



(University of Choice)

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

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR**

FIRST YEAR FIRST TRIMESTER EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF MEDICAL LABORATORY SCIENCES/
CLINICAL MEDICINE/PHYSIOTHERAPY /HEALTH
PROFESSIONS EDUCATION (DIRECT ENTRY/ UPGRADING)
MAIN EXAM**

COURSE CODE: BML 116/BSP 114/ HCM 100/NUR 100

COURSE TITLE: CELL BIOLOGY

DATE:

TIME:

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**).

TIME: 2 Hours

MMUST observes ZERO tolerance to examination
cheating

SECTION A: MULTIPLE CHOICE QUESTIONS (20 MKS)

Instructions to the candidate

- The section has twenty (20) multiple choice questions (MCQs)
- Each question has a stem and four (4) completion options, of which only one is correct
- Write your answers on the provided university examination booklet.

1. Which among the following microscopes gives information about external topography of specimen
 - A. Transmission electron microscope
 - B. Scanning electron microscope**
 - C. Dark field microscope
 - D. Light microscope
2. The cells that have no nucleus are known as:
 - A. Eukaryotic cells
 - B. Proliferative cells
 - C. Prokaryotic cells
 - D. Animalcules
3. One of the following is a function of epithelial tissue. Which one is it?
 - A. Internal support for organs
 - B. Protection from external environment
 - C. Stores nutrients
 - D. Contracts to produce movement
4. Respiration reactions involved in oxidation of sugars occur in the
 - A. Ribosomes
 - B. Lysosomes
 - C. Mitochondria
 - D. Peroxisomes
5. The organelle that synthesizes proteins is:
 - A. Ribosomes
 - B. Peroxisomes

- C. Lysosomes
 - D. Nucleus
6. Phagocytosis is the process of:
- A. Internalizing particles by a cells
 - B. Particles leave the cell
 - C. Internalization of extracellular fluid
 - D. Fluid leaves the cell
7. Cells of the pancreas contain many _____ because they synthesize many digestive enzymes.
- A. Lysosomes
 - B. Secretory vesicles
 - C. Centrioles
 - D. Vacuoles
8. Which one of the following is a constituent of the phospholipid layer of membrane structure
- A. Fatty acids
 - B. Cholesterols
 - C. Proteins
 - D. Amino acids
9. The cytoskeleton is composed of well-defined filamentous structures know as
- A. Chromatin
 - B. Gap junction
 - C. Microfilaments
 - D. Desmosome
10. The hydrophobic part of the phospholipid layer is made up of:
- A. Choline
 - B. Phosphate group
 - C. Fatty acids**
 - D. Cell surface markers
11. The name of the sugar found on an RNA molecule is called
- A. Pentose
 - B. Deoxyribose

- C. Ribose
 - D. Phosphate group
12. The nucleotides are joined by linking the phosphate on chromosome number
- A. 1'
 - B. 3'
 - C. 5'
 - D. 2'
13. The RNA has Uracil instead of _____ in its structure
- A. Adenine
 - B. Guanine
 - C. Cytosine
 - D. Thymine
14. How many bonds are there between G-C base pair
- A. Four
 - B. Two
 - C. Three
 - D. One
15. A group of three bases that specify an amino acid is known as
- A. Genetic code
 - B. Codon
 - C. Start signal
 - D. Central dogma
16. Which of the following is a start codon
- A. AUG
 - B. GAG
 - C. UAG
 - D. GAA
17. The reversible replacement of one differentiated cell type with another mature differentiated cell type is known as
- A. Atrophy

- B. Hyperplasia
 - C. Metaplasia
 - D. Dysplasia
18. The junctions that link cells together into tissues are
- A. Tight junctions
 - B. Adhesive junctions
 - C. Gap junctions
 - D. Plamodesmata
19. Which of the following is NOT a microdeletion syndrome
- A. Wialliams-Bauren syndrome
 - B. Prader-Willi syndrome
 - C. Turner's syndrome
 - D. Angleman syndrome
20. _____ syndrome involves the inheritance of extra chromosomal 21 material
- A. Downs Syndrome
 - B. Turner's syndrome
 - C. XXY syndrome
 - D. Prader-Willi syndrome

SECTION B: SHORT ANSWER QUESTIONS. ANSWER ALL THE QUESTIONS (40 MARKS)

1. Outline the procedures followed when Preparing Specimens for Transmission Electron Microscopy (5 marks)
2. Tabulate the differences between a Prokaryotic and Eukaryotic cell (5 marks)
3. Explain the functions of the cytoskeleton as part of the cytoplasm and its inclusion (5 marks)
4. Enumerate the major functions of membrane proteins (5 marks)
5. Distinguish between Endocrine signaling and paracrine signaling (5 marks)
6. Describe the three classes of intracellular signaling proteins (5 marks)
7. Describe Calcium signaling in cells (5 marks)
8. Describe the sugars and phosphate group of a nucleotide (5 marks)

SECTION C: LONG ANSWER QUESTIONS. ANSWER ALL THE QUESTIONS (60 MARKS)

1. Evans has been diagnosed to have chromosomal microdeletions. Discuss the health and behavioural implications of this diagnosis (20 marks)
2. Describe the meiosis I of cell division (20 marks)
3. Give a detailed account of the cell membrane (20 marks)