

BIOL-8 Practice Test 02

Modules 5-15: Membranes through Body Systems

Instructions: This practice test covers material from Modules 5-15. Answer all questions to the best of your ability.

Part A: Multiple Choice (25 questions)

Choose the best answer for each question.

Modules 5-6: Membranes & Metabolism

1. The cell membrane's phospholipid bilayer has:
 - A) Hydrophilic heads facing outward
 - B) Hydrophobic heads facing outward
 - C) Only proteins on the surface
 - D) No protein component

2. Endocytosis is the process of:
 - A) Releasing materials from the cell
 - B) Taking materials into the cell
 - C) Passive diffusion
 - D) Osmotic balance

3. Which process uses vesicles to export materials from the cell?
 - A) Endocytosis
 - B) Exocytosis
 - C) Facilitated diffusion
 - D) Osmosis

4. Anabolic reactions:

- A) Break down molecules
- B) Build up molecules
- C) Require no energy
- D) Release energy

5. Competitive inhibition occurs when:

- A) Temperature denatures an enzyme
 - B) A molecule blocks the active site
 - C) pH is too high
 - D) No substrate is present
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Modules 7-8: Mitosis & Meiosis

6. Chromatin condenses into visible chromosomes during:

- A) Interphase
- B) Prophase
- C) Anaphase
- D) Telophase

7. Sister chromatids separate during which phase of mitosis?

- A) Prophase
- B) Metaphase
- C) Anaphase
- D) Telophase

8. Meiosis produces:

- A) Two diploid cells
- B) Four diploid cells
- C) Four haploid cells
- D) Two haploid cells

9. Independent assortment refers to:

- A) Crossing over
- B) Random alignment of homologs at metaphase I
- C) Sister chromatid separation
- D) DNA replication

10. Crossing over increases:

- A) Chromosome number
 - B) Genetic variation
 - C) Cell size
 - D) Mutation rate
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Module 9: Inheritance

11. In a monohybrid cross $Aa \times Aa$, the phenotypic ratio is:

- A) 1:2:1
- B) 3:1
- C) 9:3:3:1
- D) 1:1

12. A test cross involves mating with a:

- A) Heterozygous individual
- B) Homozygous dominant individual
- C) Homozygous recessive individual
- D) Random individual

13. Sex-linked traits are carried on:

- A) Autosomes
- B) Sex chromosomes
- C) Mitochondrial DNA
- D) Plasmids

Modules 10-12: Tissues & Skeletal/Muscular Systems

14. The four basic tissue types are epithelial, connective, muscle, and:

- A) Blood
- B) Bone
- C) Nervous
- D) Skin

15. The function of bone (skeletal system) includes all EXCEPT:

- A) Support
- B) Protection
- C) Blood cell production
- D) Hormone production

16. Skeletal muscle is controlled:

- A) Involuntarily
- B) Voluntarily
- C) Automatically only
- D) By hormones only

17. The sliding filament theory describes:

- A) Bone growth
- B) Muscle contraction
- C) Nerve transmission
- D) Blood flow

Modules 13-15: Pathogens & Cardiovascular/Respiratory Systems

18. Pathogens include all of the following EXCEPT:

- A) Bacteria
- B) Viruses
- C) Red blood cells
- D) Fungi

19. The heart chamber that pumps blood to the lungs is the:

- A) Left atrium
- B) Right atrium
- C) Left ventricle
- D) Right ventricle

20. Blood vessels that carry blood AWAY from the heart are:

- A) Veins
- B) Arteries
- C) Capillaries
- D) Lymph vessels

21. The function of red blood cells is to:

- A) Fight infection
- B) Carry oxygen
- C) Clot blood
- D) Produce antibodies

22. Gas exchange in the lungs occurs at the:

- A) Bronchi
- B) Trachea
- C) Alveoli
- D) Bronchioles

23. The diaphragm is a muscle used for:

- A) Circulation
- B) Breathing

- C) Digestion
- D) Movement

24. The correct path of air through the respiratory system is:

- A) Nose → Bronchi → Trachea → Lungs
- B) Nose → Trachea → Bronchi → Alveoli
- C) Lungs → Trachea → Bronchi → Nose
- D) Bronchi → Nose → Trachea → Lungs

25. White blood cells function primarily to:

- A) Carry oxygen
- B) Fight infection
- C) Clot blood
- D) Transport nutrients

Part B: Fill in the Blank (10 questions)

Write the correct term in the blank.

- 26.** The process by which cells take in fluid and dissolved molecules is _____.
- 27.** The phase of interphase when DNA is copied is called _____ phase.
- 28.** Gametes (sex cells) contain the _____ number of chromosomes.
- 29.** The four tissue types are epithelial, connective, muscle, and _____.
- 30.** Bones store minerals, particularly _____ and phosphorus.
- 31.** The protein filaments that slide past each other during muscle contraction are actin and _____.
- 32.** The _____ system is the body's first line of defense against pathogens.
- 33.** Blood is pumped from the left ventricle into the _____.

34. The exchange of oxygen and carbon dioxide occurs across the thin walls of the _____.

35. Hemoglobin is the protein in red blood cells that carries _____.

Part C: Short Answer (5 questions)

Answer each question in 2-3 complete sentences.

36. Compare and contrast mitosis and meiosis in terms of their purpose and outcomes.

37. Explain how the muscular and skeletal systems work together to produce movement.

38. Describe the pathway blood takes through the heart and to the lungs.

39. Explain how the respiratory system exchanges gases (oxygen and carbon dioxide).

40. Describe two ways the body defends itself against pathogens.

End of Practice Test 02