

Enhanced Science 7: Solutions, Cells, and Microscopy

Science · Answer Key · 26 Questions

1. Which of the following is a simple measure to express the concentration of solutions quantitatively?

A) Percent by mass

B) Boiling point

C) Density

D) Viscosity

2. How does temperature generally affect the solubility of a solute in a given solvent?

A) It increases solubility

B) It decreases solubility

C) It has no effect on solubility

D) It can either increase or decrease solubility depending on the solute

3. What indicator can be used to classify common household solutions as acidic, basic, or neutral?

A) Litmus paper

B) Thermometer

C) Magnifying glass

D) pH meter

4. Which part of a compound microscope is used to adjust the amount of light passing through the specimen?

A) Diaphragm

B) Eyepiece

C) Objective lens

D) Stage clip

5. When using a microscope, what is the formula to calculate the total magnification?

A) Eyepiece magnification x Objective lens magnification

B) Eyepiece magnification + Objective lens magnification

C) Objective lens magnification / Eyepiece magnification

D) Eyepiece magnification - Objective lens magnification

6. What part of the cell is often referred to as the control center and contains genetic material?

- A) Cytoplasm
- B) Nucleus**
- C) Cell membrane
- D) Organelle

7. Which scientist is credited with observing cork cells and coining the term 'cell'?

- A) Matthias Schleiden
- B) Theodor Schwann
- C) Robert Hooke**
- D) Rudolf Virchow

8. An organism made up of only one cell is classified as:

- A) Multicellular
- B) Unicellular**
- C) Prokaryotic
- D) Eukaryotic

9. A key structural difference between plant and animal cells is the presence of a:

- A) Nucleus
- B) Cytoplasm
- C) Cell wall**
- D) Cell membrane

10. The cell membrane's function is to act as a semipermeable barrier that regulates:

- A) Cell division
- B) Energy production
- C) Movement of materials**
- D) Protein synthesis

11. Which of the following is a quantitative measure of concentration: grams per milliliter?

- A) True**
- B) False
- C) Sometimes
- D) Depends on the solute

12. What is the primary function of the cytoplasm in a cell?

- A) To control cell activities
- B) To provide structural support
- C) To hold organelles and be the site of many metabolic reactions**
- D) To protect the cell from damage

13. Which scientist proposed that all cells arise from pre-existing cells?

- A) Robert Hooke
- B) Matthias Schleiden
- C) Theodor Schwann
- D) Rudolf Virchow**

14. What is the typical role of a 'salt containing' solution when tested with litmus paper?

- A) Turns litmus red
- B) Turns litmus blue
- C) Has no effect on litmus paper**
- D) Reacts vigorously

15. Proper handling of a microscope includes:

- A) Carrying it by the eyepiece
- B) Storing it in a dusty area
- C) Using both hands, one on the arm and one on the base**
- D) Placing heavy objects on it

16. Observing specimens safely and accurately under a microscope involves:

- A) Looking directly at the light source
- B) Using the coarse adjustment knob on high power
- C) Starting with the lowest power objective and moving up**
- D) Touching the lenses with fingers

17. Which of the following is a characteristic of multicellular organisms?

- A) Lack of specialized cells
- B) Simple structural complexity
- C) Levels of biological organization**
- D) Single cell performs all functions

18. The nucleus of a cell contains:

- A) Ribosomes
- B) Genetic material**
- C) Chloroplasts
- D) Vacuoles

19. What is the primary role of the objective lenses on a compound microscope?

A) To magnify the image

B) To control the light

C) To hold the specimen

D) To adjust focus

20. Which scientist is known for stating that all plants are made of cells?

A) Robert Hooke

B) Matthias Schleiden

C) Theodor Schwann

D) Rudolf Virchow

21. Percent by mass is a way to express the concentration of a solution by comparing the mass of the solute to the:

A) Mass of the solvent

B) Volume of the solvent

C) Total mass of the solution

D) Total volume of the solution

22. When classifying solutions with litmus paper, a basic solution will typically turn litmus paper:

A) Red

B) Blue

C) Purple

D) Colorless

23. To observe specimens clearly, it is important to use the correct technique for focusing under:

A) Low-power objectives only

B) High-power objectives only

C) Both low- and high-power objectives

D) No objectives

24. The cell theory states that all living things are composed of:

A) Atoms

B) Molecules

C) Cells

D) Organelles

25. A plant cell typically has a large central vacuole, which is responsible for:

- A) Photosynthesis
- B) Storing water and maintaining turgor pressure**
- C) Protein synthesis
- D) Waste removal

26. Microscopy involves the use of specialized instruments to observe objects that are:

- A) Very large
- B) Invisible to the naked eye**
- C) Only found in space
- D) Extremely hot