

# **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.

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### **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

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## **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
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## **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
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## **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 \_\_\_\_\_.

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## **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.

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*End of Practice Test 02*