

International Academic  
Competitions

**Biology Examination**  
**Asian Championships 2023**

Name \_\_\_\_\_

School \_\_\_\_\_

Age \_\_\_\_\_

**Instructions – Mark your answers on the scantron provided. Correct answers are worth 2 points. Incorrect answers are worth –1 point. Questions left blank are worth 0 points. Write the answer to your tiebreaker question on the back of your scantron.**

1. Prokaryotic cells do not possess which of the following?
  - A. Capsule
  - B. Mitochondria
  - C. Flagella
  - D. Nucleus
2. Nerve cells perform which function?
  - A. Help fight off bacteria
  - B. Produce energy
  - C. Transport messages around the body
  - D. To help us move
3. The nucleus in a cell is similar to what in the human body?
  - A. Lungs
  - B. Brain
  - C. Stomach
  - D. Ears
4. What is the whip-like appendage that some prokaryotes use to move?
  - A. Flagella
  - B. Ribosome
  - C. Cilia
  - D. Lysosome
5. Which of the below are not made up of eukaryotic cells?
  - A. Humans
  - B. Bacteria
  - C. Plants
  - D. None of the above
6. Your skin acts like which part of a eukaryotic cell?
  - A. Golgi apparatus
  - B. Endoplasmic reticulum
  - C. Cell membrane
  - D. Ribosome
7. Ribosomes are responsible for producing what biomolecules?
  - A. Fats
  - B. Carbohydrates
  - C. Nucleic acids
  - D. Proteins
8. What organelle is famously called the powerhouse of the cell?
  - A. Mitochondria
  - B. Lysosomes
  - C. Nucleus
  - D. Cell wall
9. The nucleus, vacuole, and cytosol are classified as what?
  - A. The envelope of the cell
  - B. Organelles
  - C. DNA
  - D. Cytoplasm region
10. What is the common name for influenza?
  - A. Cold
  - B. Mumps
  - C. Measles
  - D. Flu
11. If you were infected with influenza, what symptoms would you experience?
  - A. Fever
  - B. Runny nose
  - C. Body aches
  - D. All of the above
12. What causes illnesses like COVID-19?
  - A. Virus
  - B. Fungus
  - C. Parasite
  - D. Prion
13. What is the most common way that viral illnesses are transmitted?
  - A. Dirty water
  - B. Insect bites
  - C. Direct or indirect contact with an infected person
  - D. All of the above
14. What is the importance of vaccinations?
  - A. To build your bodies immunity to a certain disease
  - B. To increase herd immunity to a certain disease
  - C. To help prevent the spread of a certain disease
  - D. All of the above
15. Name the three things plants need to perform photosynthesis.
  - A. Sunlight, oxygen, and sugar
  - B. Sunlight, carbon dioxide, and water
  - C. Soil, oxygen, and sugar
  - D. Darkness, carbon dioxide, and fertilizer

16. What gas do plants release as part of photosynthesis?  
A. Carbon dioxide  
B. Cyanide  
C. Oxygen  
D. Nitrogen
17. What compound is used to absorb the energy from sunlight?  
A. Chlorophyll  
B. Rhizomes  
C. Chloroplasts  
D. Tubers
18. What color is chlorophyll?  
A. Blue  
B. Red  
C. Yellow  
D. Green
19. What is the name of the compound used to store energy?  
A. Sucrose  
B. ATP  
C. Fats  
D. Glycogen
20. What is the Calvin Cycle?  
A. The Water Cycle  
B. Where energy is stored from photosynthesis  
C. The second phase of photosynthesis  
D. None of the above
21. What are the structures that contain chlorophyll?  
A. Nucleus  
B. Cell wall  
C. Vesicle  
D. Chloroplasts
22. How many main food groups are there?  
A. 2  
B. 6  
C. 8  
D. 5
23. In what food group would you place Milk, Cheese, & Yogurt fall under?  
A. Grains  
B. Dairy  
C. Fruits  
D. Vegetables
24. Identify the vegetable out of the following.  
A. Nuts  
B. Berries  
C. Carrots  
D. Rice
25. Nuts, fish, and pork are all examples of which food group?  
A. Vegetables  
B. Protein  
C. Fruits  
D. Dairy
26. Which of the below belong to the grain food group?  
A. Pasta  
B. Millet  
C. Rice  
D. All of the above
27. Pick the two main food groups that are slightly larger than the rest?  
A. Vegetables and Protein  
B. Fruits and Vegetables  
C. Grains and Vegetables  
D. Fruits and Protein
28. How would you best describe Calories?  
A. Energy stored in the food  
B. Mass of the food  
C. Vitamins stored in the food  
D. Volume of the food
29. What option would be the best if you wanted to lose weight?  
A. Eat whatever you want and work it off  
B. Eat healthy & exercise  
C. Just eat smaller portions of what you already eat  
D. Go on a crazy diet
30. Excluding Domain, which is the first level of classification?  
A. Species  
B. Class  
C. Kingdom  
D. Order
31. What is the 3rd level of classification?  
A. Genus  
B. Order  
C. Species  
D. Phylum
32. New cells being made by living organisms take place when?  
A. Very rarely  
B. Only when they are growing  
C. All the time  
D. Only when they are trying to heal an injury
33. During mitosis which of the following in the cell is duplicated?  
A. DNA  
B. Genetic code  
C. Functions  
D. All of the above

34. During mitosis, which of the following is the “normal” state?
- Prophase
  - Interphase
  - Metaphase
  - Telophase
35. Which phase has the chromosomes separate and move to opposite sides of the cell?
- Telophase
  - Anaphase
  - Interphase
  - Prophase
36. Which best describes the term cytokinesis?
- The splitting of a cell during mitosis
  - Chromatin condensing into chromosomes
  - Chromosomes separating
  - Second division during meiosis
37. What kind of cells in the human body are produced through meiosis?
- Muscle Cells
  - Sexual reproductive cells
  - Blood cells
  - Skin Cells
38. What is the percentage of DNA of the original cell is present in each new cell after meiosis?
- 100%
  - 50%
  - 25%
  - 75%
39. How big does a cell grow before splitting and forming two separate cells during binary fission?
- Twice
  - 1/4
  - Quadruple
  - 1/2
40. Which body system is composed of bones, ligaments, and tendons?
- Cardiovascular system
  - Skeletal system
  - Nervous system
  - Respiratory system
41. The spinal cord and nerves belong to which body system?
- Digestive system
  - Respiratory system
  - Nervous system
  - Skeletal system
42. The digestive system is responsible for doing what process in the human body?
- Moving the body around
  - Circulating blood through the body
  - Exchanging gasses within the body
  - Converting food into energy and nutrients
43. What does our immune system do?
- To distribute energy throughout the body
  - Helps communicate between different parts of the body
  - Help regenerate cells
  - Fights off diseases
44. Identify a protein that fights off diseases?
- T Cells
  - Antibodies
  - Antigens
  - Memory Cells
45. How do antibodies fight antigens?
- Both B & C
  - Specific binding sites on antibodies join with specific markers on antigens
  - Antibodies attack diseased cells while ignoring healthy cells
  - Antibodies destroy any cell they come in contact with
46. Identify which part of the immune system remembers antigens that have already attacked the body.
- Antibodies
  - Antigens
  - Memory cells
  - T cells
47. What are the cells called that get rid of cells that have been infected?
- B Cells
  - Memory Cells
  - Antigens
  - T Cells
48. Identify which of the following is NOT a good way to get immunity.
- Avoiding going to the doctor
  - Nursing
  - Vaccines
  - Getting sick
49. Vaccines introduce \_\_\_ into our bodies?
- Live microbes
  - Dead or modified microbes
  - Antibodies
  - Killer T Cells

50. Identify the disease that is known to be caused by a malfunction in the immune system.
- A. Type 1 Diabetes
  - B. Cancer
  - C. Asthma
  - D. Bronchitis
51. Identify the basic unit of heredity.
- A. Genes
  - B. Lipids
  - C. Chromosomes
  - D. Enzymes
52. What do we call scientists who study genes and heredity?
- A. Mathematicians
  - B. Astronomers
  - C. Geneticists
  - D. Physicists
53. In addition to proteins, what else makes up chromosomes?
- A. ATP
  - B. Ammonia
  - C. Carbon Dioxide
  - D. DNA
54. Human beings possess how many pairs of chromosomes?
- A. 89
  - B. 23
  - C. 233
  - D. 46
55. Which abbreviation is correct for deoxyribonucleic acid?
- A. DBN
  - B. RNA
  - C. DNA
  - D. DYNA
56. Who is considered the father of genetics?
- A. Gregor Mendel
  - B. Albert Einstein
  - C. Ben Franklin
  - D. Isaac Newton
57. Francis Crick & James Watson are credited with what discovery?
- A. The structure of the DNA molecule
  - B. The chromosome in the human cell
  - C. The electron microscope
  - D. All of the above
58. What shape does a DNA molecule take?
- A. Covalent
  - B. Triple triangle
  - C. Double helix
  - D. Octahedral
59. Which scientist's famous photograph 51 was instrumental in Watson and Crick's discovery of the shape of DNA?
- A. Thomas Mosely
  - B. JJ Dalton
  - C. Marie Curie
  - D. Rosalind Franklin
60. What is a pandemic?
- A. A type of vaccine
  - B. An epidemic that has spread across a large region
  - C. An epidemic that was started deliberately
  - D. A small epidemic
61. Which disease is responsible for causing the black death?
- A. Bubonic plague
  - B. Cholera
  - C. Smallpox
  - D. Influenza
62. Roughly one-third of the people in Europe were killed by what major pandemic?
- A. Spanish Flu
  - B. Plague of Athens
  - C. Black Death
  - D. Plague of Justinian
63. What is the name of the disease that was thought to have killed 90% of the Native Americans living in the Americas after the Europeans arrived?
- A. Malaria
  - B. Cholera
  - C. Smallpox
  - D. Typhoid Fever
64. What do we call animals that eat plants?
- A. Plantations
  - B. Vegans
  - C. Carnivores
  - D. Herbivores
65. The protective waxy layer on the surface of plants is called what?
- A. Leaf
  - B. Root
  - C. Cuticle
  - D. Spore
66. Which empire was affected by the plague of Justinian?
- A. British Empire
  - B. Byzantine Empire
  - C. Chinese Empire
  - D. Inca Empire

67. Which leader of Greece was killed by the plague of Athens?

- A. Pericles
- B. Draco
- C. Solon
- D. Alexander the Great

68. Which disease do researchers believe is most likely to have caused the plague of Athens?

- A. Typhus
- B. Smallpox
- C. Cholera
- D. Bubonic plague

69. What was the vector of transmission for the black death?

- A. Mosquitoes
- B. Infected food
- C. Through the air
- D. Fleas that lived on rats

70. The Spanish Flu pandemic occurred during what major war?

- A. Hundred years War
- B. Vietnam War
- C. World War I
- D. Spanish-American War

71. What disease still kills around 100,00 people each year?

- A. Smallpox
- B. Bubonic plague
- C. Cholera
- D. None of the above

72. Which of the following is considered to be a constitutive defense?

- A. Thorns
- B. Bark
- C. Cuticle
- D. All of the above

73. An induced defense is best described as which of the following?

- A. Sharp thorns that injure attackers
- B. A temporary defense
- C. Thick outer protective layer
- D. All of the above

74. Chrysanthemums, foxglove, and wisteria all have what type of defense?

- A. Barbs
- B. Poison
- C. Carnivorous
- D. Bad Taste

75. Mushrooms belong to which scientific group?

- A. Molds
- B. Club fungi
- C. Imperfect fungi
- D. Sac fungi

### Tiebreaker

This question will only be scored if there is a tie for placement on the exam. There is no penalty for a wrong answer to this question. Write your answer legibly on the back of your scantron.

How many base pairs are on chromosome 1 of a human genome?