



**OROMIA EDUCATION BUREAU BIOLOGY PRE-TEST EXAM FOR GRADE 12
STUDENTS OF SEVEN BOARDING AND ONE NON-BOARDING SCHOOLS FOR
SUMMER TUTORIAL CLASS AT ARSI UNIVERSITY JULY, 2016/2024**

GENERAL DIRECTIONS

THIS BOOKLET CONTAINS **BIOLOGY** EXAM FOR **GRADE 12** PREPARED FROM GRADE **9-11** TEXT BOOKS TO ASSESS THE STATUS OF OROMIA BOARDING SCHOOL STUDENTS AND TO IDENTIFY THE CONTENTS ON WHICH SOME GAPS EXIST AND TO GIVE TUTORIAL CLASSES.

THERE IS A TOTAL OF **50** MULTIPLE CHOICES QUESTIONS. THERE IS ONLY ONE BEST ANSWER FOR EACH QUESTION. CHOOSE THE BEST ANSWER FROM THE SUGGESTED OPTIONS AND WRITE THE LETTER OF YOUR CHOICE ON THE SEPARATE ANSWER SHEET PROVIDED.

YOU WILL BE ALLOWED TO WORK ON THE EXAM FOR **1:15** MINUTES. ANY FORM OF CHEATING OR AN ATTEMPT TO CHEAT IN THE EXAM IS FORBIDDEN.

PLEASE MAKE SURE THAT YOU HAVE WRITTEN ALL THE REQUIRED INFORMATION ON THE ANSWER SHEET BEFORE YOU START TO WORK ON THE EXAM.

1. In our country we have some very renowned biologists whose work is known and important not just here but around the world. Which of those biologists is **CORRECTLY** described?
 - A. Dr Tewolde Berhan GebreEgziabher safe guard biodiversity
 - B. Dr Melaku Worede develop vaccine against cattle disease rinderpest
 - C. Professor Tilahun Yilma preserved many different traditional crop varieties
 - D. Professor Mogessie Ashenafi founder and leader of center for indigenous tree propagation.
2. All of the following research activities has been conducted at Aklilu Lemma Institute of pathobiology, **EXCEPT**
 - A. Vector of disease and how to control of them
 - B. Human parasitic diseases
 - C. Research on Endod and other plants which may be useful as medicines
 - D. Management and conservation of ecosystem
3. Suppose a group of grade 9 students took a sample of animal cell and observed chromosome in dividing nuclei under microscope. Which one of the following staining chemical is appropriate for this purpose?
 - A. Haematoxylin
 - B. Methylene blue
 - C. Acetocarmine
 - D. Iodine
4. The cell theory introduced by Matthias Schleiden and Theodore Schwann in 1839 states that:
 - A. Any cell comes from cell like it
 - B. Cells are the basic units of life
 - C. All energy flow occur within the cells
 - D. All cells have basically the same chemical composition
5. Which of the following structure and function of cell is **CORRECTLY** matched with its function?
 - A. Cell membrane_ move substance freely through it in either direction
 - B. Cytoplasm_ carries out most of the reaction of respiration in eukaryotes.
 - C. Endoplasmic reticulum_ links the nucleus with the cell membrane
 - D. Vacuole_ filled with cell sap and controls all cellular activities
6. Which one of the following is **TRUE** about diffusion?
 - A. The bigger the difference in the concentration of two areas the steeper the gradient will be.
 - B. It is passive process_ it takes place along a concentration gradient and uses up energy
 - C. An increase in temperature slows the random movement of the particles
 - D. Diffusion is relatively a rapid process.

7. Potato slices of equal weighed were immersed in four different concentrations of sucrose solutions. The solutions were 2.0, 1.5, 1.0 and 0.5 molar. After a day, the potato slices were reweighed. Which potato slice weights the most? The one from
 - A. 0.5 molar
 - B. 1.0 molar
 - C. 1.5 molar
 - D. 2.0 molar
8. One of the following is **NOT** macronutrients?
 - A. Carbohydrates and proteins
 - B. Proteins and fats
 - C. Fats and carbohydrates
 - D. Vitamins and minerals
9. Which of the following simple sugar can represent letter “A” in the following condensation reaction?

$$\text{Glucose} + \text{A} \xrightarrow{\hspace{1cm}} \text{Sucrose} + \text{Water}$$

 - A. Galactose
 - B. Fructose
 - C. Glucose
 - D. Mannose
10. Fats and oils are made up of combination of two types of organic chemicals known as:
 - A. Amino acids and fatty acids
 - B. Glucose and Fructose
 - C. Fatty acids and glycerol
 - D. Amino acids and glycerol
11. Which of the following micronutrient is vital to make hemoglobin found in red blood cells?
 - A. Calcium
 - B. Phosphorus
 - C. Sodium
 - D. Iron
12. Which of the following is **NOT** a part of balanced diet?
 - A. Carbohydrate
 - B. Proteins
 - C. Cellulose
 - D. Lipids
13. Which of the following arteries delivering oxygenated blood to the mentioned organ is **INCORRECTLY** matched?
 - A. Heart – Coronary artery
 - B. Lungs - pulmonary artery
 - C. Kidney – renal artery
 - D. Liver- hepatic artery
14. Which of the following microorganism is categorized under kingdom Monera?
 - A. *Plasmodium falciparum*
 - B. *Entamoeba histolyca*
 - C. *Trypanosoma species*
 - D. *Hemophilus ducreyi*
15. Identify the **CORRECT** statement about biotechnology.
 - A. All types of micro-organism are used in biotechnology
 - B. Producing new medicines and providing new energy sources are traditional application of biotechnology
 - C. Yoghurt, cheese and alcoholic drinks are all the results of biotechnology
 - D. Biotechnology involves anaerobic respiration but not aerobic respiration.
16. Which of the following concepts explains the possibilities of genetic engineering in biological context?
 - A. Genes of a donor organism produces the same product in transgenic organism
 - B. Genes of a donor organism produces different product in transgenic organism
 - C. The work of a received gene depends on organism in which it exists
 - D. Prokaryotes can be donors of genes while eukaryotes are only recipients.

17. There are some possible problems with the new biotechnologies, to which we humans must be careful. All of the following are these problems **EXCEPT**
- A. genetic engineering, can introduce new characteristics very rapidly
 - B. Insects eating a constant diet of pesticide-forming plants will be pesticide resistant
 - C. Genes from genetically modified plants and animals might spread into the wildlife.
 - D. Genetically modified crops are often not fertile
18. Biogas is one of the modern application of biotechnology which will be an important fuel for the future because
- A. It is a non-renewable type of energy
 - B. Its large scale production is questionable
 - C. It is an environmentally friendly activity and has a surplus supply of raw material
 - D. The world has inexhaustible sources of coal, oil and gas
19. Which one of the following differentiates mitosis from meiosis? Mitosis
- A. is a type of cell division in sex organs
 - B. occurs as part of a process known as gametogenesis
 - C. Produces four non identical daughter cells
 - D. is taking place in somatic cells all the time.
20. A grade 11 student wants to study how a dimple trait is inherited from parents to offspring. The father is heterozygous and the mother has no dimple. The allele for dimple is dominant over the allele for no dimple. What proportion of the children will be no dimple?
- A. 25 %
 - B. 50%
 - C. 75%
 - D. 100%
21. Which one of the following statements explains how nerve impulse is occurred? It occurs as a result of
- A. The movement of neurotransmitter molecules out of cell body
 - B. Balanced charge across the membrane of dendrites
 - C. The movement of neurotransmitter molecules into myelin sheath
 - D. Charge difference between the membranes of axon.

The next Item is based on the following terms related to temperature regulation in homoeothermic animals.

1. Aestivation 2. Vasodilation 3. Fat layer 4. Hibernation 5. Sweating 6. Panting.

22. The mechanisms involved in hot weather to control internal body temperature are indicated by numbers
- A. 1, 2, 3, 4
 - B. 1, 2, 5, 6
 - C. 2, 4, 5, 6
 - D. 2, 3, 5, 6.
23. Which one of the following is **INCORRECT** about short sighted people?
- A. Such people can clearly focus on closer objects
 - B. The image from distance object is focused in front of the retina
 - C. It is caused by either too long eyeball or too strong lens
 - D. It is corrected by wearing convex lens

24. Which of the following is **CORRECT** about antidiuretic hormone (ADH)?
- A. It facilitates reabsorption in the first convoluted tubule
 - B. It is produced when the water content of the blood is too low
 - C. It works in the direction of producing dilute urine
 - D. Its production is initiated by low salt concentration in the blood.
25. What is the main significance of homeostasis? It is important to
- A. Denature the enzymes and stop cell activities in our body
 - B. Increase the cellular activities of our body systems
 - C. Maintain the internal conditions of the body in stable state
 - D. Burn food molecules to produce carbon dioxide.
26. How does the carbon dioxide used during photosynthesis get into the plants? By
- A. Diffusion
 - B. Active transport
 - C. Osmosis
 - D. Endocytosis
27. The type of response by which roots grow towards water is:-
- A. Nitro tropism
 - B. Hydrotropism
 - C. Phototropism
 - D. Geotropism.
28. How do predators contribute in conserving our vegetation?
- A. By feeding on specific species of plants
 - B. By feeding on important weeds
 - C. by keeping down the number of herbivores
 - D. by keeping down the number of carnivores
29. Which of the following is **TRUE** of the light dependent reaction of photosynthesis? It
- A. splits water molecules into hydrogen and oxygen
 - B. Supplies oxygen for synthesis of carbohydrates
 - C. Gives off hydrogen as waste product
 - D. Occurs outside chloroplasts.
30. Considering the variegated leaves of a plant is the simplest way to demonstrate the need of one of the following components in green plants to carryout photosynthesis. It is
- A. chlorophyll
 - B. CO₂
 - C. water
 - D. light
31. Which of the following factors increase the rate of transpiration in plants?
- A. High moisture
 - B. Still air
 - C. High Temperature
 - D. low light intensity
32. Which one of the following statement is **CORRECT** about Poikilothermic animals? They
- A. Have constant internal body temperature
 - B. Are endothermic
 - C. Lack internal control over their body temperature
 - D. Can generate internal heat to maintain a constant internal body temperature
33. Which of the following innate behaviors is categorized under instinctive behavior in animals?
- A. Honeybees dance when they return to the hive after finding a source of food
 - B. The movement of cockroaches away from the source of light
 - C. The movement of woodlice in relation to the temperature around them

- D. Blinking when something gets too close to your eye
34. Among the following statement, which one is **NOT CORRECT** about the induced-fit model of enzyme action?
- A. It is more dynamic model of enzyme action
 - B. States that the active site is flexible to adapt to the shape of the substrate.
 - C. They catalyze only substrates which fit perfectly on the active site of that enzyme.
 - D. The active site can modify its shape as the substrate interacts with the enzyme.
35. Which one of the following comparisons between vertebrates and invertebrates animals is **CORRECT**?
- invertebrate organisms:
- A. Have two pairs of appendages
 - B. Lack back bones
 - C. Have Endoskeleton
 - D. have skull and notochord
36. Which one of the following statements is **NOT CORRECTLY** described about the general properties of enzymes?
- A. Enzymes are not used up in the process of reaction.
 - B. Enzymes are globular proteins with a unique three-dimensional shape
 - C. Enzymes change the nature of the products of the reaction
 - D. Enzymes can be used over and over again
37. Some animals like Ethiopian wolves use their urine as marking substance on bushes to indicate other wolves that they have claimed particular area as their own is an example of:
- A. Reproductive behavior
 - B. Classical conditioning
 - C. Courtship behavior
 - D. Territorial behavior
38. Which of the following statement is **NOT CORRECT** about Rh factor compatibility in blood transfusions and pregnancy?
- A. If a person has Rh-negative blood; their blood cells lack the Rh protein.
 - B. Individual with Rh-negative blood can only receive Rh-negative blood
 - C. Rh incompatibility does not cause problems in a first pregnancy
 - D. Rh-negative individuals do not produce anti-Rh antibodies on exposure to Rh positive blood.
39. Which of the following statement best describes chromosomal translocation?- It is a genetic disorder in which:-
- A. Results from two breaks on non-homologous chromosomes and incorrectly rejoined
 - B. A portion of the chromosome has broken off, turned upside down, and reattached
 - C. Occur when the portion of the chromosome is missing
 - D. A portion of the chromosome is replicated, resulting in extra genetic material.

40. A student carried out an experiment about the effect of certain factors on rate of enzyme catalyzed reaction. If they maintained temperature, kept pH constant and there is constant supply of substrate molecules, which one of the following is **TRUE** about the rate of reaction?

- A. Increasing the concentration of the enzyme will decrease the rate of the reaction
- B. The shape of enzyme molecule will be denatured
- C. Rate of reaction is directly proportional to enzyme concentration
- D. Increasing the concentration of enzymes does not have significant change on reaction rate

41. DNA molecules differ from RNA molecules in the following ways **EXCEPT**?

- A. DNA molecule is polynucleotide and RNA molecule is not
- B. RNA molecule contains the nitrogenous base uracil and DNA molecules **DO NOT**
- C. DNA molecule is a double helix and RNA molecule is single stranded.
- D. DNA molecule is a huge molecule and RNA molecule is relatively small

42. Which of the following statements best describes about noncompetitive enzyme inhibitor?

- A. It competes with substrate for occupancy of the enzyme's active site
- B. It binds to a region away from the active site
- C. It binds at the active site simultaneously with the substrate
- D. Its effect can be reduced by increasing substrate concentration

43. DNA replication is said to be Semi-conservative because:

- A. Only one strand of double helix acts as template for a synthesis of new DNA strands
- B. Each newly formed double helix contains one new & one old strand**
- C. A newly synthesized strand is made up of fragments of the old and the new strands.
- D. The original double stranded DNA remains intact after replication

44. Which one of the following statements is **NOT correct about** protein synthesis?

- A. In eukaryotic cell, transcription takes place in the nucleus
- B. DNA is a nucleic acid molecule which carries the instruction for protein synthesis
- C. Translation mainly takes place in cytoplasm of the cell
- D. DNA replication is the process by which genetic information contained in nucleus is converted into mRNA

45. Which one of the following processes occurs in prophase of mitotic division?

- A. The nucleolus reappears
- B. Spindle apparatus forms at opposite poles of the cell
- C. Chromatids are pulled apart at the centromere and move towards the opposite poles
- D. Nuclear membrane reforms around each set of chromosomes

46. Which of the following alternatives contain **ONLY** appendicular skeletons?
- Vertebral column, Skull , Rib cage, and Sternum
 - Skull , Rib cage, vertebral column and Shoulder girdles
 - Thighs and legs , Ankles ,Shoulder girdle and Forearms
 - Sternum ,Cranium , Limbs and Vertebral column
47. Identify **INCORRECT** statement regarding the structure or functions of human musculoskeletal system?
- Hinge joints are joints that opens and closes in one direction along one plane only
 - Sutures are the free movable joints in human skull
 - Femurs are the longest and strongest bone in human skeletal system
 - Tendons are fibrous connective tissues that attach muscle to bone
48. The table given below describes about the three types of muscles. Which one of the following option correctly describes the feature of these muscles?

Options	Skeletal Muscles	Cardiac Muscles	Smooth Muscles
A.	Muscles in the wall of alimentary canal	with non-striated appearance	Involuntary control
B.	Involuntary control	Multinucleated muscles	non-striated appearance
C.	Involuntary control	striated appearance	Multinucleated muscles
D.	voluntary control	striated appearance	Involuntary control

49. Identify the false statement about the conditions that occurs during spermatogenesis?
- Spermatids are transformed into spermatozoa by the process of spermiogenesis.
 - Both secondary spermatocytes and spermatids are haploid cells
 - Spermatogonia are haploid cells and possess 23 chromosomes
 - Sertoli are somatic cells that help in the nourishment of the developing sperms
50. Which one of the following human reproductive structure is mismatched with its function?
- Vas deference: carries sperm from the epididymis to its junction with the urethra
 - Scrotum :protects the testes and maintain an optimal temperature for sperm production
 - Clitoris: contains many nerve endings that are very sensitive during sexual stimulation
 - Uterus : produces ovum and estrogen hormones

THE END