ENTRANCE TRICKS PRIVATE SCHOOL FIRST ROUND UNIVERSITY ENTRANCE MODEL EXAMINATION BIOLOGY, TIKIMT 2017/ NOV 2024

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BOOKLET CODE: 06 **SUBJECT CODE: 06**

Time Allowed: 02:00 HOURS

GENERAL DIRECTIONS

THIS BOOKLET CONTAINS BIOLOGY EXAMINATION. THE CODE FOR THISEXAMINATION IS **06** AND THE CODE FOR THIS PARTICULAR BOOKLET IS **06**.

IN THIS EXAMINATION, THERE ARE A TOTAL OF 80 **QUESTIONS** .EACH SECTION CONTAINS **MULTIPLE CHOICE QUESTIONS** CONSISTING IF FOUR POSSIBLE ANSWERS. CAREFULLY SELECTTHE BEST ANSWER. YOU ARE ALLOWED TO WORK ON THE EXAM FOR 02:00 **HOURS**.BEFORE TIME IS CALLED, YOU MUST SUBMIT YOUR RESPONSES.

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

DO NOT FORGET SUBMİT YOUR ANSWERS BEFORE THE GIVEN TIME IS FINISHED

1. Email *

2. Full name

3. School name

4. Region

Check all that apply.

- [ ] Addis Ababa
- [ ] Dire Dawa
- [ ] Amhara
- [ ] Tigray
- [ ] Oromiya
- [ ] Afar
- [ ] Somali
- [ ] Benishangul Gumz
- [ ] Harari
- [ ] Gambela
- [ ] Central Ethiopia
- [ ] South west Ethiopia
- [ ] Sidama
- [ ] South Ethiopia

5. Sex

Check all that apply.

- [ ] Male
- [ ] Female

6. Phone number

2017 ENTRANCE TRICKS BIOLOGY MODEL EXAMINATIONS

7. 1. Which of the following best describes the scientific method? 1 point

Mark only one oval.

- a) A rigid set of steps that must be followed in order.
- b) A flexible process of observation, hypothesis formation, testing, and analysis.
- c) A method that only focuses on observable phenomena.
- d) A system that guarantees the discovery of absolute truths.

8. 2. A hypothesis is best described as: 1 point

Mark only one oval.

- a) A proven fact.
- b) A tentative explanation that can be tested.
- c) An educated guess that is always correct.
- d) A theory that has been verified by multiple experiments.

9. 3.Which of the following is NOT a characteristic of a good scientific experiment? 1 point

Mark only one oval.

- a) Controlled variables.
- b) Replication of results.
- c) Use of anecdotal evidence.
- d) Statistical analysis of data.

10. 4. The theory of evolution by natural selection is considered a scientific theory because: 1 point

Mark only one oval.

- a) It is a proven fact.
- b) It has been supported by a vast amount of evidence.
- c) It is based on the opinions of experts.
- d) It is a hypothesis that has not been tested.

11. 5.5. Which of the following is an example of a scientific theory? 1 point

Mark only one oval.

- a) The Earth is flat.
- b) Plants need sunlight to grow.
- c) Gravity causes objects to fall to the ground.
- d) All of the above.

12. 6. What is the role of peer review in the scientific process? 1 point

Mark only one oval.

- a) To ensure that only the most groundbreaking research is published.
- b) To provide feedback and critique to improve the quality of research.
- c) To eliminate any research that contradicts established theories.
- d) To determine the funding for research projects.

13. 7. Which of the following is an example of a pseudoscientific claim? 1 point

Mark only one oval.

- a) Vaccines cause autism.
- b) Climate change is caused by human activity.
- c) The Earth orbits the sun.
- d) Bacteria can cause disease.

14. 8. Why is it important to be able to critically evaluate scientific information? 1 point

Mark only one oval.

- a) To distinguish between reliable and unreliable sources.
- b) To identify potential biases and conflicts of interest.
- c) To make informed decisions about health, environment, and other issues.
- d) All of the above.

15. 9. What is the difference between a scientific law and a scientific theory? 1 point

Mark only one oval.

- a) A law describes a pattern, while a theory explains the underlying cause.
- b) A law is a proven fact, while a theory is an educated guess.
- c) A law is based on observation, while a theory is based on experimentation.
- d) There is no difference between a law and a theory.

16. 10. The process of developing new technologies often involves: 1 point

Mark only one oval.

- a) Applying scientific knowledge to solve real-world problems.
- b) Conducting basic research without any practical application.
- c) Ignoring ethical considerations related to technology.
- d) None of the above.

17. 11. Biotechnology has the potential to revolutionize healthcare. Which of the following is NOT a potential application of biotechnology in medicine? 1 point

Mark only one oval.

- a) Development of new drugs and therapies.
- b) Gene therapy to treat genetic disorders.
- c) Creation of artificial organs.
- d) Production of genetically modified foods.

18. 12. How does the study of genetics contribute to agriculture? 1 point

Mark only one oval.

- a) By developing pest-resistant crops.
- b) By increasing crop yields.
- c) By improving nutritional content of food.
- d) All of the above.

19. 13. Which of the following is an example of how biology is used in environmental conservation? 1 point

Mark only one oval.

- a) Understanding population dynamics of endangered species.
- b) Developing sustainable agricultural practices.
- c) Restoring degraded ecosystems.
- d) All of the above.

20. 14. The study of biodiversity is crucial for understanding: 1 point

Mark only one oval.

- a) The interconnectedness of life on Earth.
- b) The impact of human activities on ecosystems.
- c) The potential for developing new medicines and technologies.
- d) All of the above.

21. 15. How can biology be used to develop more sustainable energy sources? 1 point

Mark only one oval.

- a) By studying the photosynthesis process to create biofuels.
- b) By developing new methods for capturing and storing carbon dioxide.
- c) By researching the potential of algae as a source of bioenergy.
- d) All of the above.

22. 16. What is the role of biology in forensic science? 1 point

Mark only one oval.

- a) Identifying individuals based on DNA evidence.
- b) Analyzing trace evidence from crime scenes.
- c) Determining the time of death.
- d) All of the above.

23. 17. How does the study of human anatomy and physiology contribute to the field of sports science? 1 point

Mark only one oval.

- a) By understanding the biomechanics of movement.
- b) By optimizing training programs for athletes.
- c) By developing strategies for preventing sports injuries.
- d) All of the above.

24. 18. Which of the following is an example of how biology is used in the food industry? 1 point

Mark only one oval.

- a) Developing food preservation techniques.
- b) Understanding the nutritional content of food.
- c) Creating new food products.
- d) All of the above.

25. 19. The field of bioethics deals with: 1 point

Mark only one oval.

- a) Ethical considerations related to the application of biological knowledge.
- b) The legal consequences of scientific research.
- c) The social impact of new technologies.
- d) All of the above.

26. 20. Why is it important to have a strong foundation in biology to succeed in many different fields? 1 point

Mark only one oval.

- a) Biology provides a framework for understanding the natural world.
- b) Biology is essential for solving complex problems in various industries.
- c) Biology is a rapidly evolving field that offers many career opportunities.
- d) All of the above.

27. 21. What is the central concept behind biotechnology? 1 point

Mark only one oval.

- a) Utilizing living organisms or their products for human benefit.
- b) Studying the genetic makeup of organisms.
- c) Creating new life forms through genetic engineering.
- d) Understanding the interactions between organisms and their environment.

28. 22.Which of the following is NOT a key tool used in modern biotechnology? 1 point

Mark only one oval.

- a) Restriction enzymes
- b) PCR (Polymerase Chain Reaction)
- c) Gene cloning
- d) Artificial selection

29. 23.What is the main difference between traditional and modern biotechnology? 1 point

Mark only one oval.

- a) Traditional methods use only natural processes, while modern methods involve genetic manipulation.
- b) Traditional methods are faster and more efficient.
- c) Modern methods are only used in medicine, while traditional methods are used in agriculture.
- d) There is no significant difference

30. 24.Which of the following is an example of a traditional biotechnology practice? 1 point

Mark only one oval.

- a) Genetically modified crops
- b) Stem cell therapy
- c) Fermentation of alcohol
- d) DNA fingerprinting

31. 25.What is the significance of recombinant DNA technology in biotechnology? 1 point

Mark only one oval.

- a) It allows scientists to introduce genes from one organism into another.
- b) It enables the production of large quantities of specific proteins.
- c) It facilitates gene therapy for genetic disorders.
- d) All of the above.

32. 26.Which of the following is a potential ethical concern regarding the use of biotechnology? 1 point

Mark only one oval.

- a) The possibility of creating genetically engineered humans.
- b) The potential for bioweapons development.
- c) The economic disparities in access to advanced medical treatments.
- d) All of the above.

33. 27.What is the role of bioinformatics in biotechnology? 1 point

Mark only one oval.

- a) Analyzing and interpreting large datasets of biological information.
- b) Developing new drugs and therapies.
- c) Creating genetically modified organisms.
- d) Studying the interaction of organisms with their environment.

34. 28.Which of the following is an example of how biotechnology is used in agriculture? 1 point

Mark only one oval.

- a) Developing pest-resistant crops.
- b) Increasing crop yields.
- c) Improving the nutritional content of food.
- d) All of the above.

35. 29.What is the potential of synthetic biology in biotechnology? 1 point

Mark only one oval.

- a) Creating artificial life forms for various purposes.
- b) Engineering organisms with specific desired traits.
- c) Developing new biomaterials and biofuels.
- d) All of the above.

36. 30.Which of the following is NOT a traditional biotechnology practice used in food production? 1 point

Mark only one oval.

- a) Brewing beer
- b) Making cheese
- c) Genetic engineering of yeast
- d) Bread making

37. 31.How does traditional biotechnology contribute to sustainable agriculture? 1 point

Mark only one oval.

- a) By using natural fertilizers and pest control methods.
- b) By promoting biodiversity and ecological balance.
- c) By reducing reliance on synthetic chemicals.
- d) All of the above.

38. 32.What is the main advantage of using modern biotechnology in medicine? 1 point

Mark only one oval.

- a) Personalized medicine tailored to an individual's genetic makeup.
- b) Development of more effective and targeted therapies.
- c) Improved diagnostics and disease prevention strategies.
- d) All of the above.

39. 33.What is the main difference between gene therapy and genetic engineering? 1 point

Mark only one oval.

- a) Gene therapy aims to treat disease, while genetic engineering aims to modify organisms.
- b) Gene therapy targets somatic cells, while genetic engineering targets germ cells.
- c) Gene therapy uses viral vectors, while genetic engineering uses bacterial vectors.
- d) Gene therapy is a traditional technique, while genetic engineering is a modern technique.

40. 34.Which of the following is a potential benefit of using genetically modified crops? 1 point

Mark only one oval.

- a) Increased crop yield and resistance to pests and diseases.
- b) Reduced reliance on pesticides and herbicides.
- c) Enhanced nutritional content of food.
- d) All of the above.

41. 35.Which Ethiopian biologist is known for his research on the biodiversity of the Rift Valley? 1 point

Mark only one oval.

- a) Dr. Yonas Demissie
- b) Dr. Teshome Soromessa
- c) Dr. Melaku Worede
- d) Dr. Alemseged Abebe

42. 36.Which Ethiopian biologist is known for his contributions to the study of human evolution? 1 point

Mark only one oval.

- a) Dr. Zeray Alemseged
- b) Dr. Berhane Asfaw
- c) Dr. Sileshi Semaw
- d) All of the above.

43. 37.Which Ethiopian biologist played a key role in the establishment of the Ethiopian Institute of Biodiversity Conservation? 1 point

Mark only one oval.

- a) Dr. Yonas Demissie
- b) Dr. Teshome Soromessa
- c) Dr. Melaku Worede
- d) Dr. Abebe Demissie

44. 38.Which of the following is NOT a common field tool used by biologists? 1 point

Mark only one oval.

- a) GPS device
- b) Binoculars
- c) Spectrophotometer
- d) Field notebook

45. 39.What is the main purpose of a dissecting microscope? 1 point

Mark only one oval.

- a) Viewing extremely small objects, like bacteria.
- b) Examining the surface details of larger specimens.
- c) Observing live organisms in their natural environment.
- d) Analyzing the internal structures of cells.

46. 40.Which of the following is a specialized tool used for measuring the volume of liquids in a laboratory? 1 point

Mark only one oval.

- a) Pipette
- b) Beaker
- c) Graduated cylinder
- d) All of the above

47. 41.What is the function of a centrifuge in a laboratory? 1 point

Mark only one oval.

- a) Separating components of a mixture based on density.
- b) Heating samples to specific temperatures.
- c) Measuring the concentration of a solution.
- d) Analyzing the composition of a compound.

48. 42.Which of the following is NOT a common laboratory technique used by biologists? 1 point

Mark only one oval.

- a) Chromatography
- b) Electrophoresis
- c) Spectrophotometry
- d) X-ray diffraction

49. 43.Which of the following is NOT a typical field data collection method used by biologists? 1 point

Mark only one oval.

- a) Transect sampling
- b) Quadrat sampling
- c) DNA sequencing
- d) Observation and recording

50. 44.Which of the following is NOT a fundamental principle of the cell theory? 1 point

Mark only one oval.

- a) All living organisms are composed of one or more cells.
- b) Cells are the basic unit of structure and function in living organisms.
- c) All cells arise from pre-existing cells.
- d) Cells can spontaneously generate from non-living matter.

51. 45.What is the main difference between prokaryotic and eukaryotic cells? 1 point

Mark only one oval.

- a) Prokaryotic cells have a nucleus, while eukaryotic cells do not.
- b) Eukaryotic cells have a nucleus, while prokaryotic cells do not.
- c) Prokaryotic cells are smaller and simpler than eukaryotic cells.
- d) Eukaryotic cells are smaller and simpler than prokaryotic cells.

52. 46.Which of the following organelles is responsible for protein synthesis? 1 point

Mark only one oval.

- a) Nucleus
- b) Ribosomes
- c) Golgi apparatus
- d) Endoplasmic reticulum

53. 47.What is the main function of the mitochondria in a cell? 1 point

Mark only one oval.

- a) Producing energy (ATP) through cellular respiration.
- b) Storing genetic information.
- c) Synthesizing proteins.
- d) Modifying and packaging proteins.

54. 48.Which of the following organelles is involved in the modification and packaging of proteins? 1 point

Mark only one oval.

- a) Endoplasmic reticulum
- b) Golgi apparatus
- c) Lysosomes
- d) Vacuoles

55. 49.What is the role of the cell membrane in a cell? 1 point

Mark only one oval.

- a) Regulating the passage of substances into and out of the cell.
- b) Storing genetic information.
- c) Providing structural support for the cell.
- d) Generating energy for cellular processes.

56. 50.Which of the following is a key difference between plant cells and animal cells? 1 point

Mark only one oval.

- a) Plant cells have a cell wall, while animal cells do not.
- b) Animal cells have chloroplasts, while plant cells do not.
- c) Plant cells have a nucleus, while animal cells do not.
- d) Animal cells have a cell membrane, while plant cells do not.

57. 51. Which of the following is the broadest taxonomic category used in the classification of living organisms? 1 point

Mark only one oval.

- a) Species
- b) Genus
- c) Family
- d) Kingdom

58. 52.What is the primary basis for classifying organisms into different kingdoms? 1 point

Mark only one oval.

- a) Their size and shape
- b) Their habitat and lifestyle
- c) Their evolutionary history and cellular structure
- d) Their ability to reproduce

59. 53.Which kingdom includes organisms that are multicellular, heterotrophic, and possess a cell wall made of chitin? 1 point

Mark only one oval.

- a) Protista
- b) Fungi
- c) Plantae
- d) Animalia

60. 54.Which kingdom consists of organisms that are mostly single-celled, eukaryotic, and can be either autotrophic or heterotrophic? 1 point

Mark only one oval.

- a) Bacteria
- b) Archaea
- c) Protista
- d) Fungi

61. 55.What is the main characteristic that distinguishes the kingdom Plantae from other kingdoms? 1 point

Mark only one oval.

- a) They are multicellular and heterotrophic.
- b) They are single-celled and prokaryotic.
- c) They are multicellular and autotrophic.
- d) They are multicellular and have a chitin cell wall.

62. 56.Which kingdom includes organisms that are unicellular, prokaryotic, and often found in extreme environments? 1 point

Mark only one oval.

- a) Bacteria
- b) Archaea
- c) Protista
- d) Fungi

63. 57.Which kingdom includes organisms that are multicellular, heterotrophic, and lack a cell wall? 1 point

Mark only one oval.

- a) Protista
- b) Fungi
- c) Plantae
- d) Animalia

64. 58.Which of the following is NOT a characteristic of organisms in the kingdom Protista? 1 point

Mark only one oval.

- a) They are all single-celled.
- b) They are all eukaryotic.
- c) They can be either autotrophic or heterotrophic.
- d) They all have a cell wall made of cellulose.

65. 59.What is the primary function of the cell wall in organisms belonging to the kingdom Plantae? 1 point

Mark only one oval.

- a) To regulate the passage of substances into and out of the cell.
- b) To provide structural support and rigidity to the cell.
- c) To store genetic information.
- d) To produce energy through photosynthesis.

66. 60.Which of the following is NOT a characteristic of plants belonging to the kingdom Plantae? 1 point

Mark only one oval.

- a) Multicellular
- b) Autotrophic
- c) Possess a cell wall made of cellulose
- d) Heterotrophic

67. 61.Which phylum of plants includes mosses, liverworts, and hornworts? 1 point

Mark only one oval.

- a) Bryophyta
- b) Pteridophyta
- c) Coniferophyta
- d) Anthophyta

68. 62.What is the main characteristic that distinguishes ferns (Phylum Pteridophyta) from mosses (Phylum Bryophyta)? 1 point

Mark only one oval.

- a) Ferns have vascular tissue, while mosses do not.
- b) Ferns reproduce by spores, while mosses reproduce by seeds.
- c) Ferns are autotrophic, while mosses are heterotrophic.
- d) Ferns have a dominant sporophyte generation, while mosses have a dominant gametophyte generation.

69. 63.Which phylum of plants includes gymnosperms like pine trees and cycads? 1 point

Mark only one oval.

- a) Bryophyta
- b) Pteridophyta
- c) Coniferophyta
- d) Anthophyta

70. 64.What is the key characteristic that differentiates gymnosperms from angiosperms (Phylum Anthophyta)? 1 point

Mark only one oval.

- a) Gymnosperms produce flowers, while angiosperms do not.
- b) Gymnosperms have seeds enclosed in fruits, while angiosperms do not.
- c) Gymnosperms have naked seeds, while angiosperms have seeds enclosed in fruits.
- d) Gymnosperms reproduce by spores, while angiosperms reproduce by seeds.

71. 65.What is the primary function of the vascular tissue in plants? 1 point

Mark only one oval.

- a) To transport water and nutrients throughout the plant.
- b) To provide structural support.
- c) To perform photosynthesis.
- d) To reproduce sexually.

72. 66.Which of the following is NOT a characteristic of organisms belonging to the kingdom Animalia? 1 point

Mark only one oval.

- a) Multicellular
- b) Autotrophic
- c) Heterotrophic
- d) Possess eukaryotic cells

73. 67. Which phylum of animals includes sponges, which are simple, multicellular organisms with no true tissues or organs? 1 point

Mark only one oval.

- a) Porifera
- b) Cnidaria
- c) Platyhelminthes
- d) Annelida

74. 68.What is the main characteristic that distinguishes animals belonging to the phylum Cnidaria from those in the phylum Platyhelminthes? 1 point

Mark only one oval.

- a) Cnidarians have radial symmetry, while platyhelminthes have bilateral symmetry.
- b) Cnidarians are mostly aquatic, while platyhelminthes are mostly terrestrial.
- c) Cnidarians have a digestive system with a single opening, while platyhelminthes have a digestive system with two openings.
- d) Cnidarians are carnivores, while platyhelminthes are herbivores.

75. 69.Which phylum of animals includes roundworms, which are unsegmented worms with a cylindrical body? 1 point

Mark only one oval.

- a) Platyhelminthes
- b) Nematoda
- c) Annelida
- d) Mollusca

76. 70.What is the key characteristic that differentiates animals belonging to the phylum Annelida from those in the phylum Mollusca? 1 point

Mark only one oval.

- a) Annelids have segmented bodies, while molluscs do not.
- b) Annelids are mostly aquatic, while molluscs are mostly terrestrial.
- c) Annelids have a closed circulatory system, while molluscs have an open circulatory system.
- d) Annelids are herbivores, while molluscs are carnivores.

77. 71.What is the main characteristic that distinguishes animals belonging to the phylum Echinodermata from those in the phylum Chordata? 1 point

Mark only one oval.

- a) Echinoderms have radial symmetry, while chordates have bilateral symmetry.
- b) Echinoderms are mostly marine, while chordates are mostly terrestrial.
- c) Echinoderms have a water vascular system, while chordates do not.
- d) Echinoderms are herbivores, while chordates are carnivores.

78. 72.What is the primary characteristic that differentiates animals belonging to the class Aves from those in the class Mammalia? 1 point

Mark only one oval.

- a) Aves have feathers and wings, while mammals have fur or hair and mammary glands.
- b) Aves are mostly terrestrial, while mammals are mostly aquatic.
- c) Aves are cold-blooded, while mammals are warm-blooded.
- d) Aves reproduce by laying eggs, while mammals give birth to live young.

79. 73.What is the significance of the notochord in chordates? 1 point

Mark only one oval.

- a) It provides structural support for the body.
- b) It helps with locomotion.
- c) It plays a role in the nervous system.
- d) It is involved in the development of the digestive system.

80. 74.Which of the following is a characteristic that distinguishes animals belonging to the class Amphibia from those in the class Reptilia? 1 point

Mark only one oval.

- a) Amphibians have smooth, moist skin, while reptiles have dry, scaly skin.
- b) Amphibians lay eggs in water, while reptiles lay eggs on land.
- c) Amphibians have a three-chambered heart, while reptiles have a four-chambered heart.
- d) All of the above.

81. 75.Which of the following animals exhibits internal fertilization and lays eggs? 1 point

Mark only one oval.

- a) Rat
- b) Bird
- c) Insect
- d) All of the above

82. 76.Which of the following animals exhibits external fertilization and lays eggs? 1 point

Mark only one oval.

- a) Rat
- b) Bird
- c) Fish
- d) Insect

83. 77.What is the primary reproductive strategy of most insects? 1 point

Mark only one oval.

- a) Oviparity (laying eggs)
- b) Viviparity (giving birth to live young)
- c) Parthenogenesis (reproduction without fertilization)
- d) Hermaphroditism (having both male and female reproductive organs)

84. 78.Which of the following animals exhibits viviparity (giving birth to live young)? 1 point

Mark only one oval.

- a) Rat
- b) Bird
- c) Fish
- d) Insect

85. 79.Which of the following is a benefit of internal fertilization? 1 point

Mark only one oval.

- a) It increases the likelihood of fertilization.
- b) It allows for the development of the embryo in a protected environment.
- c) It reduces the risk of predation on eggs or young.
- d) All of the above

86. 80.Which of the following animals is known for its excellent sense of smell? 1 point

Mark only one oval.

- a) Rat
- b) Bird
- c) Fish
- d) Insect



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