AltMedASA
Anatomy & Physiology
Project Number 1
(May 2022 – Pass 50%)

Name: _____

Registration # (Optional): _____

Date Completed: _____

1. View this animation (http://openstaxcollege.org/l/metabolic) to learn more about metabolic processes.
What kind of catabolism occurs in the heart?

2. Water concentration in the body is critical for proper functioning. A person's body retains very tight control on water levels without conscious control by the person. Watch this video (http://openstaxcollege.org/l/H2Ocon) to learn more about water concentration in the body.
Which organ has primary control over the amount of water in the body?

3. A CT or CAT scan relies on a circling scanner that revolves around the patient's body. Watch this video (http://openstaxcollege.org/l/CATscan) to learn more about CT and CAT scans.
What type of radiation does a CT scanner use?

4. A patient undergoing an MRI is surrounded by a tube-shaped scanner. Watch this video (http://openstaxcollege.org/l/MRI) to learn more about MRIs. What is the function of magnets in an MRI?

5. PET relies on radioactive substances administered several minutes before the scan. Watch this video (http://openstaxcollege.org/l/PET) to learn more about PET. How is PET used in chemotherapy?

6. Which of the following specialties might focus on studying all of the structures of the ankle and foot?
a. microscopic anatomy
b. muscle anatomy
c. regional anatomy
d. systemic anatomy

7. A scientist wants to study how the body uses foods and fluids during a marathon run. This scientist is most likely a(n) _____.
a. exercise physiologist
b. microscopic anatomist
c. regional physiologist
d. systemic anatomist

8. The smallest independently functioning unit of an organism is a(n) _____.
a. cell
b. molecule
c. organ
d. tissue

9. A collection of similar tissues that performs a specific function is an _____.
a. organ
b. organelle
c. organism
d. organ system

10. The body system responsible for structural support and movement is the _____.
a. cardiovascular system
b. endocrine system
c. muscular system
d. skeletal system

11. Metabolism can be defined as the _____.
a. adjustment by an organism to external or internal changes
b. process whereby all unspecialized cells become specialized to perform distinct functions
c. process whereby new cells are formed to replace worn-out cells
d. sum of all chemical reactions in an organism

12. Adenosine triphosphate (ATP) is an important molecule because it _____.
a. is the result of catabolism
b. release energy in uncontrolled bursts
c. stores energy for use by body cells
d. All of the above

13. Cancer cells can be characterized as “generic” cells that perform no specialized body function. Thus cancer cells lack _____.
a. differentiation
b. reproduction
c. responsiveness
d. both reproduction and responsiveness

14. Humans have the most urgent need for a continuous supply of _____.
a. food
b. nitrogen
c. oxygen
d. water

15. Which of the following statements about nutrients is true?
a. All classes of nutrients are essential to human survival.
b. Because the body cannot store any micronutrients, they need to be consumed nearly every day.
c. Carbohydrates, lipids, and proteins are micronutrients.
d. Macronutrients are vitamins and minerals.

16. C.J. is stuck in her car during a bitterly cold blizzard. Her body responds to the cold by _____.
a. increasing the blood to her hands and feet
b. becoming lethargic to conserve heat
c. breaking down stored energy
d. significantly increasing blood oxygen levels

17. After you eat lunch, nerve cells in your stomach respond to the distension (the stimulus) resulting from the food. They relay this information to _____.
a. a control center
b. a set point
c. effectors
d. sensors

18. Stimulation of the heat-loss center causes _____.
a. blood vessels in the skin to constrict
b. breathing to become slow and shallow
c. sweat glands to increase their output
d. All of the above

19. Which of the following is an example of a normal physiologic process that uses a positive feedback loop?
a. blood pressure regulation
b. childbirth
c. regulation of fluid balance
d. temperature regulation

20. What is the position of the body when it is in the “normal anatomical position?”
a. The person is prone with upper limbs, including palms, touching sides and lower limbs touching at sides.
b. The person is standing facing the observer, with upper limbs extended out at a ninety-degree angle from the torso and lower limbs in a wide stance with feet pointing laterally
c. The person is supine with upper limbs, including palms, touching sides and lower limbs touching at sides.
d. None of the above

21. To make a banana split, you halve a banana into two long, thin, right and left sides along the _____.
a. coronal plane
b. longitudinal plane
c. midsagittal plane
d. transverse plane

22. The lumbar region is _____.
a. inferior to the gluteal region
b. inferior to the umbilical region
c. superior to the cervical region
d. superior to the popliteal region

23. The heart is within the _____.
a. cranial cavity
b. mediastinum
c. posterior (dorsal) cavity
d. All of the above

24. In 1901, Wilhelm Röntgen was the first person to win the Nobel Prize for physics. For what discovery did he win?
a. nuclear physics
b. radiopharmaceuticals
c. the link between radiation and cancer
d. X-rays

25. Which of the following imaging techniques would be best to use to study the uptake of nutrients by rapidly multiplying cancer cells?
a. CT
b. MRI
c. PET
d. ultrasonography

26. Which of the following imaging studies can be used most safely during pregnancy?
a. CT scans
b. PET scans
c. ultrasounds
d. X-rays

27. What are two major disadvantages of MRI scans?
a. release of radiation and poor quality images
b. high cost and the need for shielding from the magnetic signals
c. can only view metabolically active tissues and inadequate availability of equipment
d. release of radiation and the need for a patient to be confined to metal tube for up to 30 minutes

28. Name at least three reasons to study anatomy and physiology.

29. For whom would an appreciation of the structural characteristics of the human heart come more easily:
an alien who lands on Earth, abducts a human, and dissects his heart,
OR
an anatomy and physiology student performing a dissection of the heart on her very first day of class?
Why?

30. Name the six levels of organization of the human body.

31. The female ovaries and the male testes are a part of which body system?
Can these organs be members of more than one organ system?
Why or why not?

32. Explain why the smell of smoke when you are sitting at a campfire does not trigger alarm,
but the smell of smoke in your residence hall does.

33. Identify three different ways that growth can occur in the human body.

34. When you open a bottle of sparkling water, the carbon dioxide gas in the bottle form bubbles.
If the bottle is left open, the water will eventually “go flat.”
Explain these phenomena in terms of atmospheric pressure.

35. On his midsummer trek through the desert, Josh ran out of water.
Why is this particularly dangerous?

36. Identify the four components of a negative feedback loop and explain what would happen if secretion of a body chemical controlled by a negative feedback system became too great.

37. What regulatory processes would your body use
if you were trapped by a blizzard in an unheated, uninsulated
cabin in the woods?

38. In which direction would an MRI scanner move to produce
sequential images of the body in the frontal plane,
and in which direction would an MRI scanner move to produce
sequential images of the body in the sagittal plane?

39. If a bullet were to penetrate a lung,
which three anterior thoracic body cavities would it enter,
and which layer of the serous membrane would it encounter first?

40. Which medical imaging technique is most dangerous to use
repeatedly,
and why?

41. Explain why ultrasound imaging is the technique of choice for
studying fetal growth and development.