(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

(MAIN CAMPUS)

UNIVERSITY EXAMINATIONS

2018/2019 ACADEMIC YEAR

MAIN EXAMINATIONS

FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN MEDICAL BIOTECHNOLOGY

COURSE CODE: BMB 323

COURSE TITLE: ETHICS, RISKS & TRENDS BIOTECHNOLOGY

DATE: 30TH MAY 2019 **TIME: 3.00 -5.00 PM**

INSTRUCTIONS TO CANDIDATES

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

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

SECTION A (20 Mks) ANSWER ALL QUESTIONS

1. Informed consent is important because

    a) It enables the investigator to recruit participants of his choice
    b) It enables the participant to understand vital information on the proposed trial
    c) It provides the participant with all the information regarding remote risks
    d) It promotes clinical research

2. The major ethical concern with Somatic Cell Nuclear Transfer (SCNT) is that:
    a. There is very little ethnic diversity in the eggs that are donated
    b. People are seeking blastocysts from foreign sources
    c. The blastocyst has to be destroyed to derive the stem cells
    d. The SCNT stem cells might harbor genetic disorders

3. Informed consent refers to:

    a) Principle of autonomy
    b) Voluntary but uninformed decision-making
    c) A voluntary decision to participate in research, by a competent individual who has received and understood the necessary information
    d) Permission to participate in research

4. What is Plagiarism?

    a. Copying verbatim and without citing the source
    b. Stealing the intellectual property of someone else without citing the source
    c. Using the examples from another paper but mixing up the order so it is unrecognizable
    d. All of the above

5. Epidemiological studies in medical research:

    a. Require patient consent
    b. Must always have research ethics committee approval
    c. Are designed to establish the distribution of diseases and health related conditions
    d. Uses patient identifiable data

6. Why is it important that personal data about research participants are kept within secure, confidential records?

    a. So that the participants cannot find out what has been written about them.
    b. In case individuals, places, or organizations can be harmed through identification or disclosure of personal information.

c. So that government officials, teachers, and other people in authority can have easy access to the data.
d. To enable the researcher to track down individuals and find out more about their lives.

7. What problem does a research institution face when drawing up an ethical code?

a. Identifying relevant legislation that should guide behaviour.
b. Reflecting the difficulty of making truly ethical decisions.
c. Incorporating assessments for the ethical behaviour of participants.
d. All of the above.

8. Researchers must be guided by scientific design requirements and not by ethical norms.

a) True

b) False

9. Which of the following is a form of harm that might be suffered by research participants?

a) Physical injury
b) Impaired development
c) Stress and anxiety
d) All of the above

10. Apart from the fact that it is "not a nice thing to do", what is an important ethical disadvantage of deceiving participants?

a) It can damage the professional reputation of the researcher and their discipline.
b) It makes it more difficult to gain access to deviant or hidden populations
c) It means that records of personal data about the participants cannot be made anonymous
d) None of the above

11. Scientific misconduct refers to

a. A researcher accidentally misquoting his or her data
b. Fabrication, falsification, plagiarism, or some other deviation from what is commonly accepted by the scientific community
c. Failure to achieve expected results
d. Accidental failure to cite a source

12. Historically speaking, ethical review of research came about, because:
    a. Of serious failings by some researchers throughout history to ensure that trial participants are not exploited or harmed one way or another during the trial
    b. Researchers discovered that without ethical review they would have problems seeing their findings published in important international biomedical journals
    c. Legislators deemed it necessary to force ethical review processes upon clinical researcher and anyone else involved in using human participants for research purposes
    d. People were sceptical that self-regulation by scientists would be the appropriate answer to ethical concerns in biomedical research involving human participants

13. How is artificial selection different from genetic engineering?
    a. Artificial selection is not an example of biotechnology
    b. Artificial selection is used to make genetically identical copies of an organisms, cell, or piece of genetic material.
    c. Artificial selection is not related to genetics.
    d. Artificial selection does not directly change a single organism's DNA.

14. Artificial selection, genetic engineering, and cloning are examples of biotechnology.

    Which phrase best defines biotechnology?

    a. The use of computers and other electronic devices in the field of biology
    b. The development of instrumentation that can be used to study biological processes
    c. The process of creating a genetically identical organism, cell, or piece of genetic material
    d. The application of living things and biological processes

15. Who gives consent in cases of minors who have no parents or guardians?
    a. A social worker
    b. Legal guardians
    c. Consent can be waived, as it is not necessary
    d. Nobody

16. The researcher must report to the Review Ethical Committee all unanticipated problems representing nonphysical risks to the participants.

    a. T
    b. F

17. The principle of respect recognizes the capacity and rights of all individuals to make their own decisions.
    a. T
    b. F

18. Protection of the research participant is more important than the pursuit of new knowledge.
    a. T
    b. F

19. The Review Ethical Committee, not the researcher, is responsible for the protection of research participants.
    a. T
    b. F

20. Researchers must be guided by scientific design requirements and not by ethical norms.
    a. T
    b. F

SECTION B (40 MARKS) Attempt ALL questions

1. State **EIGHT** potential risks associated with Biotechnology applications (8 Mrks)
2. Explain the concept of ethics in the context of animal cloning (8 Mks)
3. Outline **FOUR** main challenges in relation to the use of genetic engineering in animal (8 Mks)
4. Briefly **FOUR** general concerns of using recombinant DNA technology (8 Mks)
5. Brief explain **FOUR** issues in patenting Biotechnology innovations (8 Mks)

SECTION C (40 MARKS) Attempt TWO questions

1. Discuss **FOUR** public concerns on production of transgenic animals (20 Mrks)
2. Discuss **FIVE** Ethical issues in Medical Biotechnology (20 Mrks)
3. Using a relevant Example; Discuss any **TWO** developments in Medical Biotechnology (20 Mks)