 - A. All of the above
 - B. Foodstuff
 - C. Manufactured
 - D. Handicraft

3. What is generally the ultimate focus of bioethics?
 - A. The impact of research on humanity and human life
 - B. The importance of technology in answering questions of the universe
 - C. The morality of actions in daily life
 - D. The natural laws of universal morality

4. Which one of the following is not a challenge in biotechnology development
 - A. The controversies and concerns of biotechnology application.
 - B. Meeting the global governance of biotechnology.
 - C. Global political economy issues
 - D. Solving humanity problems

5. Which of the following practices should be utilised when working in a biological safety cabinet
 - A. Disinfect the work surface before and after work
 - B. Disinfect all items that come and go into the BSC
 - C. Do not store any items in the BSC
 - D. Allow the BSC to operate before work begins and after work ends

6. Which of the following practices is not allowed in the laboratory
 - A. Eating and drinking in the laboratory
 - B. Applying cosmetics
 - C. Handling contact lenses
 - D. All of the above

7. How should biological materials that need to be transported from the lab to another location be handled?
 - A. Wear a lab coat and transport materials in your pocket
 - B. Wear gloves and carry the material in your hands
 - C. Seal materials in a leak-proof, shatter-resistant secondary container
 - D. Cells in cell culture flasks and dishes are fine for transport

8. Which of the following statements about Personal Protective Equipment (PPE) are correct?
- A. PPE should be worn and stored only inside the laboratory
 - B. PPE should be chosen based upon the work being completed
 - C. Employees utilizing PPE should be properly trained
 - D. All of the above
9. 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
10. 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
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. 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&S
13. Which of the following are some of the current issues associated with the benefit and risk concerns in biotechnology
- A. Biosafety of Genetically Modified Organisms (GMOs).
 - B. Bio policy: Guiding policy to biotechnology application and regulation.
 - C. Bio politics: Politicization of modern biotechnology issues with the political stream that influence public policy
 - D. All of the above
14. Which of the following are aspects related transgenic animals.
- A. Food safety on food derived from genetically modified (GM) animal.
 - B. Health of animal (animal warfare).
 - C. Unknown risks because permits to research on animals are issued without sufficient risk analysis.
 - D. All of the above
15. Which one among this is not a major risk associated with Biosafety risk Assessment (BSA)
- A. Human health
 - B. Environment (focusing on conservation and sustainable use of biological diversity in receiving environment).

- C. Food and feed quality (nutritional value, toxicity, allergenicity and other impacts).
D. Economic and social impacts

16. Which of the following procedures could generate aerosols?

- a) Cell sorters
- b) Pipetting
- c) Sonicating tissue culture cells
- d) All of the above

17. *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

18. 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

19. Why is it important to know the names and appearance of lab equipment before doing laboratory work?

- A. So you will score higher on the lab test.
- B. So you can quickly obtain your laboratory supplies before lab.
- C. So you can follow the lab instructions clearly.
- D. So you can make sure everything has been cleaned before beginning the lab procedure.

20. Will the future generations benefit from biotechnology, genetic modification, and synthesis?

- A. Yes! The sustainability of the human race depends on it!
- B. If used properly and with extreme caution, it could be very beneficial.
- C. NO. It will lead to the downfall of the human race as superweeds, genetically modified super-bacteria, and synthetic organisms take over.

SECTION B :(SHORT QUESTIONS, 40 MARKS)

Answer all the questions in this section

1. Define risk analysis and state the three components of risk analysis as applied in biosafety regulations (4marks)
2. a) State two approaches used in handling perceived risks of GMO that can help reduce impacts on human health and biodiversity (2marks)
 - b) State any four biosafety principles for microbiological and biomedical laboratories (4marks)
3. Briefly explain any five concerns of using recombinant DNA technology derived products (5marks)
4. State any five bodies under umbrella of the United Nations (UN) that have greatly been involved in biosafety issues worldwide (5marks)
5. Highlight key areas that good laboratory procedures (GLP) stresses on (5marks)

6. Briefly explain one of social and ethical concerns raised on patenting biotechnology inventions (5marks)
7. State five benefits associated with plant biotechnology that have been as a result of biosafety regulations put in place (5marks)
8. State how precautionary principle has been applied under compliance with Cartagena Protocol on Biosafety (5marks)

SECTION C: (ESSAY QUESTIONS, 40MARKS)

Answer question 1 as a compulsory question and any other ONE

1. Discuss some of the concerns that are raised for use of biotechnology in agriculture that necessitate appropriate biopolicies being initiated (20marks)
2. Discuss the process involved in the development of Biotechnology policy in a given country (20marks)
3. Describe the propoerties of Intellectual property rights (20marks)