

Fundamentals of Anatomy & Physiology, 10e, GE (Martini)

Chapter 1 An Introduction to Anatomy and Physiology

Multiple Choice Questions: Section One

1) _____ is considered the oldest medical science.

- A) Anatomy
- B) Biology
- C) Physiology
- D) Cytology
- E) Embryology

Answer: A

Learning Outcome: 1-1

Bloom's Taxonomy: Knowledge

2) Anatomy is to _____ as physiology is to _____.

- A) function; form
- B) form; structure
- C) structure; function
- D) structure; form
- E) growth; form

Answer: C

Learning Outcome: 1-2

Bloom's Taxonomy: Comprehension

3) The analysis of the internal structure of individual cells is called

- A) cytology.
- B) histology.
- C) embryology.
- D) physiology.
- E) anatomy.

Answer: A

Learning Outcome: 1-3

Bloom's Taxonomy: Knowledge

4) The study of the general form and superficial markings of an organism is called _____ anatomy.

- A) gross
- B) surface
- C) systemic
- D) regional
- E) surgical

Answer: B

Learning Outcome: 1-3

Bloom's Taxonomy: Knowledge

5) The study of the superficial and internal features in a specific area of the body is called _____ anatomy.

- A) surface
- B) regional
- C) surgical
- D) pathological
- E) radiographic

Answer: B

Learning Outcome: 1-3

Bloom's Taxonomy: Knowledge

6) Anatomical features that change during illness are studied in _____ anatomy.

- A) gross
- B) surface
- C) microscopic
- D) pathological
- E) regional

Answer: D

Learning Outcome: 1-3

Bloom's Taxonomy: Knowledge

7) The study of the first two months of development is termed

- A) histology.
- B) embryology.
- C) cytology.
- D) pathology.
- E) organology.

Answer: B

Learning Outcome: 1-3

Bloom's Taxonomy: Knowledge

8) The study of the function of specific organ systems is called

- A) systemic physiology.
- B) organ physiology.
- C) cell physiology.
- D) pathological physiology.
- E) histology.

Answer: A

Learning Outcome: 1-3

Bloom's Taxonomy: Knowledge

9) Cardiovascular function is an example of

- A) histophysiology.
- B) organ physiology.
- C) systemic physiology.
- D) pathological physiology.
- E) physiological chemistry.

Answer: C

Learning Outcome: 1-3

Bloom's Taxonomy: Knowledge

10) The study of the liver is to gross anatomy as the study of a liver cell is to

- A) physiology.
- B) regional anatomy.
- C) cytology.
- D) systemic anatomy.
- E) radiographic anatomy.

Answer: C

Learning Outcome: 1-3

Bloom's Taxonomy: Comprehension

11) Organ physiology is to _____ as gross anatomy is to _____.

- A) cell physiology; microscopic anatomy
- B) macroscopic anatomy; unbalance
- C) equilibrium; macroscopic anatomy
- D) balance; equilibrium
- E) imbalance; microscopic anatomy

Answer: A

Learning Outcome: 1-3

Bloom's Taxonomy: Comprehension

12) Which of the following is arranged in correct order from the most **complex** to the **simplest**?

- A) cellular, tissue, molecular, system, organ, organism
- B) molecular, cellular, tissue, organ, system, organism
- C) tissue, cellular, molecular, organ, system, organism
- D) organ, organism, molecular, cellular, tissue, system
- E) organism, system, organ, tissue, cellular, molecular

Answer: E

Learning Outcome: 1-4

Bloom's Taxonomy: Comprehension

13) Which organ system provides support, protection of soft tissue, mineral storage, and blood formation?

- A) integumentary
- B) muscular
- C) skeletal
- D) nervous
- E) endocrine

Answer: C

Learning Outcome: 1-4

Bloom's Taxonomy: Knowledge

14) Which organ system transports nutrients, metabolic wastes, gases, and defense cells?

- A) cardiovascular
- B) digestive
- C) muscular
- D) respiratory
- E) urinary

Answer: A

Learning Outcome: 1-4

Bloom's Taxonomy: Knowledge

15) Which organ system includes the spleen and the tonsils?

- A) digestive
- B) endocrine
- C) nervous
- D) cardiovascular
- E) lymphatic

Answer: E

Learning Outcome: 1-4

Bloom's Taxonomy: Knowledge

16) The kidneys and ureters are organs of the _____ system.

- A) endocrine
- B) digestive
- C) respiratory
- D) urinary
- E) lymphatic

Answer: D

Learning Outcome: 1-4

Bloom's Taxonomy: Knowledge

17) The pituitary gland and thyroid gland are organs of the _____ system.

- A) endocrine
- B) cardiovascular
- C) respiratory
- D) lymphatic
- E) digestive

Answer: A

Learning Outcome: 1-4

Bloom's Taxonomy: Knowledge

18) Which organ system removes carbon dioxide from the bloodstream?

- A) cardiovascular
- B) lymphatic
- C) respiratory
- D) digestive
- E) endocrine

Answer: C

Learning Outcome: 1-4

Bloom's Taxonomy: Knowledge

19) Lungs are to the respiratory system as the liver is to the _____ system.

- A) lymphatic
- B) urinary
- C) digestive
- D) cardiovascular
- E) nervous

Answer: C

Learning Outcome: 1-4

Bloom's Taxonomy: Knowledge

20) Skin, hair, and nails are associated with the _____ system.

- A) skeletal
- B) muscular
- C) integumentary
- D) endocrine
- E) immune

Answer: C

Learning Outcome: 1-4

Bloom's Taxonomy: Knowledge

21) A chemical imbalance in the body can cause the heart to stop pumping blood, which in turn will cause other tissues and organs to cease functioning. This observation supports the view that

- A) all organisms are composed of cells.
- B) all levels of organization within an organism are interdependent.
- C) chemical molecules make up cells.
- D) blood has magical properties.
- E) congenital defects can be life-threatening.

Answer: B

Learning Outcome: 1-4

Bloom's Taxonomy: Application

22) In general, the nervous system does each of the following **except**

- A) help to maintain homeostasis.
- B) respond rapidly to change.
- C) direct long-term responses to change.
- D) direct very specific responses.
- E) interpret sensory information.

Answer: C

Learning Outcome: 1-5

Bloom's Taxonomy: Comprehension

23) Which one of the following is **not** a characteristic of the endocrine system?

- A) releases chemical messengers called hormones
- B) produces a more rapid response than the nervous system
- C) produces effects that last for days or longer
- D) produces an effect that involves several organs or tissues at the same time
- E) important homeostatic system

Answer: B

Learning Outcome: 1-5

Bloom's Taxonomy: Comprehension

24) The central principle of physiology is

- A) nutrition.
- B) reflexes.
- C) homeostasis.
- D) stimulation.
- E) temperature regulation.

Answer: C

Learning Outcome: 1-5

Bloom's Taxonomy: Comprehension

25) The maintenance of a relatively constant internal environment in an organism is termed

- A) positive feedback.
- B) homeostasis.
- C) negative feedback.
- D) effector control.
- E) integration.

Answer: B

Learning Outcome: 1-5

Bloom's Taxonomy: Knowledge

26) When body temperature rises, a center in the brain initiates physiological changes to decrease the body temperature. This is an example of

- A) negative feedback.
- B) positive feedback.
- C) nonhomeostatic regulation.
- D) diagnostic regulation.
- E) fever.

Answer: A

Learning Outcome: 1-6

Bloom's Taxonomy: Comprehension

27) A cell or an organ that responds to commands of the control center in negative feedback is termed a(n)

- A) receptor.
- B) thermoregulator.
- C) hypothalamus.
- D) effector.
- E) stimulus.

Answer: D

Learning Outcome: 1-6

Bloom's Taxonomy: Knowledge

28) This type of feedback exaggerates the effects of variations from normal.

- A) negative
- B) positive
- C) neutral
- D) depressing
- E) All of the answers are correct.

Answer: B

Learning Outcome: 1-6

Bloom's Taxonomy: Knowledge

29) If a response **decreases** a disturbance, the control system is classified as a _____ feedback system.

- A) deficit
- B) negative
- C) neutral
- D) polarized
- E) positive

Answer: B

Learning Outcome: 1-6

Bloom's Taxonomy: Comprehension

30) If a response **increases** a disturbance, the control system is classified as a _____ feedback system.

- A) deficit
- B) negative
- C) neutral
- D) polarized
- E) positive

Answer: E

Learning Outcome: 1-6

Bloom's Taxonomy: Comprehension

31) An example of a receptor in a negative feedback loop controlling body temperature would be

- A) temperature sensors on the skin that detect a stimulus.
- B) sweat glands that increase secretion.
- C) regulatory centers that send commands to an effector.
- D) effectors that cause blood vessels to dilate.
- E) sweat glands that act like effectors.

Answer: A

Learning Outcome: 1-6

Bloom's Taxonomy: Comprehension

32) The integrating center for the negative feedback loop that regulates body temperature is the

- A) hypothalamus.
- B) skin.
- C) temperature sensor.
- D) positive feedback center.
- E) thermostat.

Answer: A

Learning Outcome: 1-6

Bloom's Taxonomy: Comprehension

33) The quadrants of the abdominopelvic region include all of the following **except**

- A) right upper quadrant (RUQ).
- B) right lower quadrant (RLQ).
- C) left upper quadrant (LUQ).
- D) left lower quadrant (LLQ).
- E) pelvic quadrant.

Answer: E

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

34) Which of the following is **not** considered an abdominopelvic region?

- A) right hypochondriac
- B) right inguinal region
- C) left lumbar
- D) left hypochondriac
- E) upper

Answer: E

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

35) A person who is standing facing forward with hands at the sides and palms facing forward is in the _____ position.

- A) supine
- B) prone
- C) anatomical
- D) frontal
- E) sagittal

Answer: C

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

36) An anatomical term that means the **same** as ventral is

- A) posterior.
- B) inferior.
- C) abdominal.
- D) anterior.
- E) superior.

Answer: D

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

37) The heart is _____ to the lungs.

- A) lateral
- B) medial
- C) posterior
- D) proximal
- E) distal

Answer: B

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

38) The wrist is _____ to the elbow.

- A) proximal
- B) distal
- C) lateral
- D) medial
- E) horizontal

Answer: B

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

39) The chin is _____ to the nose.

- A) anterior
- B) superior
- C) posterior
- D) inferior
- E) medial

Answer: D

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

40) Which of the following regions corresponds to the buttocks?

- A) pelvic
- B) cephalic
- C) gluteal
- D) lumbar
- E) thoracic

Answer: C

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

41) Which of the following terms refers to the foot?

- A) cervical
- B) brachial
- C) antebrachial
- D) femoral
- E) pedal

Answer: E

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

42) Which plane divides the body into right and left parts?

- A) proximal
- B) frontal
- C) orthogonal
- D) transverse
- E) sagittal

Answer: E

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

43) A midsagittal section of the body would pass through the

- A) kidney.
- B) lung.
- C) heart.
- D) spleen.
- E) leg.

Answer: C

Learning Outcome: 1-7

Bloom's Taxonomy: Comprehension

44) The plane that separates the abdominal and the pelvic cavities is

- A) the mediastinum.
- B) sagittal on the brachium.
- C) transverse at the hips.
- D) midsagittal on the trunk.
- E) superior to the thorax.

Answer: C

Learning Outcome: 1-7

Bloom's Taxonomy: Comprehension

45) Terms of anatomical direction are used to describe

- A) one body part in relation to another.
- B) surgical procedures.
- C) a supine position.
- D) the nervous system.
- E) living matter.

Answer: A

Learning Outcome: 1-7

Bloom's Taxonomy: Comprehension

46) While standing erect, the direction of caudal is

- A) toward the head.
- B) toward the heel.
- C) lateral to the trunk.
- D) medial to the sides.
- E) posterior to the head.

Answer: B

Learning Outcome: 1-7

Bloom's Taxonomy: Comprehension

47) While standing in the anatomical position,

- A) front refers to anterior.
- B) front refers to ventral.
- C) back refers to posterior.
- D) back refers to dorsal.
- E) All of the answers are correct.

Answer: E

Learning Outcome: 1-7

Bloom's Taxonomy: Comprehension

48) The liver is primarily located in the _____ quadrant.

- A) right upper
- B) left upper
- C) right lower
- D) left lower
- E) hepatic

Answer: A

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

49) The urinary bladder is found in the _____ quadrant and the _____ quadrant.

- A) right upper; right lower
- B) left upper; left lower
- C) left upper; right upper
- D) right lower; left lower

Answer: D

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

50) The diaphragm muscle separates the _____ from the _____.

- A) pleural cavity; mediastinum
- B) thoracic cavity; abdominopelvic cavity
- C) pericardial cavity; pleural cavity
- D) abdominal cavity; pelvic cavity
- E) pericardial sac; pericardial cavity

Answer: B

Learning Outcome: 1-8

Bloom's Taxonomy: Knowledge

51) The two major divisions of the ventral body cavity are the

- A) pelvic and thoracic.
- B) cranial and sacral.
- C) lateral and medial.
- D) thoracic and abdominopelvic.
- E) dorsal and ventral.

Answer: D

Learning Outcome: 1-8

Bloom's Taxonomy: Knowledge

52) The thoracic cavity contains the

- A) coelom.
- B) pericardial cavity.
- C) pelvic cavity.
- D) pleural cavities.
- E) pericardial and pleural cavities.

Answer: E

Learning Outcome: 1-8

Bloom's Taxonomy: Knowledge

53) The serous membrane covering the stomach and most of the intestines is called the

- A) pericardium.
- B) peritoneum.
- C) pleura.
- D) mediastinum.
- E) abdomen.

Answer: B

Learning Outcome: 1-8

Bloom's Taxonomy: Knowledge

54) Which of the following organs is described as retroperitoneal?

- A) stomach
- B) kidney
- C) urinary bladder
- D) large intestine
- E) spleen

Answer: B

Learning Outcome: 1-8

Bloom's Taxonomy: Knowledge

55) The right pleural cavity contains

- A) the heart.
- B) the trachea.
- C) the left lung.
- D) the right lung.
- E) both lungs.

Answer: D

Learning Outcome: 1-8

Bloom's Taxonomy: Knowledge

56) Which of the following organs is **not** contained within the abdominal cavity?

- A) stomach
- B) small intestine
- C) ovary
- D) spleen
- E) pancreas

Answer: C

Learning Outcome: 1-8

Bloom's Taxonomy: Knowledge

57) Visceral pericardium is located

- A) on the heart itself.
- B) lining the pleural cavity.
- C) lining the pericardial cavity.
- D) on the lung itself.
- E) lining the peritoneal cavity.

Answer: A

Learning Outcome: 1-8

Bloom's Taxonomy: Knowledge

58) The mediastinum

- A) contains the pleural cavities.
- B) separates the pleural cavities.
- C) contains the pericardial cavity.
- D) contains the pleural cavities and pericardial cavity.
- E) separates the pleural cavities and includes the pericardial cavity.

Answer: E

Learning Outcome: 1-8

Bloom's Taxonomy: Knowledge

59) Identify the structure located within the mediastinum.

- A) pericardial cavity
- B) small intestine
- C) lung
- D) spleen
- E) stomach

Answer: A

Learning Outcome: 1-8

Bloom's Taxonomy: Comprehension

60) Which of the following imaging techniques is used to monitor blood flow through specific organs, such as the brain, heart, lungs, and kidneys?

- A) PET scan
- B) ultrasound
- C) digital subtraction angiography
- D) MRI
- E) CT scan

Answer: C

Learning Outcome: 1-8

Bloom's Taxonomy: Knowledge

Multiple Choice Questions: Section Two

1) Identify the branch of biological science that studies the external and internal structure of the body and the physical relationship among body parts.

- A) genetics
- B) physiology
- C) embryology
- D) anatomy
- E) cytology

Answer: D

Learning Outcome: 1-2

Bloom's Taxonomy: Knowledge

2) Identify the branch of biological science that deals with the study of how living organisms perform their vital functions.

- A) genetics
- B) physiology
- C) embryology
- D) anatomy
- E) cytology

Answer: B

Learning Outcome: 1-2

Bloom's Taxonomy: Knowledge

3) Anatomy uses a special language, called _____ terminology, which involves the use of word roots, prefixes, suffixes, and combining forms to construct terms related to the body in health and disease.

- A) clinical
- B) pathological
- C) medical
- D) anatomical
- E) surgical

Answer: C

Learning Outcome: 1-2

Bloom's Taxonomy: Knowledge

4) _____ serves as a worldwide official standard of anatomical vocabulary.

- A) *Gray's Anatomy*
- B) *Terminologia Anatomica*
- C) *Hippocratic Corpus*
- D) *Anatomia Inteligencia*
- E) *De Materia Medica*

Answer: B

Learning Outcome: 1-2

Bloom's Taxonomy: Knowledge

5) The study of the changes in form that occur between conception and physical maturity is called _____ anatomy.

- A) developmental
- B) clinical
- C) systemic
- D) embryological
- E) physiological

Answer: A

Learning Outcome: 1-3

Bloom's Taxonomy: Knowledge

6) The tendency for physiological systems to stabilize internal conditions is called

- A) self-regulation.
- B) homeostasis.
- C) equilibriosis.
- D) hemopoiesis.
- E) amplification.

Answer: B

Learning Outcome: 1-5

Bloom's Taxonomy: Knowledge

7) _____ occurs when the activities of organs are regulated locally.

Answer: E

- A) Self- regulation
- B) Automatic regulation
- C) Intuitive regulation
- D) Extrinsic regulation
- E) Amplification

Answer: E

Learning Outcome: 1-5

Bloom's Taxonomy: Knowledge

8) Homeostatic regulation usually involves a(n) _____ that detects a particular stimulus, and a(n) _____ that responds to the stimulus by communicating with a(n) _____ whose activity has an effect on the same stimulus.

- A) control center; effector; receptor
- B) receiver; communicator; effector
- C) receptor; control center; effector
- D) effector; receiver; communicator
- E) control center; receiver; effector

Answer: C

Learning Outcome: 1-5

Bloom's Taxonomy: Comprehension

9) _____ results from the activities of the nervous or endocrine system.

- A) Self-regulation
- B) Automatic regulation
- C) Intrinsic regulation
- D) Extrinsic regulation
- E) Autoregulation

Answer: D

Learning Outcome: 1-5

Bloom's Taxonomy: Knowledge

10) Disease is an indicator of

- A) negative feedback.
- B) signs and symptoms.
- C) homeostatic failure.
- D) positive feedback.
- E) All of the answers are correct.

Answer: C

Learning Outcome: 1-6

Bloom's Taxonomy: Knowledge

11) A person lying face down is in the _____ position.

- A) anatomical
- B) prone
- C) supine
- D) ventral
- E) prostrate

Answer: B

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

12) A person lying on the bed and gazing at the ceiling is in the _____ position.

- A) prone
- B) supine
- C) anatomical
- D) dorsal
- E) caudal

Answer: B

Learning Outcome: 1-7

Bloom's Taxonomy: Comprehension

- 13) The common term for the buccal region is the
- A) back.
 - B) waist.
 - C) breast.
 - D) cheeks.
 - E) buttocks.

Answer: D

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

- 14) The common term for the carpal region is the
- A) wrist.
 - B) fingers.
 - C) ankle.
 - D) shin.
 - E) chest.

Answer: A

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

- 15) The common name for the pollex is the
- A) ear lobe.
 - B) belly.
 - C) big toe.
 - D) hand.
 - E) thumb.

Answer: E

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

- 16) The common name for the patella is the
- A) forehead.
 - B) knee.
 - C) heel.
 - D) palm of the hand.
 - E) chin.

Answer: B

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

17) A cut parallel to the midsagittal plane would produce a(n) _____ section.

- A) frontal
- B) transverse
- C) oblique
- D) parasagittal
- E) coronal

Answer: D

Learning Outcome: 1-7

Bloom's Taxonomy: Knowledge

18) Which of the following imaging techniques is used to monitor blood flow through specific organs, such as the brain, heart, lungs, and kidneys?

- A) PET scan
- B) ultrasound
- C) digital subtraction angiography
- D) MRI
- E) CT scan

Answer: C

Learning Outcome: 1-8

Bloom's Taxonomy: Knowledge

Essay Questions

1) What is homeostatic regulation, and what is its physiological importance?

Answer: Homeostatic regulation refers to adjustments in physiological systems that are responsible for the preservation of a constant internal environment. This provides a favorable environment for the body's cells.

Learning Outcome: 1-6

Bloom's Taxonomy: Comprehension

2) During exercise, blood flow to skeletal muscles increases. The initial response that increases blood flow is automatic and independent of the nervous and endocrine systems. Which type of homeostatic regulation is this? Why?

Answer: The initial increase in blood flow to active muscles is an example of autoregulation. For example, when oxygen levels decline in a tissue, the cells release chemicals that dilate local blood vessels. This dilation increases the rate of blood flow and provides more oxygen to the region even before responses from the nervous or endocrine system take place. Autoregulation does not require the nervous or endocrine system.

Learning Outcome: 1-6

Bloom's Taxonomy: Application

3) Name the organs found in the thoracic cavity.

Answer: lungs, heart, trachea, esophagus, thymus, major blood vessels connected to the heart

Learning Outcome: 1-8

Bloom's Taxonomy: Knowledge

4) Name the two upper abdominal quadrants and list the organs that lie in each.

Answer: right upper quadrant (RUQ): right lobe of liver, gallbladder, right kidney, portions of stomach, large and small intestines; left upper quadrant (LUQ): left lobe of liver, stomach, pancreas, left kidney, spleen, portions of large intestine

Learning Outcome: 1-8

Bloom's Taxonomy: Comprehension