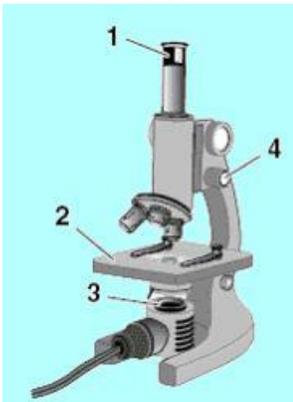


BIO SOL Review 1 - Research, Scientific Cooperation, Microscopes

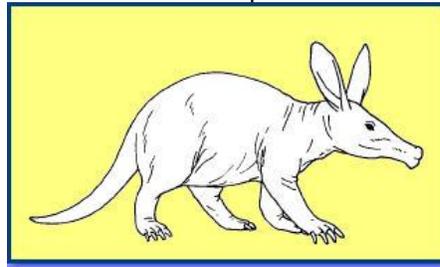
Name _____ Date _____

- (2006-30) An important feature of modern classification systems is that they —
 - group organisms that live in the same habitat
 - apply only to organisms that are alive today
 - can predict the discovery of new species
 - can incorporate new scientific discoveries
- (2004-35) An organism that causes infections in plants and animals, but cannot be seen with a light microscope similar to that used in a high school biology course, is most likely a —
 - virus
 - bacterium
 - protozoan
 - fungus
- (2002-50) A student wants to view cells under the compound microscope at a total magnification of 400X. If the eyepiece is 10X, which of the following objective lenses should be used?
 - 10X
 - 4X
 - 100X
 - 40X



- (2003-6) When viewing a prepared slide under the compound microscope, a student has to remove his glasses. This means he will need to readjust for fine focus with which part labeled above?
 - 1
 - 2
 - 3
 - 4
- (2004-4) Which of the following methods would provide the most accurate information for students collecting data about local attitudes concerning the use of alternative fuels for automobiles?
 - Track prices at nearby gas stations
 - Take an opinion poll of drivers
 - Study newspaper articles
 - Listen to speeches given by politicians
- (2004-38) Richard was observing black swallowtail butterflies in the field. Which one of these is an observation he made about a black swallowtail butterfly?
 - The black swallowtail belongs to the class Insecta.
 - The black swallowtail laid its eggs on a parsley plant.

- The black swallowtail likes to fly more than anything else.
 - The black swallowtail is closely related to the spicebush swallowtail.
- (2003-2) Which of these would be the best resource to research the symptoms and treatment of hypoglycemia?
 - Daily television news
 - New England Journal of Medicine
 - Journal of Zoology
 - Natural History Magazine
 - (2004-27) Which of the following came first in the scientific study of living things?
 - Light microscope
 - Electron microscope
 - Cell theory
 - Model of DNA
 - (2002-12) If a student needs to do research on heredity for a science project, which of these sources is the most reliable resource?
 - A weekly news magazine
 - A newspaper tabloid
 - A professional journal
 - A national newspaper
 - (2003-46) The discovery that chromosomes are involved in inheritance was made possible by the invention of the—
 - mercury thermometer
 - computer
 - microgram scale
 - microscope



- (2002-10) Which of these hypotheses is best supported by observations of this animal?
 - This animal is herbivorous.
 - This animal has poor hearing.
 - This animal usually hunts for food at night.
 - This animal spends much of its time digging.
- (2001-24) Henry's project is on porcupine populations in Virginia. He would like to use the phone book to help him make contacts. His most reliable contacts would probably be found by looking in the phone book under —
 - state agencies
 - newspapers
 - travel agencies
 - civil engineers
- (2006-40) A student researching a new discovery about the activity of mitochondria could find the most current and reliable information in a —
 - scientific journal
 - newspaper
 - popular news magazine
 - cell biology textbook

14. (2004-25) Which of the following best explains why a student researching genetics should use the most recent textbooks available?
- No technologies from more than ten years ago are still in use.
 - Research in Mendelian genetics began very recently.
 - New discoveries frequently add to older knowledge in genetics.
 - Older textbooks are more difficult to understand.

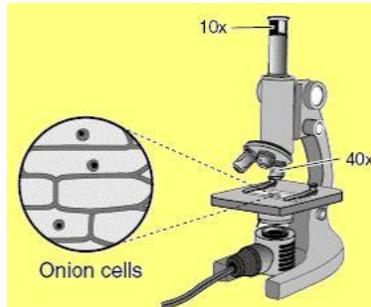
15. (2004-37) Which of the following scientific achievements best represents a collaborative effort among scientists?
- Gregor Mendel's study of pea plants enabled Thomas Morgan to become the first to locate a gene on a chromosome in *Drosophila*.
 - Anton van Leeuwenhoek invented the microscope in the 1600s, which was later used by others to study cells.
 - Robert Koch studied infectious diseases, and Louis Pasteur demonstrated that life only comes from life.
 - Francis Crick and James Watson worked together to design the double-helix model of DNA.

16. (2002-4) In 1928, the scientist Alexander Fleming was trying to grow the bacterium *Staphylococcus*, and by chance, discovered that it would not grow in the presence of a mold that he named *Penicillium*. In 1939, Ernst Chain and Howard Florey purified penicillin, and in 1941, penicillin was first used to treat bacterial diseases. In 1945, Alexander Fleming, Ernst Chain, and Howard Florey received the Nobel Prize in medicine for the discovery and isolation of penicillin. These facts show that —
- Florey and Chain unfairly used Fleming's work and should not have received the Nobel Prize
 - whenever possible, the Nobel Prize should be given to more than one person
 - scientific progress often requires the efforts of many people working together
 - chance plays no role in scientific discoveries

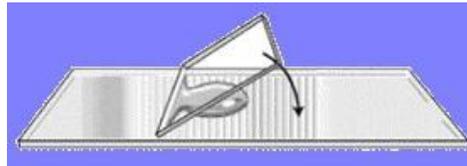
17. (2005-4) A biology class in Virginia conducted a survey of the plant species found on their school grounds. They found several plants that they didn't recognize. What resources would be most helpful to the class in identifying the plants and determining if they were introduced as exotic species?
- Fossil records and historical society publications
 - Virginia newspapers and science journals
 - Virginia native plant checklists and plant identification keys
 - Biology textbooks and the encyclopedia

18. (2005-42) In 1869, DNA was discovered within the nuclei of cells. By the 1940s, scientists knew that chromosomes were made of both DNA and protein but did not know which was the genetic material of cells. In the 1950s, scientists demonstrated that DNA is the

- material responsible for heredity. In 1953, using information collected by other scientists, an American biologist and an English physicist built a three-dimensional model of DNA. These discoveries best illustrate the importance of —
- replication of results
 - collaborative efforts among scientists
 - recent improvements in the scientific method
 - independent research



19. (2005-1) What is the total magnification used to view these onion cells through this microscope setup?
- 50
 - 400
 - 40
 - 10



20. (2001-18) The picture shows a coverslip correctly being lowered onto a slide. This method is used because it —
- prevents the escape of microorganisms found in the water
 - reduces the possibility of air bubbles on the slide
 - prevents the coverslip from moving
 - allows microorganisms to move freely in the water
21. (2004-44) Early classification systems consisted of two kingdoms; *Plantae* and *Animalia*. What scientific development allowed taxonomists to establish the *Monera* and *Protista* kingdoms?
- Development of Koch's postulates
 - Creation of electrophoresis
 - Discovery of DNA
 - Invention of the electron microscope

22. (2006-23) As part of their training, biologists learn the history of developments in their field of interest. Which best explains the importance of this education?
- It provides background information since most conclusions from before 1950 have been disproven.
 - It gives biologists an understanding of their field so they can expand on earlier knowledge.
 - It narrows their field of research because most important discoveries in biology have already been made.
 - It allows scientists to rule out models that have already been tested.