

FEDERAL REPUBLIC OF SOMALIA

GRADE 12 EXAMS, 2022

BIOLOGY



OFFICE OF EXAMINATIONS AND CERTIFICATION





Somali Federal Ministry of Education, Culture & Higher Education

Form Four National Standardized Examinations.

MAY / JUNE 2022

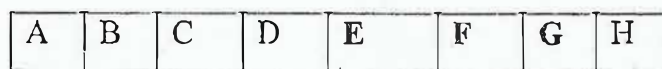
SUBJECT: BIOLOGY

TIME: 2 HOURS

INSTRUCTIONS: Answer all questions in the ANSWER BOOKLET

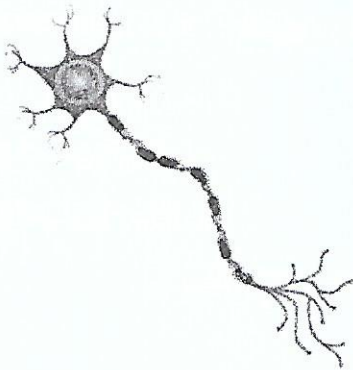
Part I: Circle the letter of the correct answer (40 Marks)

- The structural and functional unit of nervous system is:
 - Neurons
 - Neurotransmitter
 - Neuroglia
 - ☒ Nodes of Ranvier
- The substance responsible for skin colour is referred to as
 - Collagen
 - Keratin
 - ☒ Melanin
 - Carotene
- Which of the following parts of the skeletal system protects the spinal cord?
 - Skull Bones
 - Sternum
 - Vemor bone
 - ☒ Vertebral column
- The type of sugar that is found in ribonucleic acid (RNA) is
 - Deoxyribose
 - ☒ Ribose
 - Fructose
 - Xylose
- If a tall pea plant (Tt) is crossed with a short pea plants (tt) the phenotypical ratio will be:
 - 0 : 2 tall to short
 - ☒ 3 : 1 tall to short
 - 1 : 1 tall to short
 - 2 : 2 tall to short
- The two main functions of human ear are
 - Hearing and taste
 - ☒ Hearing and balance
 - Hearing and pressure
 - Hearing and temperature
- Look at the figure below and then describe the type of gene mutation.



- Inversion
 - ☒ Deletion
 - Duplication
 - Translocation
- The nucleotides of each strand of DNA molecule are binded together by
 - Hydrogen bond
 - ☒ Phosphodiester bond
 - Ionic bond
 - Metallic bond

9. The branch of biology that deals with the study of interactions between living organisms and their environment is called:
- (a) Ecology b. Entomology c. Embryology d. Etiology
10. Ali got cerebellum injury due to car accident, what are the effects that he is most likely to experience:
- a. Fluctuation of body temperature (c) Loss of body balance and posture
b. Increasing heart rate d. Decreasing heart rate
11. The physiological inability of muscle to contract resulted of ATP depletion is termed
- a. Muscle fatigue b. Muscle tearing c. Muscle cramps d. Muscle strain
12. The technique aimed to correct the mutated genes that cause human disease is
- a. Recombinant DNA b. Gene cloning
b. Gene therapy d. Polymerase chain reaction
13. Which one of the following set of terms is mismatched?
- a. Cranium and suture b. Shoulder and ball and socket joint
b. Wrist and pivot joint d. Knee and hinge joint
14. If the sequence of (AGC) is a part of DNA, what is the complementary codon of mRNA?
- a. UCG b. GGC c. AGC (d) GCU
15. The neuron in the diagram below represents a:



- a. Multipolar neuron b. Anaxonic neuron c. Bipolar neuron d. Unipolar neuron
16. Hormones that work together in pairs to regulate the level of critical substances are referred to as:
- a. Lipophilic hormones c. Antagonistic hormones
b. Steroid hormones d. Non-steroid hormones

17. The building block of nucleic acids (DNA and RNA) is

- a. Amino acids b. Fatty acids c. Deoxyribose **d. Nucleotide**

18. The increasing concentration of toxic substances in an organisms as trophic level increase in a food chain or food web is described as:

- a. Biological magnification** b. Biological concentration
c. Biological accumulation d. Biological toxicity

19. An enzyme that cuts DNA or genes into fragments is termed as:

- a. Isomerase b. Helicase c. Ligase d. Restriction

20. The breeding of two closely related cows to increase milk production is said to be..

- a. Inbreeding b. Cross breeding c. Hybridization d. Crossing over

PART II: Match the terms in column A with suitable descriptions in column B (10 marks)

COLUMN (A)

COLUMN (B)

1. Fertilization	(6) members of a pair homologous chromosome do not separate
2. Mutation	(7) lowers the level of glucose when it becomes rise above normal
3. Eutrophication	(8) controls the output of hormones from pituitary gland
4. Foramen magnum	(9) bundles of thread like structures found in skeletal muscles
5. Transcription	(10) an organism's complete set of genetic materials
6. Nondisjunction	(1) union of male gamete- sperm and female game- egg to form a zygote
7. Insulin	(2) sudden change or error that occur in the genetic materials
8. Hypothalamus	(3) excessive nutrients in the aquatic ecosystem that destroys the habitat of fish
9. Myofibrils	(4) large oval opening that locate at the base of the human skull
10. Genome	(5) transfer of genetic instruction in specific gene into RNA molecule



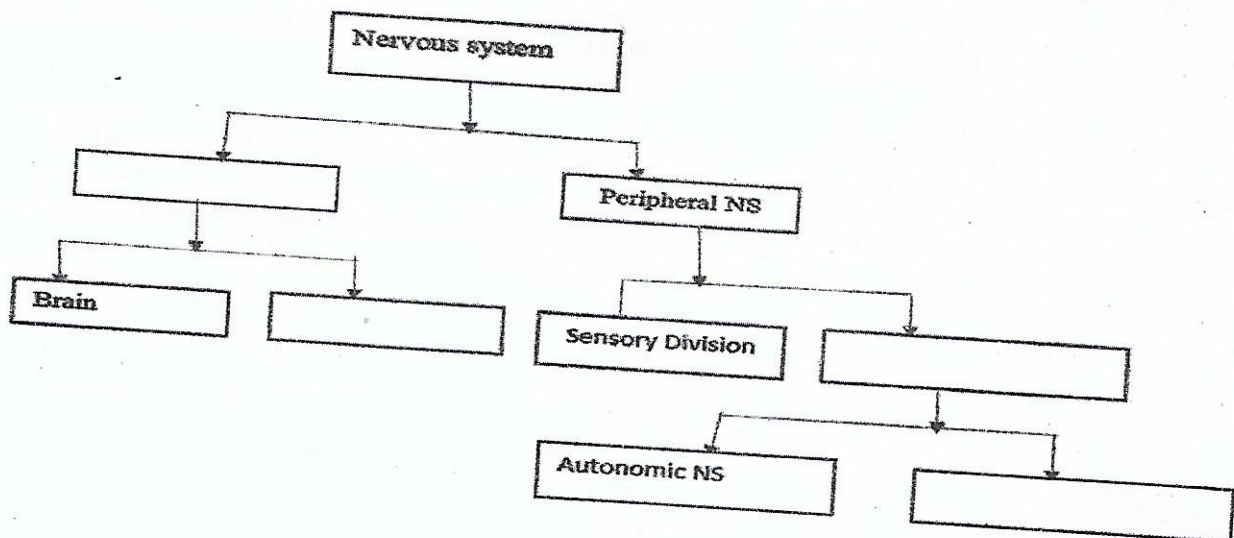
PART III: Use the information in the box below to fill the - gaps (10 m

Epidermis	Rods	Cerebrum
Pectoral girdle	Deoxyribose	Dwarfism
Consumer	Proteomics	Myosin
Peptide bond		

- The largest part of the brain is Cerebrum
- Too low growth hormone causes a condition referred to as Dwarfism
- The type of sugar that constitute DNA is Deoxyribose
- The outermost layer of human skin is called epidermis
- In a food chain the trophic level of grazing animals can be categorized as primary _____
- The light-sensitive cells that are excited by low levels of light is _____
- The thick filamentous protein that constitute the skeletal muscle fibers is _____
- The bond that links amino acids in a protein is called peptide bond
- The large scale study and cataloguing of the structure and function of proteins in the human body is called _____
- The upper limbs are connected to the axial skeleton by Pectoral girdle

PART IV: Answer All of the Following Questions

- Define the following terms: (4 marks)
 - Genetic engineering
 - Biodiversity
- Identify the main parts of nervous system based on the flow chart given (4 marks)



3. Ahmed has broken his leg in football match to the extent that his bone was protruding through his skin, identify the type of fracture. (4 Marks)
4. Describe uses of DNA fingerprinting in our life? (4 marks)
5. Using a punnet square, find the phenotype ration of two heterozygote plants (Tt) for their F1 generation. (6 Marks)
6. State the three structural parts of the nucleotide (3 marks)
7. Summarize the importance of DNA replication (4 Marks)
8. The sequence of DNA strand is ACGTTG, Write the complementary strand of this DNA. (4 Marks)
9. Mention at least three functions of the human skin (3 Marks)
10. Differentiate between species diversity and genetic diversity? (4 Marks)