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UNIVERSITY EXAMINATIONS 2023/2024

FIRST YEAR, FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN CLINICAL MEDICINE AND COMMUNITY HEALTH AND DEVELOPMENT

CCM 3111: CELL BIOLOGY AND GENETICS

DATE: JANUARY 2024

TIME: 3 HOURS

INSTRUCTIONS: *Answer all questions in the booklet provided*

Ensure that all your answers are properly numbered

Section A: Multiple Choice Questions (MCQs)

Section B: Short Answer Questions

Section C: : Long Answer Questions (Answer Only Two Questions)

SECTION A: MULTIPLE CHOICE QUESTIONS (MCQS)

1. Who was the first person to see cells under the microscope and give them a name?
 - a) Anton van Leeuwenhoek
 - b) Robert Hooke
 - c) Theodor Schwann
 - d) Matthias Schleiden
2. Which of the following is NOT one of the main components of the cell theory?
 - a) Cells must contain DNA
 - b) All living things are made of cells



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- c) Cells can only come from other cells
 - d) Cells are the basic unit of life
3. This structure serves as the outer boundary of the eukaryotic cell:
- a) Flagella
 - b) Cytoskeleton
 - c) cell membrane
 - d) capsule
4. The word cyto means:
- a) Cell
 - b) Dark
 - c) Jelly
 - d) Small
5. Tiny structures that carry out cell functions are collectively called:
- a) Animalcules
 - b) Organelles
 - c) Tissues
 - d) Ribosomes
6. What part of a cell is responsible for breaking down and digesting things?
- a) Ribosomes
 - b) Lysosomes
 - c) endoplasmic reticulum
 - d) vacuole
7. The jellylike interior of the cell is called the:
- a) Vacuole
 - b) Cytoplasm
 - c) Cytoskeleton
 - d) Nucleus
8. What part of the cell makes proteins?
- a) Ribosomes
 - b) Mitochondria



- c) Lysosomes
 - d) Vacuole
9. What are cells called if they are adapted to perform a certain job?
- a) Specific
 - b) Functional
 - c) Unique
 - d) Specialised
10. What are cells produced by mitosis called?
- a) Sister cells
 - b) Daughter cells
 - c) Haploid cells
 - d) Zygotes
11. A cell that has half the usual number of chromosomes is called what?
- a) Haploid
 - b) Diploid
 - c) Homozygous
 - d) Heterozygous
12. What is the term for when a cell divides?
- a) Cytolysis
 - b) Cytocrenation
 - c) Cytodivision
 - d) Cytokinesis
13. Small circular pieces of DNA in a bacterial cell are called:
- a) Plasmids
 - b) Loose DNA
 - c) Ribosomes
 - d) Enzymes
14. How many sex chromosomes are present in a human being?
- a) 1 pair
 - b) 2 pairs



- c) 3 pairs
 - d) 4 pairs
15. Which 4 bases are present in DNA?
- a) AUCG
 - b) ATDG
 - c) ATCG
 - d) ACGD
16. How many restriction sites are contained by a plasmid?
- a) 1
 - b) 2
 - c) 3
 - d) More than 1
17. Which of the following is NOT true about transposable elements?
- a) Transposable elements are primarily considered non-coding DNA
 - b) Transposable elements often move around the genome
 - c) Transposable elements can cause disease
 - d) Transposable elements are only found in eukaryote
18. Which of these could increase the rate of mutation in DNA?
- a) A balanced diet
 - b) Ionising radiation
 - c) Regular exercise
 - d) sickness
19. Most of the genetic disorders are caused due to by:
- a) Mutation
 - b) The gender of an individual
 - c) The gross chromosomal abnormalities
 - d) All of the above
20. Which of the following is called the sex-linked disease?
- a) Leukemia
 - b) Alzheimer's



- c) Malignancy
- d) Colour blindness

SECTION B: SHORT ANSWER QUESTIONS (40 MARKS)

1. What does the cell theory state (3 Marks)
2. How do viruses violate the cell theory (2 Marks)
3. Describe 3 main functions of cell division (3 Marks)
4. Explain the importance of cell differentiation (8 Marks)
5. Describe 2 forms of nonrandom mating (6 Marks)
6. Explain 4 different types of genetic disorders (8 Marks)
7. Describe any 5 ethical issues surrounding gene therapy. (5 Marks)
8. Name 3 advantages and 2 disadvantages of gene therapy (5 Marks)

SECTION C: LONG ANSWER QUESTIONS (40 MARKS)

1. Highlight the differences between unicellular and multicellular organisms (16 Marks)
 - i. Give two examples of multicellular organisms (2 Marks)
 - ii. Give two examples of unicellular organisms (2 Marks)
2. Describe the cell cycle including the stages of mitosis. (20 Marks)
3. With examples Discuss any 5 chromosomal genetic disorders (20 Marks)

