



DEPARTMENT OF ANIMAL AND ENVIRONMENTAL BIOLOGY
RIVERS STATE UNIVERSITY, NKPOLU-PORTHARCOURT
FIRST SEMESTER EXAMINATION, 2021/2022 SESSION

COURSE TITLE: BASIC BIOLOGY I COURSE CODE: BIO 101 MAX.MARKS 70%
CREDIT UNIT: 3 TIME ALLOWED: 2HRS DATE OF EXAMINATION 06/07/2022

NAME OF CANDIDATE..... MATNO.....
DEPARTMENT.....

SECTION A (40marks)

INSTRUCTIONS: ANSWER ALL QUESTIONS FROM SECTION A AND ANY THREE FROM SECTION B. NO STUDENT IS ALLOWED TO ENTER THE EXAMINATION HALL WITH MOBILE PHONES.

1. The process via which multiple organisms gain a greater or lesser share of a limited resource is termed..... **Competition**
2. **Divergent**and..... **Convergent** are the types of evolution
3. The deliberate management of communities and ecosystems in an attempt to regenerate historical levels of native biodiversity is known as..... **Ecosystem diversity**
4. **Sun**is the primary source of energy to all ecosystems
5. Plants which require large amount of water for growth are known as..... **Aquatic Plants**
6. Living organisms can use energy in two forms which are..... **Glucose** and **ATP**
7. **Speciation**is the process by which an organism develops an adaptation that create an entirely new species .
8. **Climate change**is a significant long-term increase in mean global temperatures
9. The branch of biology dealing with interactions among organisms and between organisms and their environment is called..... **Ecology**
10. In the following food chain, which organism is the secondary consumer? Grass-rabbit-snake-hawk. A Grass B Rabbit C Snake D hawk **The Snake**
- 11) Cells divide and reproduce in 2 ways:..... **Mitosis**and..... **Meiosis**
- 12) At the end of Mitosis, the cytoplasm divides around the two new nuclei in a process called **Cytokinesis**
- 13) Meiotic division takes place in **Reproductive** Cell

- 14) The Nucleus is the brain box of the cell
- 15) Epithelial is the protective outer covering of the animal body and plays the same function as the Diffusion in plants.
- 16) Shuffling of genes occur during Meiosis division
- 17) Xylem and Phloem are complex tissues in plants
- 18) Mitochondria organelle is responsible for producing energy within the cell
- 19) The tissues and organs in the animal body is supported and held in position by the Connective tissue
- 20) The fine structure of the cell can be observed under the Transmission electron microscope
- 21) Louis Pasteur was the first person to report the role of microorganisms in fermentation in 1848
- 22) Robert Koch verified the germ theory of disease by relating a specific organism to the specific disease
- 23) The gut microbiome can be kept in good shape by taking Fruits and Vegetables
- 24) Chemotrophs are bacteria that produce their own food using inorganic sources such as CO₂
- 25) Mention any two taxonomical aspect in microbiology Fungi and Bacteria
- 26) The roles of microorganisms in geochemical cycles were established by Robert Hooke and Antoni van Leeuwenhoek
- 27) Animal wastes, domestic refuse biomass and grain can be converted to biofuels such as Pending and Pending by microorganisms.
- 28) In the nitrogen cycle, fixation of atmospheric nitrogen is carried by only Nitrogenases
- 29) Microorganisms resident on the skin include Proteobacteria and Staphylococcus
- 30) The most abundant vaginal microorganisms found in premenopausal women are from the genus Pending
- 31) The process of producing a RNA polymer from a DNA template is called Transcription
- 32) Each organisms has a unique combination of characters encoded in molecules of DNA
- 33) Considering the double stranded DNA, what kind of bonds hold one complimentary strand to the other Hydrogen bond
- 34) The DNA strand from which the mRNA is transcribed is known as Transcription

- 35 The chemical bonds in DNA by which the sugar component of adjacent nucleotides are linked through the phosphate groups are called Phosphodiester bonds.....?
- 36 The enzyme that breaks the hydrogen bonds between complementary bases is called Helicases
- 37) The two types of nucleic acids are Deoxyribonucleic acid (DNA).....and Ribonucleic acid (RNA)
- 38 For the codon AUG on a mRNA, the tRNA that will bind at the P-site will carry the anticodon UAC
- 39 Given a single strand of DNA 3' CTA GCA GCT 5', what will be the mRNA chain which would be made from the strand? Pending
- 40 What is meant by "nonsense" codon?..... Terminator codon

SECTION B (30 Marks)

INSTRUCTION: ANSWER THREE QUESTIONS ONLY FROM THIS SECTION

1 Differentiate between microbiome and Microbiota

Answer

- The microbiome refers to the collection of genomes from all the microorganisms in the environment. Microbiota
- The microbiota refers to microorganisms that are found within a specific environment. Microbiota can refer to all the microorganisms found in an environment, including bacteria, viruses, and fungi.

2) Mention three major types of plant tissues and their functions

(i) Parenchyma (ii) Collenchyma (iii) Sclerenchyma

(i) Parenchyma have thin walls of cellulose.

(ii) Collenchyma have cell walls with thickened areas of additional cellulose.

(iii) Sclerenchyma cells have lignified cell walls.

3) Distinguish between i) population and community ii) food chain and food web

Population is a group of the same species living in the same area

Community is a group of different species living in the same area

4 In a tabular form, state the four major differences between DNA and RNA



DIFFERENCES BETWEEN DNA & RNA

DIFFERENCES	DNA	RNA
Nucleotides	Adenine, guanine, cytosine and thymine	Adenine, guanine, cytosine and uracil
Number of chains	2	1
Location	Mostly in the nucleus or nucleoid, but also in mitochondria	Mainly in the cytoplasm
Composition	Deoxyribose	Ribose